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1 INTRODUCTION ON AMS
1.1 MOTION FOR AN APPLIED SCIENCES UNIVERSITY
In December 2011 the motion 'Realisatie van een Amsterdamse universiteit voor Toegepaste Wetenschappen' asked the City Executive to investigate under which conditions an Applied Sciences University may be established in Amsterdam through a public procurement process, with which business sectors this institute could forge partnerships and which locations in the city would be suited for this.

1.2 INITIAL OUTLINE OF AMS
Goals
An initial exploratory study conducted by the city from February 2012 to April 2012, combined with later discussions between BCG and the City, identified four main goals for AMS
1. Stimulate economic activity e.g. by creating spin-offs
2. Attract talent to the Amsterdam region (e.g. researchers, students)
3. Develop and export technology based metropolitan solutions
4. Attract additional R&D funding to the Netherlands and Amsterdam region

Exploratory study conducted by the City
The exploratory study conducted by the City went into necessary conditions and incentives Amsterdam is willing to offer and the expected potential of AMS. Required conditions for the city are that the institute should focus on metropolitan solutions, build on Amsterdam’s strengths, have strong links to local and international ecosystems of research and development and seeks alliances with triple helix parties.

The exploratory study also concluded that AMS should focus on economic growth and should not be seen as a step towards a new academic institution. Furthermore the City wants the institute to have a solid business case, as the city will not cover any operating costs of the institute.

The City is willing to supply enabling conditions for the institute such as:
- Building and grounds for housing of the institute
- A living lab, meaning the identification of urban challenges, data collection, solution creation and implementation in the city through
  - Cooperation of city departments
  - Guidance in procedures and rules
- Access to existing knowledge and patents that the City or its departments have on metropolitan solutions
- The City as a launching customer; both in the articulation of demand and as the potential first customer
- Showcase for successful solutions, and promotion through the network of Amsterdam with other cities worldwide

Furthermore the exploratory study concluded that the institute may be appealing to market parties as it can lead to demand driven metropolitan solutions with commercial potential.

The conclusions of the exploratory study were endorsed by the City Executive and City Council.
1.3 AIM OF THIS STUDY: ASSESS MARKET INTEREST TO SUBMIT A TENDER FOR AMS

Based upon the exploratory study the City considers an institute for Amsterdam Metropolitan Solutions to be a potentially interesting route to stimulate economic growth in the region. Amsterdam therefore wished to further investigate this option and if it indeed is an interesting route, to organize a tender to find out which companies and knowledge institutions, both national and international, are interested in investing into the formation of AMS.

The City of Amsterdam has engaged the assistance of BCG to assist with this. Two main goals were formulated for the current BCG study:

- Further develop the potential setup and focus for AMS (‘what could AMS be’)
- Execute a market consultation to assess the interest of companies and knowledge institutions to set up AMS through a tender

In the course of this study, the joint team of the City and BCG undertook research and activities in many fields to assess the potential for AMS, including:

- Possible AMS content topics (including demand for solutions, active companies, existing programs and institutes, etc.)
- Value chain positioning of AMS (e.g. through archetypes of other institutes)
- Attractiveness of Amsterdam for international talent (assessed through a survey)
- Public funding sources for research
- Interviews with city departments
- Interviews with companies and knowledge institutions

This report does not contain the results of all of these activities, but only those results that are relevant for the final conclusions. All results – including interim – have been shared with the project team from the City of Amsterdam.

1.4 SPECIFICATION OF POSSIBLE AMS CONTENT TOPICS

The exploratory study conducted by the City suggested a focus on metropolitan solutions, given the growing importance of metropolitan areas. By estimate of the OECD, some 86% of the global population will live in urban areas by 2050. Additionally the exploratory study suggested a focus on technology. In combining these two the City and BCG defined metropolitan solutions around topics related to smart cities. Figure 1 below shows the sub-topics within smart cities and the possible research areas within these subtopics.

