Towards Open Urban Platforms for Smart Cities and Communities

Memorandum of Understanding

1. Outline of this Memorandum

1.1. The market for current Urban Platform(s) is fragmented and uncertain on the demand-side and lacking interoperability and common standards in the supply-side.

1.2. Big, small and diverse industry organisations have come together recognising that the Urban Platform market is a critical enabler for the Smart Cities market.

1.3. The signatories to this MoU have agreed to take a city and community needs led approach to address the fragmented market. The key challenges facing this market include:
   - Interoperability and common open standards – so that cities can mix and match offerings from a range of different vendors;
   - To date the market has been supply-led – with the norm being proprietary and custom-built offerings;
   - Many cities have reservations about Urban Platform(s) – including limited understanding of their costs & benefits.

1.4. The ambition of the signatories to this MoU is to enrol cities, infra-structure and service companies, tele-communications and utilities to;
   - Work with the partners of this Memorandum of Understanding
   - by 2018, create a strong EU city market for Urban Platforms
   - by 2025, ensure that the market of 300m residents of EU cities use Urban Platform(s) to manage their business with a city and that the city in turn drives efficiencies, insight and local innovation through the platform(s)

To meet the above challenges and to deliver on these ambitions the Memorandum of Understanding Group (in the following: MOU Group), whose names and signatures appear at Annex two of this document, have agreed on the following:

2. Background

2.1. The European Innovation Partnership on Smart Cities and Communities (EIP SCC) is a stakeholder driven initiative stimulated and supported by the European Commission. The EIP SCC has defined key priority areas which will be addressed through six Action Clusters including “Integrated Infrastructures & Open Data”. A general observation has been that
open urban platforms are a pre-requisite to support fast take-up of smart solutions in cities to allow many stakeholders of a city to participate and for different vendor solutions to be easily integrated. This has stimulated this Memorandum of Understanding and our goal is to gain broader industry, city and other support, and to move forward as a commitment within the EIP.

3. Objectives

3.1. Accelerate the opening up of the Smart Cities Market (see emerging road map attached at annex two of this document),

3.2. Ensure suitable industry input, and an open dialogue with cities and communities in order to take into account their needs and concerns

3.3. Develop the Urban Platform open market by creating competition for supply side and confidence for demand side.

4. Definition of Urban Platform

4.1. What does the MOU Group mean by ‘an Urban Platform’? ...

... the implemented realisation of a logical architecture/content/design that brings together (integrates) data flows within and across city systems

... and exploits modern technologies (sensors, cloud services, mobile devices, analytics, social media etc)

... providing the building blocks that enable cities to rapidly shift from fragmented operations to include predictive effective operations, and novel ways of engaging and serving city stakeholders

... in order to transform, in a way that is tangible and measurable, outcomes at local level (e.g. increase energy efficiency, reduce traffic congestion and emissions, create (digital) innovation ecosystems)

5. Proposed areas of co-operation

5.1. The MOU Group agree with the following goals of this Memorandum of Understanding

5.1.1. Develop a set of principles and a joint reference architecture framework to enable interoperability, scalability and open interfaces to integrate different solutions (see 5.2)
5.1.2. Develop a joint data and service ontology to be used by individual Smart cities commercial products and solutions (see 5.3)

5.1.3. Accelerate the adoption of the developed framework by standardisation bodies

5.1.4. Comply with any joint standards (as developed from 5.4) and framework when developing individual Smart Cities commercial products and solutions

5.1.5. Work with cities to develop tailored operational frameworks (both for installation and servicing phases) based on different business models (e.g., own city infrastructure, cloud-based solution, etc.)

5.2. Joint reference architecture;

5.2.1. To enable providers to develop solutions that allow openness, interoperability and integration a common reference framework on the business and technical architecture is needed. Such a reference architecture would enable:

5.2.1.1. The interoperability between urban infrastructures within the cities

5.2.1.2. The replicability of the solutions/platforms from city to city

5.2.1.3. The scalability of the solutions without technical constraints and excessive cost consequences

5.2.1.4. An open common interface (APIs) and corresponding tools (SDK) that facilitate the development of applications on top of the platform by any third party

5.2.1.5. A set of functional capabilities and corresponding technical modules that are based on city needs and supported by city use cases

5.2.1.6. The MOU Group intends to develop a framework along these lines that defines a reference architecture stack developing the concept on multiple layers, e.g.,:

- Infrastructure
- Data management, including semantics/ontology
- Open interface layer
- Analytics
- Service creation and provisioning
- Security and privacy
- General management services
- Testware
5.3. Joint data and service ontology

5.3.1. The rapid deployment of ICT technology in urban infrastructures and the growth of the Internet of Things will lead to new service portfolios, especially using real-time information. Urban data provided by cities and infrastructure providers will enable new business models and service portfolios.

5.3.2. A common data and service ontology will ensure a seamless commercialization of these new service portfolios across Europe and around the world, as recently promoted by the Digital Single Market.

- The group intends to develop such an ontology including but not limited to urban data from city administrations and city public services such as infrastructure data from public transport, from energy nets and from road authorities.

5.4. Adoption standards and frameworks by the standardisation bodies

5.4.1. The group is committed to support the effort of the related standardisation bodies by supporting technical specifications, reference implementations, and conformance and interoperability tests.

