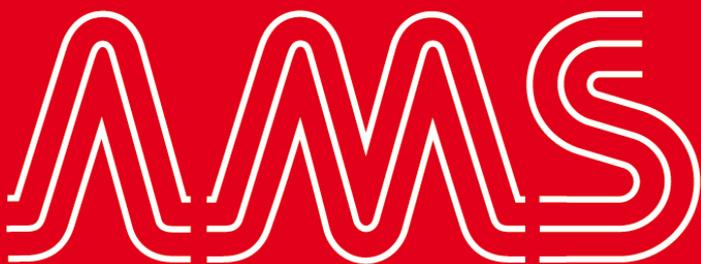




Amsterdam Institute for Advanced Metropolitan Solutions (AMS Institute):

Young institute delivering
metropolitan solutions to urban
• challenges

Amsterdam, The Netherlands



AMSTERDAM INSTITUTE FOR
ADVANCED METROPOLITAN SOLUTIONS



General Information

Title	Amsterdam Institute for Advanced Metropolitan Solutions (AMS Institute)										
Pitch	Young institute delivering metropolitan solutions to urban challenges										
Organisations	The founding partners of AMS Institute are Delft University of Technology, Wageningen University & Research and Massachusetts Institute of Technology, in close cooperation with societal and business partners: Amsterdam Smart City, The Waag Society, City of Boston (societal partners), KPN, Accenture, Alliander, Cisco, ESA, IBM, Shell, Waternet (business partners)										
Country	The Netherlands										
Authors	Arno Meerman and Hacer Tercanli (University Industry Innovation Network)										
Nature of interaction	<table><tr><td><input checked="" type="checkbox"/> Collaboration in R&D</td><td><input type="checkbox"/> Lifelong learning</td></tr><tr><td><input type="checkbox"/> Commercialisation of R&D results</td><td><input checked="" type="checkbox"/> Joint curriculum design and delivery</td></tr><tr><td><input checked="" type="checkbox"/> Mobility of staff</td><td><input checked="" type="checkbox"/> Mobility of students</td></tr><tr><td><input type="checkbox"/> Academic entrepreneurship</td><td><input type="checkbox"/> Student entrepreneurship</td></tr><tr><td><input type="checkbox"/> Governance</td><td><input type="checkbox"/> Shared resources</td></tr></table>	<input checked="" type="checkbox"/> Collaboration in R&D	<input type="checkbox"/> Lifelong learning	<input type="checkbox"/> Commercialisation of R&D results	<input checked="" type="checkbox"/> Joint curriculum design and delivery	<input checked="" type="checkbox"/> Mobility of staff	<input checked="" type="checkbox"/> Mobility of students	<input type="checkbox"/> Academic entrepreneurship	<input type="checkbox"/> Student entrepreneurship	<input type="checkbox"/> Governance	<input type="checkbox"/> Shared resources
<input checked="" type="checkbox"/> Collaboration in R&D	<input type="checkbox"/> Lifelong learning										
<input type="checkbox"/> Commercialisation of R&D results	<input checked="" type="checkbox"/> Joint curriculum design and delivery										
<input checked="" type="checkbox"/> Mobility of staff	<input checked="" type="checkbox"/> Mobility of students										
<input type="checkbox"/> Academic entrepreneurship	<input type="checkbox"/> Student entrepreneurship										
<input type="checkbox"/> Governance	<input type="checkbox"/> Shared resources										
Supporting mechanism	<table><tr><td><input checked="" type="checkbox"/> Strategic</td></tr><tr><td><input checked="" type="checkbox"/> Structural</td></tr><tr><td><input checked="" type="checkbox"/> Operational</td></tr><tr><td><input type="checkbox"/> Policy</td></tr></table>	<input checked="" type="checkbox"/> Strategic	<input checked="" type="checkbox"/> Structural	<input checked="" type="checkbox"/> Operational	<input type="checkbox"/> Policy						
<input checked="" type="checkbox"/> Strategic											
<input checked="" type="checkbox"/> Structural											
<input checked="" type="checkbox"/> Operational											
<input type="checkbox"/> Policy											
Summary	AMS Institute is a unique collaboration between knowledge institutions, business and public stakeholders to deliver metropolitan solutions to urban challenges. The City of Amsterdam and the greater metropolitan region function as a testbed for AMS Institute's projects. Created following a unique call for tender by the City of Amsterdam, some of the world's leading universities, multinationals and several societal stakeholders committed themselves to establishing a leading institute in urban innovation. The initial funding provides this unique concept with a 10-year runway to use technology and design to resolve, steer and navigate city flows.										



Introduction & Overview

1. BACKGROUND

The Amsterdam Institute for Advanced Metropolitan Solutions (AMS) is a consortium of private-public partners who collaboratively **educate talent**, and **develop** and **valorise interdisciplinary metropolitan solutions** to the urban challenges of sustainability and quality of life.