As a part of this study BCG conducted ‘deep-dives’ into a number of subtopics: waste, water, health, mobility and energy efficiency. Overall these deep-dives confirm the potential for research and solutions in many of these areas.
AMS to focus on topics related to smart cities
Non limitative list of possible topics; many interesting areas are at crossroad of different sub-topics

Figure 1: smart cities topics

2 Market interest for AMS
As a part of this study BCG has assisted the City of Amsterdam in a market consultation, interviewing about 40 companies and knowledge institutions about AMS and their potential interest to participate in AMS. Representatives from companies and knowledge institutions were generally on a senior level, such as CEO/chairman, executive board member, BU director, director the Netherlands or senior vice president.

Companies and knowledge institutions that were consulted during this phase were sent a background document which described the initial outline of AMS. This document described the goals and differentiating factors, fit of AMS with the Amsterdam Metropolitan area, envisioned benefits of participating in AMS, possible structure for AMS and possible content topics for AMS.

In this document and during the interviews it was clearly stated that the City of Amsterdam did not envision to contribute financially to operations of the institute but was willing to provide the enabling conditions mentioned in paragraph 1.2.

The goal of the interviews was to assess the intrinsic value of AMS for potential participants and determine under which conditions companies and knowledge institutions would be interested to participate in AMS.

2.1 Companies
Interest in AMS themes
A large majority of the interviewed companies consider the AMS themes relevant to their business.
At the same time most companies are only interested in one or two themes, and not the full scope of topics. Only a number of (mainly ICT) companies have indicated a broader interest in (almost) all topics.

**Perceived added value of AMS**

Companies see the potential added value of AMS in multiple ways:

- Living lab, including data from the City, with the opportunity to test solutions in Amsterdam and the possible showcase for successful solutions
- A focus on research into implementation of solutions and their acceptance and use by citizens
- Promotion of the solution by Amsterdam through its network with other cities
- Collaboration between AMS partners leading to unusual consortia
- Amsterdam as a potential launching customer for developed solutions

Companies are enthusiastic about the proposition of a living lab and Amsterdam as a launching customer. At the same time companies indicate that this requires significant commitment from the City of Amsterdam. A number of companies has voiced concerns whether Amsterdam is committed sufficiently to this initiative to provide this proposition. This concern is partially related to the fact that Amsterdam is seen to have started many initiatives already.

A limited number of companies indicated they saw no added value for AMS. Different reasons are given, with the main reasons being

- Limited perceived added value of AMS compared to existing institutions and initiatives (e.g. living lab already possible, many platform organizations already exist)
- Amsterdam is not attractive enough as launching customer or showcase for solutions (e.g. for companies that want to sell outside of Europe)
- The City should focus on consolidating and leveraging existing initiatives, and not building a new one

**Participation in AMS**

The majority of interested companies indicate that they wish to participate on a project level, especially if these projects are formulated broadly in order to allow innovation. For example instead of a project for installment of windmills a project to reduce CO₂ exhaust in general is seen as interesting.

There is almost no interest of companies to set up their own institute or (co)finance a new institute. The reluctance from companies stems from the fact that many platform organizations already exist, often without a proven added value. Projects are more tangible for companies and provide a better outlook for real products and business models.

Furthermore, few companies indicated interest to finance education of (potential) employees through AMS (e.g. graduate courses), mainly as they find that education is a public task in the Netherlands.

Overall there are a number of conditions mentioned by multiple companies for participating in AMS projects:

- The City should commit to facilitate AMS, both on political and administrative level
- Companies should have a clear view on how their investments in AMS projects may be recovered
- Projects should be with complementary companies, not competitors
- AMS should stay exclusive and only be open to the best companies in their field
AMS should allow for good IP protection
AMS should ensure international connections, for example with other European initiatives (e.g. BIT for the Habitat in Barcelona)

Most companies suggest to operate in a growth model in which a number of tangible projects are started initially and expanded if these projects show success. A handful of companies has expressed interest to be involved in this pioneering phase.

Only a few companies have expressed interest in setting up an entire institute. These companies see a large value in education and research into urban studies and highly value the option of a living lab. These companies would seek to build a consortium of companies (e.g. in technology, education) and highly ranked universities to bid for the tender. Based upon the initial discussions held the exact business model that these companies envision is not yet clear.