5.4.2. The intent of the Memorandum of Understanding is to ensure that in-between the endorsement of the standards and now cities will be provided with a clear vendor driven commitment of openness, interoperability and integration avoiding investments to be dead end.

5.5. Work with Cities

5.5.1. The group is fully committed to work openly with cities, communities, and their related associations on defining the scope of the framework and reference architecture leveraging the Strategic Implementation Plan of the EIP SCC and the related recommendations of the Operational Implementation Plan.

5.5.2. Hereby, special emphasis is given to explore new business and service models and thus related financial models to allow for;

- Fast take-up of so called quick-win solutions such as smart integrated lighting (cf. to commitment #6670 “Humble Lamppost”) which calls for multi-infrastructure operator models,
- Systems of systems solutions providing fast integration especially with legacy systems of deployed infrastructures,
- Integration of innovative, small, but fast scaling solutions as being provided by the growing community of start-up and small/medium enterprises as part of a Smart City eco system, for example through accelerator programs.
5.6. Dedicated resources

5.6.1. All partners commit to dedicate required resources, expertise and associated budget to support the creation of jointly defined deliverables, e.g., in form of white papers, templates and more detailed technical specifications. The associated documents will be openly published to be used by city stakeholders as well as solution providers to shape their solutions to enable interoperability and easy integration via open interfaces.
### Annex One: Road Map for the Urban Platform

<table>
<thead>
<tr>
<th>Key date</th>
<th>Action</th>
<th>Who</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 May 2015</td>
<td>Announce MoU at Berlin</td>
<td>EIP</td>
</tr>
<tr>
<td>tbd</td>
<td>Develop reference architecture</td>
<td>MoU partners</td>
</tr>
<tr>
<td>tbd</td>
<td>Set up CSrg - Consumer Stakeholder reference group (cities, research, utilities)</td>
<td>MoU partners</td>
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<tr>
<td>tbd</td>
<td>Audit early movers Platforms and Standards</td>
<td>MoU partners</td>
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<tr>
<td>tbd</td>
<td>Set up ISrg - Industry Stakeholders reference group (infrastructure, service providers)</td>
<td>MoU partners</td>
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<tr>
<td>tbd</td>
<td>Test and publish reference architecture</td>
<td>MoU partners</td>
</tr>
<tr>
<td>tbd</td>
<td>Provide open interfaces, formats and ontology</td>
<td>MoU partners</td>
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<tr>
<td>tbd</td>
<td>Publish map of standards</td>
<td>MoU partners or ISrg</td>
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<tr>
<td>tbd</td>
<td>Identify Demonstrator Urban Platforms</td>
<td>EIP</td>
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<tr>
<td>tbd</td>
<td>Create 4-5 showcases of existing assets</td>
<td>EIP</td>
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<tr>
<td>tbd</td>
<td>Pilots</td>
<td>EIP</td>
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<tr>
<td>tbd</td>
<td>Templates</td>
<td>ISrg</td>
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<tr>
<td>tbd</td>
<td>Provide testware to assure conformance, interoperability and security of urban platforms</td>
<td>Tbd</td>
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<td>2018</td>
<td>Market success/evaluation</td>
<td>EIP?</td>
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<tr>
<td>tbd</td>
<td>Exploitation and new case studies from cities</td>
<td>ISrg</td>
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<tr>
<td>2025</td>
<td>300m residents of EU cities use Urban Platform(s)</td>
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# Annex Two: The Memorandum signatories

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Name, Role</th>
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</table>
| 1. HERE                                           | Mr Michael Bültmann  
Managing Director  
HERE Deutschland GmbH |
| 2. Alliander N.V.                                 | Mr Peter Molengraaf  
Chief Executive Officer  
Alliander N.V. and High Level Group Member |
| 3. SAP SE                                         | Mr Luka Mucic  
Board Member  
SAP AG |
| 4. Microsoft Corporation                         | Dr Marianne Janik  
Senior Director Public Sector  
Microsoft Deutschland GmbH |
| 5. Continental AG                                 | Mr Helmut Matschi  
Member of the Executive Board  
Continental AG Division Interior |
| 6. Fraunhofer FOKUS                               | Prof. Dr-Ing. Ina Schieferdecker  
Director  
Fraunhofer Institute for Open Communication Systems FOKUS |
| 7. Urban Software Institute GmbH & Co. KG         | Dr Lutz Heuser  
Chief Technology Officer  
Urban Software Institute GmbH & Co. KG |
| 8. UrbanDNA LLP                                   | Mr Graham Colclough  
Partner  
UrbanDNA LLP |
| 9. HyperCat Consortium                            | Lord Erroll  
Chairman  
HyperCat Consortium |
| 10. Software AG                                   | Dr Harald Schöning  
Vice President Research  
Software AG |
| 11. EnBW Energie Baden-Württemberg AG             | Mr Michael Gutjahr  
Regional-Director  
EnBW AG |
| 12. Flexeye Ltd                                   | Mr Justin Anderson  
Chairman & CEO  
Flexeye Ltd |
| 13. Greater London Authority                      | Mr Matthew Pencharz  
The Mayor’s Smart Cities and Environment Adviser  
Greater London Authority |
| 14. Deutsche Telekom AG                           | Mr Heinrich Arnold  
Senior Vice President  
Innovation & Laboratories, Deutsche Telekom AG |