Since the start of the century, themes such as the circular economy, urban growth and sustainability have found their way into regional, national and international policies. European initiatives such as the regional innovation strategies for smart specialisation (RIS3) and smart cities have been implemented on a regional scale. In 2010, the City of Amsterdam initiated a high-level stakeholder group, the Amsterdam Economic Board, to intensively drive these themes on a regional level. Not long after, the City of Amsterdam launched a €50 million call for proposals for a technological research institute for metropolitan solutions to which it received 13 bids. The winning consortium consisted of a collaboration between Delft University of Technology (TU Delft), Wageningen University & Research (WUR) and Massachusetts Institute of Technology (MIT) with the support of eight large corporations and several societal stakeholders who pitched the establishment of the Amsterdam Institute for Advanced Metropolitan Solutions. This 10-year funded institute is slowly working towards a self-sustainable model, partly by acquiring external funding to multiply its investments by 4, working with an estimated budget of €250 mil.

The suggested model established the founding framework of AMS, Institute which fosters the creation of urban solutions in the areas of water and waste management, energy, resource and food security, mobility and logistics, and data management through the collaboration of academic and research institutions, enterprises, municipalities and residents.

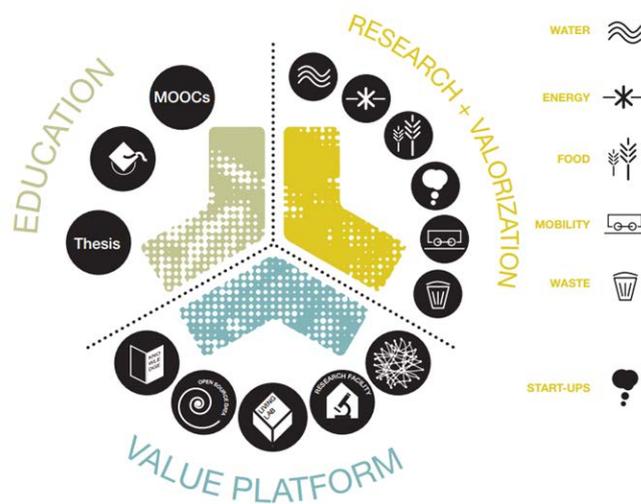


Figure 1: Three pillars of AMS (Source: AMS Institute)

AMS Institute is built on **three main pillars**: Research & Valorisation, Education and a Value Platform. By taking an integrated approach among these pillars, AMS guarantees that:

- ▶ talent is educated on topics that really matter and are connected to labour markets, both local and global;
- ▶ researchers build on the latest knowledge and technology, and by working with companies, governments and citizens the research stays connected to real world questions and challenges;
- ▶ results will be implemented in Amsterdam and exported over the world by existing companies and entrepreneurial talent.

Looking in detail at the interconnected nature of the founding pillars;

- ▶ The research and valorisation activities are defined and carried out by the academic partners of AMS Institute. Each research and valorisation project or program must add value to the platform in the form of, for example, data, knowledge, network and/or infrastructure that can be leveraged for other projects.
- ▶ The education of graduate students and researchers from partners is being supported by the research and valorisation arm and its partners. To complete their education, engineering students must carry out a research-based thesis project related to the research and valorisation portfolio. Entrepreneurial talent valorises research results.
- ▶ The value platform – which is in development, will soon support education, research and valorisation, and these in turn fuel the value platform and challenge it to continuously reinvent itself to create value.

2. OBJECTIVES AND MOTIVATIONS

AMS Institute has a clear motivation: **To engineer talent and create metropolitan solutions.** The vision of the institution is “to become a leader in urban innovation, using technology and design to resolve, steer and navigate city flows – e.g. water, energy, waste, food, data and people”. AMS targets the entire chain; from education to research, and valorisation to bring an integrated approach to urban development.

More particularly, the institution aims to:

1. **Attract and retain talent** in the field of applied technology in the Amsterdam region;
2. **Create sustainable connections** to ensure that the initiatives are embedded both in the Amsterdam region as well as internationally
3. **Have a positive economic impact** for the Amsterdam region
4. **Develop and market metropolitan solutions** to create economic value and improve the quality of living and working in Amsterdam

5. **Contribute to innovation** while complementing existing strategic assets and/or organisationsⁱ

To realise these goals, AMS Institute has:

- ▶ **an educational program** with a new, innovative MSc in Metropolitan Solutions that targets top students from all over the world
- ▶ **a portfolio of research and valorisation projects/programs** defined and executed by consortia of knowledge institutes and companies in cooperation with the City of Amsterdam and its citizens
- ▶ **a value platform** that combines infrastructures, knowledge and networks to enable its education, research and valorisation activities

AMS Institute adopts a **growth model**ⁱⁱ that is formed through a **one-year kick-start** and design phase, a **four-year growth** phase in which AMS Institute matures and establishes itself firmly in Amsterdam, a **four-year development** period where AMS Institute moves towards becoming autonomous to have developed a **full-scale autonomous AMS institute in year 10**.

3. STAKEHOLDERS

The consortium of AMS Institute is made up of a number of academic, research, societal and industrial partners who are committed to the advancement of the institution with national and international outlook. Linked to the founding pillars of AMS Institute, these partners can be grouped into three, based on their contributions to facilitate planning and implementation of the activities in the chain (*see illustration*).