### 2.2 UNIVERSITIES AND KNOWLEDGE INSTITUTES

**Interest of Dutch universities and knowledge institutes**
Six Dutch universities (including most technical universities) and one knowledge institute have been interviewed in the market consultation for AMS. All have expressed an interest in the themes, the opportunities provided by the living lab and have indicated that they could provide skilled researchers to participate in projects or use of facilities. For this they either require contract research or the ability to attract research funding.

Just like companies most universities have indicated that themes and projects should be positioned broadly to ensure room for innovation.

None of the universities or knowledge institutes that have been interviewed have expressed an interest in setting up a full institute in Amsterdam themselves. The main argument mentioned is that it would require new infrastructure and facilities. This implies that the universities would double their infrastructure, which in a small country like the Netherlands is seen as inefficient and too costly. At the same time most universities agree that AMS should have its own physical presence, including space for small permanent staff, meeting facilities and work locations for temporary staff.

**Interest of foreign universities**

Given the reluctance of companies and national universities to invest in AMS the team of the City of Amsterdam and BCG also looked into the potential interest of foreign universities. This was done mainly through desk research combined with a number of interviews.

Three foreign institutes, of which two (one Indian, one Israeli) participate in similar initiatives in the US were interviewed. All universities have expressed their interest in participating in AMS through contributing researchers, knowledge on valorization and their knowledge on metropolitan solutions. However none of these universities indicated interest to (co)finance an institute.

Desk research suggested US universities are the most likely to have the intention and the ability to invest in foreign institutes. In the case of the Applied Sciences RFP in New York City both initiatives that are being rolled out are (financially) led by US based universities. These initiatives are the Applied Sciences Campus (ASC) and the Center for Urban Science and Progress (CUSP). For the ASC Cornell University is in the lead, financing the total investment of $2bln through its multi billion dollar endowment fund, a single alumnus donating $350mln and income from future tuitions. CUSP is led by New York University which is expected to significantly invest in
CUSP, as moving to the new CUSP building involves relocating the current tenants which already costs $60mln.

Furthermore universities from the US are also the most likely universities to expand internationally. An analysis shows around 50% of the known international branch campuses are of US origin. Most of the branch campuses have their destination in the Middle East or Asia. These international branch campuses need significant (public) funding, as NYU Abu Dhabi shows, or have a clear tuition based business case such as MBA offerings. Abu Dhabi funded the joint venture with NYU up front with $50mln, pays scholarships for the tuition fees of $62,000, and supports research into Middle Eastern themes with $35mln of funding.

An example of an earlier venture of MIT Media Labs in Ireland cost Ireland €36mln in 4 years before it was terminated. This significant public investment yielded hardly any results. A report of the Auditor General and Comptroller of Ireland described the scientific and economic output as ‘dismal’. The main reasons given were that private investment, which MIT had counted on from its US experience, lagged behind initial expectations. The Irish government then compensated for this lag in private investments itself until it was clear that it would remain dependent on public funding and the venture was terminated.

These examples show that while it is expected that the US universities are the most likely to have the interest and financial possibilities to participate in AMS, they probably require significant (public) funding which needs to be approached with care to ensure effective spending of public finances. Interviews with US based universities should be held to explore their willingness to participate in AMS and determine whether this is against conditions that are acceptable for the City of Amsterdam.

### 3 EVALUATION OF POTENTIAL MODELS FOR AMS

Based upon the results of the market consultation, BCG has developed three possible models for AMS. These models cover the spectrum of options between individual projects and a full technical institute.

#### 3.1 INDIVIDUAL CITY CHALLENGES

**Description**

In this option the City defines individual ‘City Challenges’ and tenders these to the market. City Challenges should be articulated on a broad ‘ambition’ level. Examples of potential city challenges are the reduction of CO2 exhaust by 40% in 2025 or a reduction of health care costs by 20% for the city. The tenders ask companies and knowledge institutions to form consortia to solve this ‘City Challenge’ or parts of this problem.

