RUGGED ISED
Designing smart,
resilient cities for all
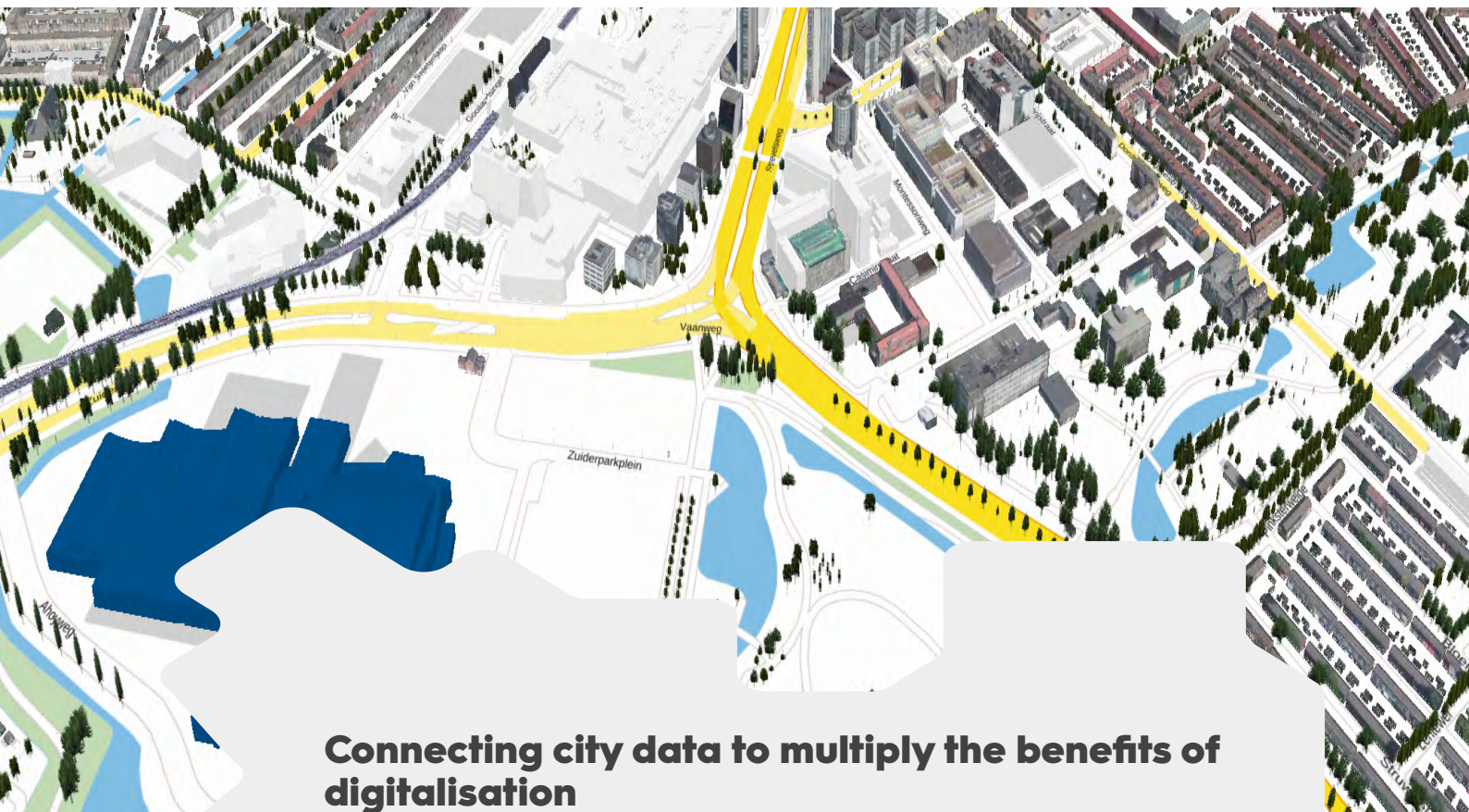
Factsheets on
Urban Data Platforms
ROTTERDAM . UMEÅ . GLASGOW

Connecting city data to multiply the benefits of digitalisation

Enabling more sustainable and efficient cities through the setting up and use of urban data platforms.