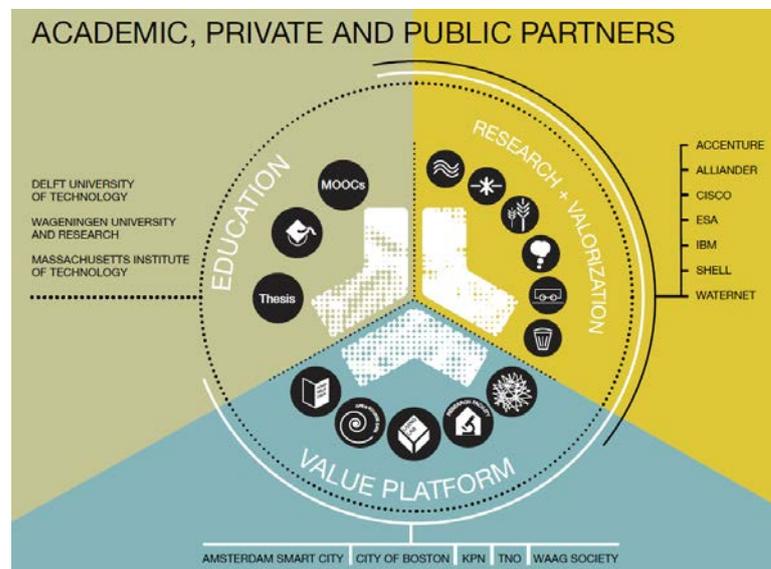


Figure 2: AMS Stakeholders Overview (Source: AMS Institute)

Three **academic partners** represent the core of the consortium: Delft University of Technology (TU Delft), Wageningen University & Research (WUR) and the Massachusetts Institute of Technology (MIT). These universities provide the long-term vision the consortium requires, as well

as experience and expertise in the fields relevant to urban design: electrical, mechanical, and agricultural and civil engineering, computer science, governance and policy, environmental sciences, landscaping, urban planning, architecture and social sciences. They have strong links to industry, scoring 2nd, 18th, and 48th in the major global rankings for their emphasis on applied research, cooperation with companies, and valorisation activities.

In respect to the **industrial partners**, the following local, national, and international organisations have since the beginning been involved in the activities of AMS Institute in the areas of **research, valorisation**, and its **value platform**: Accenture, Alliander, Amsterdam Smart City, Cisco, City of Boston, ESA, IBM, KPN, Shell, TNO, Waag Society and Waternet (list not exhaustive). These organisations facilitate technology R&D and integration required for progressive cities, i.e. IT, energy, water, food, materials, and waste. They do not only make contributions to the consortium with data, technologies, and knowledge, but also take part in setting the research agenda to define topics that benefit both society and the economy. In the area of research, AMS Institute collaborates with over 70 partners, both local, national and international.





Implementation

4. INPUTS

The investments made in the establishment and development of AMS Institute are in the form of financial, physical, and human resources directed towards the activities indicated within the three pillars.

The City of Amsterdam committed €50m to AMS Institute for a ten-year period. This funding is designed on a co-investment model, in which financial resources committed by the city will only be spent if sufficient co-financing from public and private AMS partners and other parties is secured. In addition to the financial support, the City of Amsterdam commits to support housing, facilitate the city's use as a living lab, provide insight into urban challenges, contribute city's data, open its network, support use of the Amsterdam brand and create publicity, support the acquisition of external funding, and act as a launching customer for new metropolitan solutions.

The financial input for AMS Institutes' **educational** activities are acquired through:

- ▶ **student fees**, with international students paying the standard annual institutional tuition fee of close to €15,000 and Dutch students just over €2,000 which is supplemented through direct government funding per student;
- ▶ **the funds allocated by the City of Amsterdam** for the presence of the institute in Amsterdam, as well as co-investments in the development and set-up of the curriculum;
- ▶ **income generated through online and on-site courses**, e.g. executive courses, summer schools

The funds of the City of Amsterdam are used to get the educational program going, after which the other income streams will facilitate a sustainable model that – in time - can function without any additional funds from the city.

The financial input for the **Research and Valorisation** activities is acquired through three streams: public/private partners, regional, national and international funding agencies, and funds of the City of Amsterdam.

- ▶ **Private and public partners** cover close to half of the funding through in-kind contributions from knowledge institutes and/or companies such as knowledge, data, technologies, etc. In addition, companies and NGOs will provide cash contributions to the projects of AMS.
- ▶ **Regional national and international funding agencies** are expected to cover a little over a third of the funding for AMS projects and programs. This funding originates from a variety of sources, including contributions from NGOs, subsidies from regional, national or European governments, e.g.
 - subsidies from the Dutch high-level consortiums for Knowledge and Innovation subsidy (25% subsidy on private cash contributions), and from the national

research councils and agencies such as NWO or STW, as well as contributions from the Innovation Fund SME+ and other policy instruments;

- EU subsidies, such as Horizon 2020 programs or the European Regional Development Fund
- Investments from local and regional governments with specific research questions
- ▶ **The City of Amsterdam** invests a fixed percentage of 16% over the first ten-year period, for the research and valorisation portfolio.