To facilitate the finding of a solution for these City Challenges the City will serve as a living lab on an ad hoc basis to projects. There are three main elements for a living lab

- Generation and sharing of data from the City (e.g. water quality, traffic, health statistics)
- The generation of solutions
- Testing and implementation of these solutions in the city

The City services and municipal companies will play an essential role to deliver this living lab. Furthermore the project consortia may require guidance in the rules and procedures of the city (like the bedrijvenloods) or even temporary exemptions (e.g. ‘free zones’). Obviously this should be done while taking the well being of Amsterdammers into account.
This option may be seen as city procurement through Public Private Partnership on a functional level instead of a product level. This option is therefore closer to improving what’s already there than creating something new.

Realization Of Goals For AMS: Low

<table>
<thead>
<tr>
<th>Goal</th>
<th>Expected realization</th>
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<tbody>
<tr>
<td>Stimulate economic activity through spin offs</td>
<td>Knowledge will most likely stay in individual consortia and is therefore unlikely to lead to spin-offs or start ups</td>
</tr>
<tr>
<td>Attract talented researchers and students</td>
<td>Probably no education component, so limited attraction of students. Researchers will be employed by their current employer, staffed temporarily on a City Challenge and will most probably leave when the project is over</td>
</tr>
<tr>
<td>Export urban solutions</td>
<td>The success of the project depends on the successful definition of City Challenges and projects, and the quality of the consortium conducting the project. The City may steer this through the tender processes</td>
</tr>
<tr>
<td>Attract R&amp;D funding</td>
<td>Needs to be done by each consortium individually. Thus success of attracting R&amp;D funding depends on quality of consortium</td>
</tr>
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</table>

Cost and risks: Low

The adjustment of the procurement process within the City is not estimate to carry significant costs. However, this should be managed with care to prevent financial or operational risks (e.g. if there is uncertainty regarding the product that is purchased and the contract that is used).

Also the living lab may have implications for the citizens of Amsterdam as consortia test their innovations in the city. Of course the goal of these solutions is to improve the quality of living in the city. At the same time it is possible that some solutions are not successful, leading to a negative impact on citizens’ experience. The degree to which this is acceptable should be managed carefully by the City.

Feasibility: Medium-High

Companies and knowledge institutions have shown an interest in city challenges. For an important part the feasibility depends on the utilized legal framework for procurement. Procurement on a functional instead of a product level should be possible, but probably needs to make a distinction between the research and purchase phase. The research phase probably does not require a tender, as there is no product to be delivered. Whether the provision of a living lab is considered state support needs to be determined. Only after the research is completed may a (commercial) tender start on a product level.

3.2 Institute for City Challenges

Description

In this option the City also defines City Challenges as described in the previous option. Consortia of companies and knowledge institutions tender for these city challenges and carry out the projects. The key difference with the previous option is that an overarching institute is set up which performs a number of tasks including:

- Sharing and spreading knowledge through education, conferences and open (public) data
- Providing a permanent link to the City
- Promoting entrepreneurship through sharing of non IP protected data with potential entrepreneurs
• Giving a physical presence for the institute (at an attractive location)
• Assisting in attracting research funding (e.g. EU funding such as EFRO, Horizon 202)

As companies and knowledge institutions have indicated that they are not willing to set up and finance an institute themselves, the City will need to be in the lead for setting up the institute. Among others this consists of
• Selecting and preparing a location
• Determining and installing institute governance
• Setting up a permanent contact between the institute and the City to enable provision of the living lab and other conditions by the City
• Launching initial projects and City Challenges by consortia through the institute

Besides projects the institute could start educational programs in cooperation with participating knowledge institutions. For example this could start with PhD research and master’s theses, and later be expanded to educational activities such as summer schools, seminars, post doc courses or even graduate courses.

There are multiple options for design of the institute which require a decision from the City. Important topics include institute membership, project participation, financing and governance. It has to be determined whether the institute is exclusive; meaning whether the number of participants is fixed and whether insiders have the power to exclude competitors. It also needs to be determined whether institute membership is required for project participation or that project participation leads to automatic membership. The interaction with tender regulation is important in these design decisions if the ability to tender for city challenges or projects is linked to the institute.

Since companies do not seem willing to finance the set up of an institute, the City is likely to have to finance the institute for the first few years. When the institute has proven its value to companies, financing the institute can shift to companies and knowledge institutions, e.g. via a project mark up, membership fees, or a shareholding construction.

Governance has a close to relation to financing, institute membership and project participation. Therefore design decisions should take the interaction between these into account.

**Realization of goals: Medium-High**

The City Challenges may lead to useful metropolitan solutions, depending on the definition of the challenges and the success of tendering. Knowledge sharing between projects may provide benefits such as faster development of solutions or more successful implementation. Furthermore from the interaction between projects new projects can arise, possibly with more uncommon consortia which work on innovative solutions. The institute may also try to utilize city data and non-utilized patents from City Challenges for startups or spinoffs. This could be facilitated by a Technology Transfer Office.

The ability of the institute to attract talent depends on the attractiveness of the underlying challenges and projects, its (possible) academic quality or the ability to offer good job perspectives. To actually develop a reputation as an institute, set up courses and have companies hire talented researchers from the institute will take time.

The institute may improve attracting R&D funding through both sharing the knowledge on how to obtain funding but also to enable universities and consortia to form consortia, thereby allowing access to EU funding.
The institute may start international collaboration with other Smart City institutes, such as BIT for the Habitat in Barcelona or the Center for Urban Science and Progress in New York. Furthermore it can try to host visiting scholars.

**Costs and risks:** Medium
Most of the expected costs are in the fact that the City needs to set up and finance the institute, at least initially as companies have not shown interest to do so. The operational costs of an institute have not been developed in detail yet, but are estimated to be small (e.g. €1-2mln per year). In addition depending on the chosen location there may be construction work required which would involve further start up costs. Costs estimates should be made more precise in a next phase of the project.

The risks of using City Challenges instead of regular procurement and the risk of a living lab also exist for this option as described in the previous option.

**Feasibility:** Medium
Companies have indicated interest in projects and not in an institute, or at least not in the financing of an institute. Therefore the City will need to setup and run the institute in such a way that it proves its value to companies. This requires significant commitment and effort from the City over multiple years. City Executive, Council and services would need to be closely involved to make it a success.

**Example:** Barcelona Institute of Technology for The Habitat and Urban Lab 22@Barcelona
Barcelona has started multiple projects in order to become a smart city. One of these projects is the construction of an urban lab. €200mln was invested in improving the infrastructure in a former industrial area. A part of these investments in infrastructure was to enable a testing area for pilot projects, e.g. through installing of underground galleries, traffic sensors and wifi networks. Also in this area a Media-ICT building was created which houses business incubators and a training center.

Companies, universities, and the city government conduct pilot projects in the urban lab. The main themes for these projects are IT, water, energy, mobility and waste. Projects have to be experimental, not in a commercial phase and should have the potential to benefit the city in the future. Examples of projects are pay per light, smart parking and recycling rain water.

All projects executed in the urban lab are overseen by The Barcelona Institute of Technology for the Habitat (BIT for the Habitat), which tests whether projects meet the stated criteria and fit within the urban lab. To ensure collaboration of the city departments there is a permanent commission across the departments for the smart city initiatives. The city has also opened up access to its data through the OpenDataBCN project.

### 3.3 Technical Institute

**Description**
In this option a technical institute is set up by a university, company or consortium. The involvement from the City of Amsterdam is limited to setting up an RFP process and providing required conditions (e.g. buildings, land) as specified in the RFP document. In the RFP the City may describe which outcomes and requirements the submissions must meet, for example the ranking of the university, and what the criteria are for the Technical Institute in terms of number of students, research subjects, scientific or commercial output. One consortium is selected as winner and will then be responsible for setting up and operating the institute.
Within the confines of the RFP set by the City of Amsterdam the exact size and shape of the Technical Institute is up to the consortium. Most likely the institute will both conduct research, possibly fundamental and applied, and offer education. The City may decide through the tender to which degree it requires the institute to focus its research and education on metropolitan solutions.