The **value platform** is centred around bringing public and private research together and providing the connection with current real world issues. The business model of the platform is linked to the research and valorisation portfolio. This means, that as the projects grow, part of their budget will be invested in the value platform development. This is also represented in its financial input model, with again three key investment streams: **The City of Amsterdam, public/private partners, Regional, national and international funding agencies.**

Concerning the **physical input**, AMS Institute is offered existing facilities of partners and of the city, in and around Amsterdam, for housing and educational purposes for the first four years. The institution is currently based in the Royal Tropical Institute in the centre of Amsterdam. However, talks are underway to move the institute to larger facilities to be able to host the incoming students, its researchers and other staff.

5. ACTIVITIES

Overall, the activities of AMS Institute are aimed to achieve the cyclical urban development process that starts with ‘sensing’ the city, followed by ‘designing’ the solution, and finally ‘integrating’ the technology in the city. What is emphasized in the implementation of this cycle is the impact of ‘societal engagement’ on the change process, for effective integration of solutions in the city’s fabric.

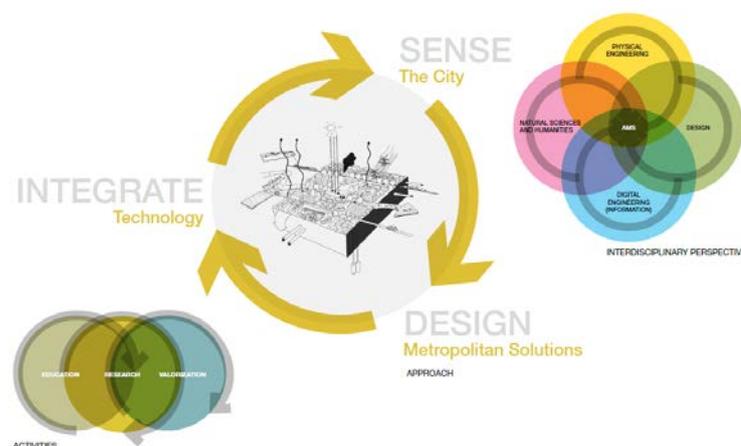


Figure 3: The cyclical model of AMS Institute urban development (Source: AMS Institute)

Linked to the three main pillars of the institution, activities of AMS Institute can be classified under three themes: education, research and valorisation, and a value platform.

Education:

Citing one of the missions of the institute; “to engineer the next generation of engineering talent”, AMS Institutes’ consortium has designed the two-year educational programme “MSc in Metropolitan Analysis, Design and Engineering (MADE)” to train talented engineers in the development and implementation of metropolitan solutions, through a combination of innovative education and real-life practice. The programme is designed, managed and financed by the academic core of AMS Institute, and implemented as an integral part of the larger education offers of the academic partners.

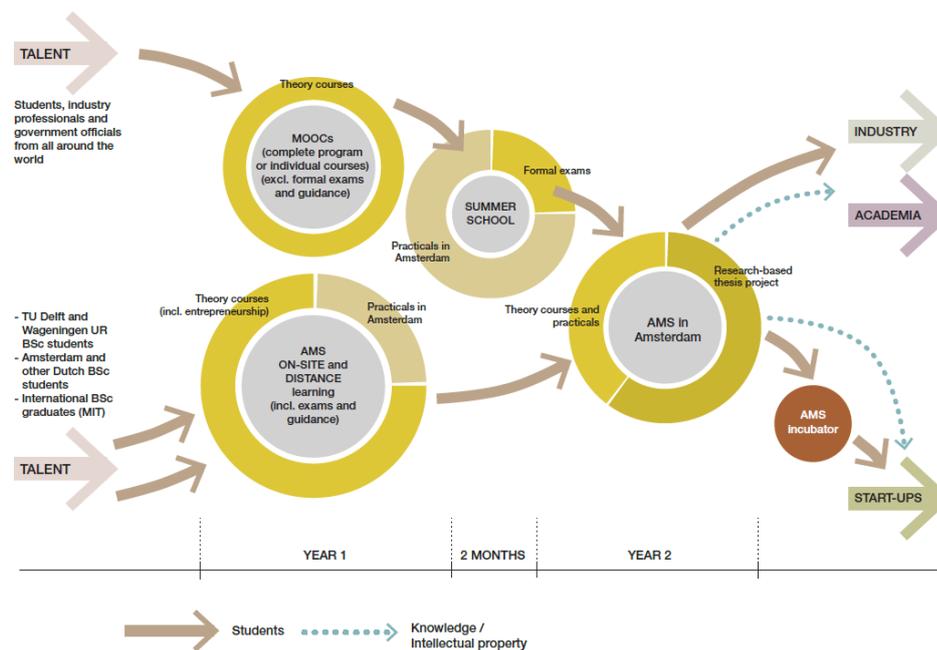


Figure 4: AMS educational model (Source: AMS Institute)

As seen in the Figure 4, the student groups for the study programme include traditional students as well as non-traditional ones, i.e. external students, industry professionals, and government officials. The curriculum is developed and delivered by TU Delft, WUR and MIT.

Students are physically based in Amsterdam, and the lectures take place on-site, which can also be followed online in real time. Therefore, the mode of learning demonstrates a combination of approaches that involve MOOCs, on-site, and distance learning modules, supported by a two-month long summer school for the practical, hands-on component of the program. In particular, to attract talent at the international level, the integration of MOOCs into the program carries utmost importance, complementing the face-to-face learning that takes place in Amsterdam. While the path for the non-traditional students commences with a theory based education online, it gradually brings the student into the city for practical application and thesis component.

The second year, is focused on the theoretical and practical courses while preparing a research-based thesis project. The project is supervised by a professor in Delft University of Technology or WUR, and coached by a professional from among the partner institutes. The final product is either introduced to academia or industry, or it is processed through the AMS incubator for the students to launch start-ups. AMS Institute will foster entrepreneurship by matching the student projects with the consortium companies, to help the development of new businesses. AMS Institute offers entrepreneurs:

- ▶ access to the **entrepreneurial support activities**, facilities and experiences of the AMS Institutes' partners (e.g. YES! Delft) and the City of Amsterdam;
- ▶ **incubator facilities** and services in the Amsterdam metropolitan area for companies tackling the theme of metropolitan solutions;
- ▶ a network of **venture capital parties** to fund entrepreneurs;
- ▶ involvement of **consulting firms** in AMS Institute;
- ▶ **entrepreneurship courses** (including electives) in the educational programme.

On the completion of their degree, the students are awarded a joint degree from TU Delft or WUR.

Research and Valorisation:

AMS Institutes' public-private consortia participate in the research and valorisation portfolio in collaboration with its international partners, and the citizens of Amsterdam to test and co-create solutions. The research agenda is currently developed around several themes, which include:

- ▶ **Connected City**, Focusing on urban mobility, citizen sensing & empowerment and intelligent urban infrastructures
- ▶ **Vital City**, with a focus on metropolitan food systems, healthy urban living and urban climate resilience
- ▶ **Circular City** and subthemes of urban energy systems, nutrient recovery and circular materials and buildings

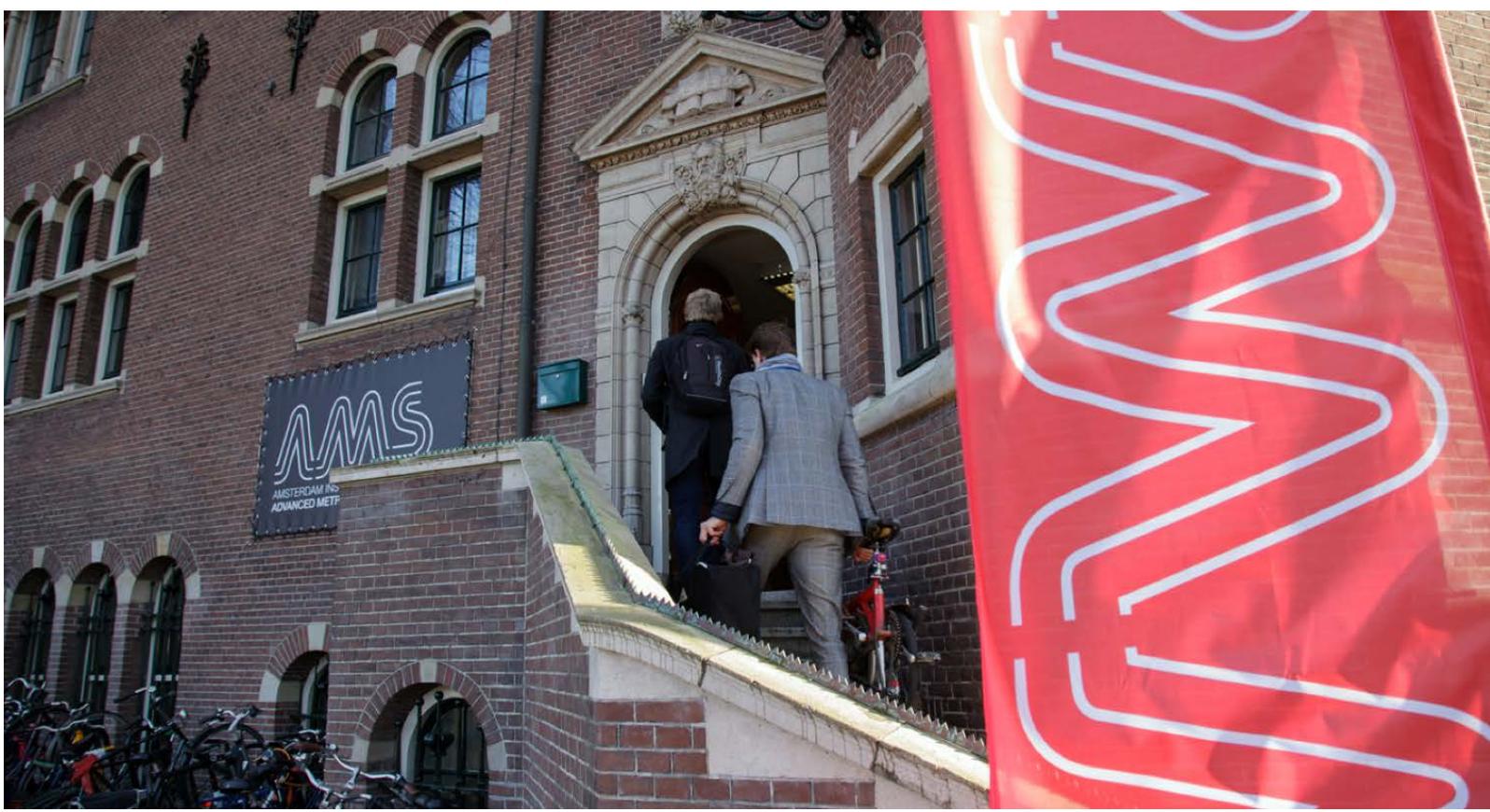
The projects identified by the institutes' consortia as part of the research and valorisation portfolio are listed in the 'Outputs' section of this document.