**Realization of goals: High**

The ability of the Technical Institute to realize the goals is dependent on the quality of the consortium (partners) and the focus of the consortium. As mentioned this may be influenced by the City through the RFP criteria and process. Possible criteria that the City may include in the RFP to ensure that the goals for AMS are realized include:

<table>
<thead>
<tr>
<th>AMS goal</th>
<th>Requirement in RFP</th>
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<tbody>
<tr>
<td>Stimulate economic activity through spin-offs</td>
<td>A description of the method of valorization of innovation and the track record of participants on start ups and job creation</td>
</tr>
<tr>
<td>Attract talented researchers and students</td>
<td>The university should have a high ranking in international lists (e.g. Times Higher Education World University Ranking). Also there may be criteria around the number of researchers that should be brought to Amsterdam</td>
</tr>
<tr>
<td>Export urban solutions</td>
<td>The number of metropolitan solutions the institute creates depends on its focus, as the Technical Institute may need to divide its resources between research and education</td>
</tr>
<tr>
<td>Attract R&amp;D funding</td>
<td>Disclosure of research grants, scientific output and ability to work with companies (e.g. for EU funding)</td>
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</table>

As a part of this study, BCG conducted a worldwide survey under BCG Associates (entry level) to determine the potential of Amsterdam to attract international talent. Respondents were asked to score Amsterdam on decision criteria in deciding where to study and work and provide an impression of the city.

This survey showed that education/career specific factors and city atmosphere/culture are the most important factors for talent in deciding where to study and work. Education factors are mainly the quality and reputation of the university and the career perspectives for after studies. This implies that educational activities of AMS should preferably be executed by a well ranking university.

City atmosphere/culture factors are around accessibility of recreational activities (e.g. sports, theater) and around the general image of the city worldwide. On this latter point the survey showed that Amsterdam is not the top choice for global talent. Cities such as New York, San Francisco, London, Sydney and Paris score higher. For studying within Europe, Amsterdam is seen as more attractive than cities such as Copenhagen and Milan, but less attractive than cities as London, Paris, Barcelona and Berlin. The picture is more or less the same for attractiveness to work.

**Costs and risks: High**

The expected costs for setting up a Technical Institute are high. Only one or two consortia that were consulted in the market consultation showed interest to do so. Other companies or (Dutch) universities indicated they were not willing to do so.

The only foreign universities that seem able to finance this are US based universities with large endowments or with access to private donors (often alumni). However these universities require a positive business case, which may be difficult in the Netherlands. Students in the Netherlands
do not seem likely to pay high tuition fees because of the high quality, subsidized/public alternative. Currently only foreign students or students interested in very specific programs such as an MBA pay high tuitions in the Netherlands. Public funding requires accreditation and a mentioning in the Dutch law ('Wet op hoger onderwijs en wetenschappelijk onderzoek') which takes time to realize. Furthermore private donations, for example the $350mln contribution by a Cornell alumnus for the Applied Science Campus in NY, are very uncommon in the Netherlands, especially on that scale. A positive business case therefore only seems possible with both start up and continuous funding from the City. This conclusion also seems supported by both the Abu Dhabi and Ireland example mentioned in paragraph 2.2.

An additional challenge of setting up a new Technical Institute with a foreign party is that it has not been done before in the Netherlands, so there is no experience to leverage. Also there could be impact on the current relations with existing Dutch knowledge institutions.

**Feasibility: Low**

It seems unlikely that the required level of (public) funding that is needed for a Technical Institute is available. This study does not go into whether this would be a good application of public resources.

Besides funding it is also unclear whether it is feasible for a branch campus to realize economic and scientific success. In universities research is often carried out in collaboration between different departments. Scientific potential of a Technical Institute could be hampered, as there are less strong ties to other departments given distance and potentially limited ties to other local institutions. This may also be the case for economic ties, where also the Technical Institute would need to leverage international ties or build these with local companies.

**Example: Center for Urban Science and Progress**

New York University (NYU) and NY Polytechnic have taken the lead in setting up the Center for Urban Science and Progress (CUSP). They collaborate with companies (e.g. Cisco) and other universities (e.g. IIT Bombay).