Value Platform:

The value platform will be built to have the following functions:

- ▶ **Living lab set-up, use and network** that will hold the City of Amsterdam with partner cities as living labs, helps new partners obtain the required licenses/approvals for specific use of the living lab, and supports the mobilization of citizens to participate
- ▶ **Data infrastructure set-up and operations** that will coordinate AMS data offering and infrastructures, including KPN data infrastructure and City SDK from Waag Society.

- ▶ **Unique research infrastructure development** that will be managed by AMS Institutes' partners and consortia in the in the research and valorisation portfolio.
- ▶ **Incubator facilities and services set-up and operations** through partnerships with existing incubator infrastructure in Amsterdam, offering one or more central places where entrepreneurs in metropolitan solutions can grow
- ▶ **Business development** that acquires new projects, partners and funding.



6. OUTPUTS

During its four years of operation, AMS Institutes' main outputs have been in the education, and the research and valorisation pillars.

AMS Institute currently runs several courses, workshops and summer school programmes. In addition, it is gradually developing several MOOCs, offered for free on edX. AMS Institute is about to launch its first master programme. The Metropolitan Analysis, Design and Engineering (MSc MADE) is a joint-degree programme from TU Delft or WUR.ⁱⁱⁱ

One of the research programmes currently funded with a €25 million^{iv} budget is '**Roboat**', a five-year project that started in collaboration with researchers at the MIT, TU Delft and WUR. In addition to the consortium of researchers from the partner universities, Waternet, City of Amsterdam, and City of Boston will provide support in the implementation of this programme. The project is seen unique for being the first large scale research on **autonomous vehicles on water**. Other possibilities Roboat offers are detecting diseases at an early stage, new forms of transport of people and goods on water and managing the waste in the Amsterdam canals.

- ▶ **Rainsense** - Making Amsterdam more resilient to flooding, and to damage from severe weather conditions like those experienced several times during summer in the last years,
- ▶ **Urban Pulse** - Generating the knowledge required to build sustainability strategies for energy, water, food, and natural resources in the city.
- ▶ **Crowd Monitoring SAIL** - Developing a real-time crowd monitoring system, including real-time data collection - using multiple sensors and visualisation of the traffic state in the overall area.
- ▶ **Allegro** - Comprehensively understanding pedestrian's and cyclist's behaviour in cities, in which different behavioural levels, concerning walking and cycling operations, activity scheduling and travel behaviour and knowledge representation and learning will be covered.
- ▶ **Saving Energy when Others pay the Bill**: stimulating energy conservation in situations where people don't pay for their energy bill by studying in a series of field experiments, the potentially positive effects of non-financial incentives and technological innovations on energy saving behaviour.^v

AMS furthermore co-financed a number of Stimulus projects to help initiate promising and innovative research projects^{vi}.

7. IMPACTS

While AMS Institute is only 30 per cent into its development programme, they are working towards very clear goals for the next five years. As specified in the Vision Report, in the academic year 2022, AMS Institute will have:

- ▶ 200-250 talented students enrolled in the new MSc education programme;
- ▶ Over 100,000 people following MOOCs (individual or the programme as a whole) from all over the world;

- ▶ 100-150 researchers (PhD students, post-docs, researchers from applied research institutes, corporate researchers, principal investigators) working in the research and valorisation portfolio of AMS;
- ▶ a €25-35m annual budget in the research and valorisation portfolio;
- ▶ 15-25 research and valorisation projects by consortia of different sizes and shapes, in which a total of 30-50 public and private partners participate; 20-40 of these being companies;
- ▶ 2-5 companies attracted to set up offices in Amsterdam over the period 2013-2022;
- ▶ a global living lab network of 4-8 partner cities that collaborate in the research and valorisation portfolio;
- ▶ a self-sustaining value platform with unique infrastructure, network and knowledge/experience;
- ▶ 1,000-1,500 articles published on metropolitan solutions between 2013 and 2022;
- ▶ 10-15 spin-outs generated in the field of metropolitan solutions from research/partners and 30-70 start-ups from entrepreneurial AMS students in Amsterdam between 2013 and 2022;
- ▶ new metropolitan solutions rolled out on a large scale in Amsterdam;
- ▶ an internationally renowned name in the field of metropolitan solutions.