The institute aims to have 430 master's students, 100 PhD candidates, 30 post docs and 50 full time faculty and researchers. The primary field of study of the institute is around challenges faced by cities. One of the cofounders of the institute is the City department for transport (MTA). The city has signed a Memorandum of Understanding in which it states to give full cooperation on providing a living lab. This means city agencies will identify targets for research, collect data and develop solutions.

An investment of $60mln by NYU is required to help relocate the MTA and NYPD, and used their old building for CUSP. The City contributes $15mln for the renovation of the building. Cisco and IBM both contribute $1mln, four other companies contribute $500k. The business plan of this institute is unknown but it is expected that revenues consist of tuition, research funding and possibly financial support from the multi-billion endowment fund of NYU.

**4 MAIN CONCLUSIONS**

Companies and knowledge institutes have shown interest for the concept of AMS, including the development of metropolitan solutions and the support by Amsterdam (e.g. living lab, city as launching customer). However, they are mainly interested in executing concrete projects and not in setting up their own institute. Based upon these outcomes BCG and the City have developed three options to proceed.
The first option – individual city challenges – seems feasible but it is not expected to attract much talent to the city or lead to entrepreneurial activity. This option thereby does not seem to meet the goals of the City.

The second option – Institute for City Challenges – seems feasible, but requires a significant effort from the City, which will have to set up the institute, facilitate it and finance it (initially). This effort from the City is also required to ensure that the City will realize its goals.

The third option – Technical Institute – has the potential to meet many of the City’s goals, but does not seem feasible without significant public (co)funding. Dutch universities do not want to set up a full institute, and most foreign universities are publicly funded and may not spend this funding abroad. Only US based universities seem to have sufficient private funding to invest. However, these universities require a good business case for their investment, which may require a significant public investment. Private funding through companies does not seem feasible based upon the outcomes of the market consultation in the course of this study. Finally, private (high) tuition fees are uncommon in the Netherlands.

5   POSSIBLE NEXT STEPS
Based upon these outcomes, BCG has developed possible next steps for options 2 and 3.

5.1   INVESTIGATE FEASIBILITY OF TECHNICAL INSTITUTE OPTION WITH A FEW REMAINING PLAYERS
A Technical Institute has the highest potential to realize the goals of AMS, but so far only a few companies have expressed an interest in setting up an institute. Follow up meetings should be organized with these companies in which they give a more concrete view on their business model and required conditions from the City.

In the course of this study no meetings were held with US based universities, whom are most likely to be able – at least financially – to set up an institute. Meetings with a selection of US universities, for example with those universities who have responded to the New York Applied Sciences RFP or have set up foreign branch campus, may be organized. In these meetings the necessary conditions for these universities to set up a Technical Institute in Amsterdam should be explored. If these universities show an interest in setting up an institute in Amsterdam, the set up and business plan should be examined on feasibility.

In all cases the City should carefully consider whether benefits of the new institute warrant the potential public investment required.

5.2   DECIDE WHETHER TO FURTHER DEVELOP OPTION FOR ‘INSTITUTE FOR CITY CHALLENGES’
An Institute for City Challenges has the potential to realize the AMS goals, but requires significant commitment and effort from the City as the City has to design, set up, facilitate and finance the institute (initially). Because of this effort required it is recommended to follow a process with multiple go/no-go decisions.

If the possible outcomes of an ‘Institute for City Challenges’ are seen as sufficiently attractive, there seems to be enough interest in metropolitan solutions from companies and universities to proceed to the next phase. In this phase a City project team would design the institute in collaboration with interested companies and knowledge institutions. Furthermore the project team will work together with the City services and City companies to establish what conditions the City needs to deliver (e.g. for living lab) and whether this is feasible. If the chosen design in this phase has enough interest from companies and knowledge institutions, and if the City can
provide the required conditions, the project can proceed to the next phase. In this phase the City challenges are developed to start the institute with.

Figure 2: Suggested process towards Institute for City Challenges with multiple go/no-go decisions