Support & Influencing factors

8. SUPPORTING MECHANISMS

The main supporting mechanism behind the activities of AMS Institute is the strongly committed consortium made up of representatives from academic institutions, industry leaders, and public organisations. This stakeholder approach to the urban development is what the three pillars of AMS Institute is built on. While TU Delft and WUR, in cooperation with MIT, majorly contribute to the implementation of the educational programme and offer their long-term support, the public-private consortia, i.e. Amsterdam Smart City, City of Boston, KPN, TNO and Waag Society commit to play a leading role in the value platform and participate in projects, and Accenture, Alliander, Cisco, ESA, IBM, Shell and Waternet to participate in and contribute to the research and valorisation portfolio. The power of this support mechanism comes from its dynamic nature shaped by (i) its open nature of cooperation where more partners can join, as well as (ii) its inclusion of citizens as co-creators in AMS Institutes' initiatives.

9. BARRIERS AND DRIVERS

One of the main drivers of AMS Institute's activities is the vision and resources that the City of Amsterdam and its heavy focus on developing the city towards a 'Smart City' as well as AMS Institute's founding partners that have dedicated a significant amount of their resources. The unique mixture of participating stakeholders provides an unprecedented platform that facilitates communication and drives cooperation. Another key driver is the willingness of all involved parties, amongst which some of the world's leading knowledge institutions and multinationals, to participate in innovation activities and the diverse range of knowledge they bring in to AMS Institute.

Whereas the primary barriers of AMS Institute include collecting sufficient capital for its future activities and further expanding its current initiatives.

10. FUTURE CHALLENGES

As a new institute, provided with €50m in initial funding but with a €250m budget for 10 years it has work cut out for itself. This €200m financing has to come from a wide variety of sources, that will have to be embedded to accomplish its goals. AMS Institute is facing a number of challenges when it comes to securing its financing for its initial 10 years but also guaranteeing its future after the funding from the City of Amsterdam runs out:

- ▶ Acquiring the accreditation to start educational activities (the MSc MADE)
- ▶ Developing the strategy and business development on key topics in close cooperation with private companies

- ▶ Designing investment programmes that align the interests between the educational provision goals of the institute and business & development goals of private companies and other stakeholders.
- ▶ Redefining the traditional business model of companies within the modern economical model

AMS Institutes' funding model is currently mainly build on the funds from the city and that of public and private partners, as well as public funding programmes. The latter being only guaranteed after proposals have received funding. Besides, as it is launching a fresh study programme it also needs to ensure that it will acquire enough talented students and retains the students for its research' programmes. The pre-enrolment for the start of the MSc MADE shows a promising outlook.

11. CONTEXT

The city of Amsterdam represents as the UBC context for AMS Institutes' activities. Selected as the 'European capital of Innovation' in 2016, the city is hosts a well-connected innovation ecosystem, as well as strong creative industry with headquarters of many multinational companies located in the city. Part of the 'European Network of Living Labs', the city of Amsterdam is a location with broad sociocultural diversity of citizens who are enthusiastic about experimenting and co-creating together with researchers, companies, and public institutions. It is a hub for international talent, attracting students, researchers, and professionals across the globe to make a positive change in the city. These unique features of the city provide AMS Institute an excellent context to operate both in top-down and bottom up manner that will facilitate the changes efficiently anchor into the city.

12. KEY SUCCESS FACTORS

The key success factors of the activities of AMS Institute are built around its three main pillars. With its endeavour to establish a sustainable business model and acquiring sufficient funding and co-funding from a variety of sources.

Sustainable funding models and access to high quality student resources are the key factors that will determine the success of AMS Institutes' educational activities. The financial model is built on student numbers, through tuition fees and direct government funding. Student numbers will be reached via marketing activities carried out in the consortium universities and the MSc programme linked to several BA programmes. International student community will be particularly targeted through design, art, and engineering focused studies via TU Delft, WUR and MIT, institutions with a significant global reach.

The business model of the **research and valorisation activities** is built upon the public-private consortium funds channelled to AMS Institute's portfolio, which is mainly determined by the attractiveness of the AMS activities. While most funding needs to be secured by the consortium itself, the stimulus funding is expected to catalyse involvement of more funders to support the services.

The Value Platform is co-financed by the public-private consortia, via attractive offers that involve city data and city of Amsterdam as a living lab, as well as a strong commitment from the City of Amsterdam. In this context, the presence of city staff in AMS Institute and AMS Institute as a neutral space for information sharing will facilitate a constructive interaction between AMS Institute, the City of Amsterdam and third parties.



Further Information

13. MONITORING AND EVALUATION

The agenda of AMS Institutes' activities is closely monitored by the stakeholders.

- ▶ The financial agenda established for a ten-year period with the City of Amsterdam is monitored annually. Each year, the board of AMS Institute detail and approve the financial plan in cooperation with the City, as well as the roles and details of the monitoring procedure.
- ▶ The majority of projects and programmes are reviewed by (i) national/international subsidy providers, e.g. Horizon 2020, "TKI toeslag", EU Structural Funds and (ii) consortium partners.
- ▶ AMS Institute performs a well-defined portfolio management procedure, that includes:
 - identification of portfolio opportunities
 - allocation of the resources of AMS Institute to the most promising and valuable projects
 - support with the actual set-up of projects and their use
 - capturing synergies between projects in the portfolio
 - reallocation of resources on the basis of project milestone planning defined upfront
 - revision of the portfolio on an annual basis

This portfolio management process is supported by a scientific advisory committee with scientists from within and outside TU Delft, WUR and MIT that meets on a quarterly basis.

14. SUSTAINABILITY MEASURES

The 10-year development plan of AMS Institute aims at preparing the institute to become self-sustaining at the end of the funding agreement with the City of Amsterdam. By the end of the funding period, AMS Institute is expected to:

- ▶ execute the educational programme from Amsterdam with the operations managed by TU Delft and WUR, securing a long-term continuity
- ▶ manage the research and valorisation portfolio co-financed by companies, knowledge institutes and subsidies from e.g. the EU and the Dutch government
- ▶ moderate a value platform maintained and strengthened through the investments made by its users, namely, partners of AMS Institute.

Current operational model implemented towards long-term sustainability of the institution includes a number of strategies that will steadily reduce the dependency of AMS Institute on the City of Amsterdam. Until AMS Institute reaches a self-sustaining state, the institute is co-

financed by the partners of AMS Institute and other resources. The open platform to generate projects for the research and valorisation portfolio, and availability of the value platform to all partners and stakeholders will allow the system to gradually develop and fund itself. The value platform will not only serve to the needs of the public-private consortia, but also to the needs of the individuals who pay to use platform infrastructures. Data management, storage, and analysis are among the promising business models that will secure additional investment in the value platform. Finally, national and EU subsidies will be targeted to fund research infrastructure.

15. TRANSFERABILITY

AMS Institute public-private collaboration model that connects the chain of education, research and valorisation is drawing on the experience of the promising initiatives developed in the city of New York, Center for Urban Science and Progress (CUSP) and in Barcelona Urban Lab & Smart City Campus (BITH)^{vii}.

- ▶ Established in 2011 in New York, The Center for Urban Science and Progress (CUSP)^{viii} is a public-private partnership which includes New York University, Carnegie Mellon University, the University of Toronto, the University of Warwick and the Indian Institute of Technology Bombay. The partner companies of the institution include IBM, Microsoft, Xerox, Cisco and Siemens. Within its educational activities, the institution offers an MSc and an Advanced Certificate degrees in Applied Urban Science and Informatics.
- ▶ Founded in 2012, Urban Lab & Smart City Campus (BITH)^{ix} is an initiative of the City of Barcelona that operates in a public-private partnership model. The consortium members include the local government, the University of Barcelona, the University Polytechnic of Barcelona, Cisco, Endesa and Sanofi. Investments are made to set up an urban lab to facilitate incubators, research facilities, and classrooms.

16. PUBLICATIONS AND ARTICLES

(2016) AMS Detailed Vision and Roadmap:

http://www.folia.nl/wp-content/uploads/2013/10/Detailed_vision_and_roadmap_AMS.pdf

17. LINKS

AMS Institute <http://www.ams-institute.org/>

(2016) Data-Driven City Management: A Close Look at Amsterdam's Smart City Initiative

<http://sloanreview.mit.edu/case-study/data-driven-city-management/>

(2016) Six Lessons from Amsterdam's Smart City Initiative

<http://sloanreview.mit.edu/article/six-lessons-from-amsterdams-smart-city-initiative/>

18. CONTACT PERSONS



Kees Slingerland
Business Director
kees.slingerland@ams-institute.org



Tom Kuipers
Program Developer
Tom.Kuipers@ams-institute.org

19. REFERENCES

- ⁱ http://www.tudelft.nl/fileadmin/Files/tudelft/actueel/Nieuws/Detailed_vision_and_roadmap_AMS.pdf
- ⁱⁱ http://www.tudelft.nl/fileadmin/Files/tudelft/actueel/Nieuws/Detailed_vision_and_roadmap_AMS.pdf
- ⁱⁱⁱ http://www.ams-amsterdam.com/wordpress/wp-content/uploads/2017/03/MSc_MADE_flyer_digitaal_DEFINTIEF.pdf
- ^{iv} <http://www.ams-institute.org/roboat/>
- ^v https://circularcities.files.wordpress.com/2016/10/arjan-van-timmeren_ams-institute_sept-2016.pdf
- ^{vi} <http://www.ams-institute.org/news/8-projects-selected-for-stimulus-funding-ams-institute/>
- ^{vii} http://www.folia.nl/wp-content/uploads/2013/10/Detailed_vision_and_roadmap_AMS.pdf
- ^{viii} <http://cusp.nyu.edu/>
- ^{ix} http://www.theinnovationgroup.it/wp-content/uploads/2012/05/Olivella_City-of-Barcelona.pdf