ENABLING THE SHARING OF DATA

DEVELOPING BUSINESS MODELS

POPULATING THE PLATFORMS

About the publication

This factsheet booklet is one of four in a series that focuses on particular aspects of the smart city approach and how to tackle common challenges faced by cities and communities across Europe. The list of challenges is not intended to cover all complexities for a succesful Smart City project, but provides key output from the RUGGEDISED project on specific issues. The thematic challenges found in this booklet on Urban Data Platforms have also been covered in various ways through the many public reports available on RUGGEDISED.EU/Publications, most notably the report 'Governance, Trust and Smart City Business Models: the Path to Maturity for Urban Data Platforms'.
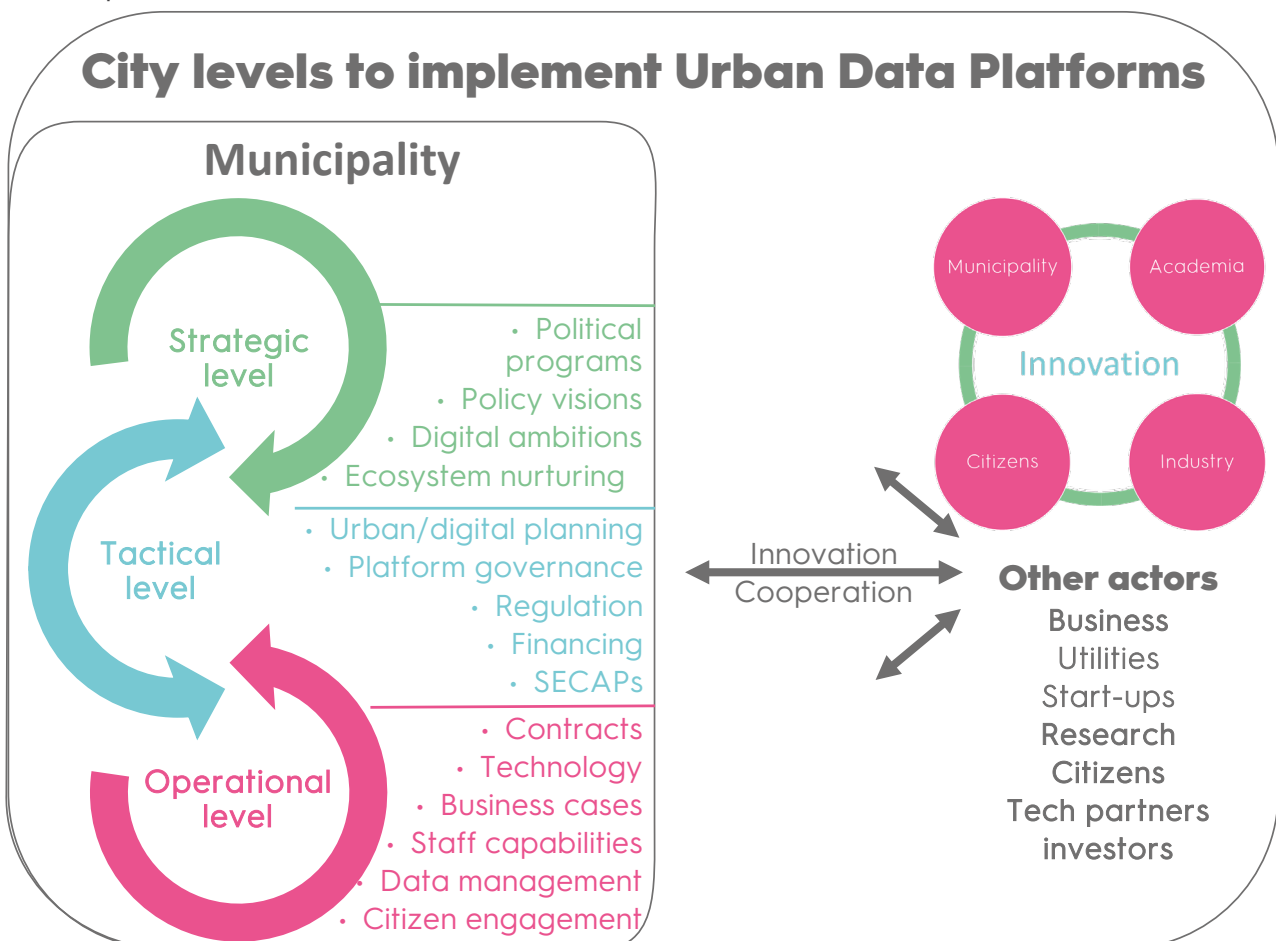
Table of contents

Embedding Urban Data Platforms in city structures

Cities have long sought to unlock the benefits of data available in urban areas – be it data from the government, citizens, universities, or companies – to help create cleaner and more efficient urban ecosystems benefitting all levels of city life. In RUGGEDISED, partners have taken on this challenge and generated impressive knowledge through work in individual cities – both Smart City Lighthouses and Fellow Cities – and through reports, most notably the concluding report on 'Governance, Trust and Smart City Business Models: the Path to Maturity for Urban Data Platforms' published by Erasmus University Rotterdam in which the challenges and the approaches to solving them, also highlighted in this booklet, are deepened and expanded upon extensively.

In large scale projects related to city innovation and urban development, partners have to deal with more than just deploying their innovative solutions (in this case an overarching digital one). To successfully implement smart city projects connecting different parts of the urban environment, it is necessary to embed and work with the different levels within a municipality. RUGGEDISED has identified an operational level, a tactical level and a strategic level for Smart City projects in city administrations to work with and within. In RUGGEDISED, partners have worked with 'Smart Thermal Grids', 'Energy Management and Connections' and 'Smart Electricity Grid and e-Mobility', in addition to the content of this factsheet-booklet on 'Urban Data Platforms'.

For local governments to successfully lead work on Urban Data Platforms, work on different levels within the government is essential. Successful cooperation with other innovative actors (and data-providers) in the city is a must to maximise the potential of any innovation action. By focusing on embedding the action within the local municipality and cooperating with city actors, local governments are well positioned to lead on the development of Urban Data Platforms.

City levels to implement Urban Data Platforms

Municipality

Strategic level
- Political programs
- Policy visions
- Digital ambitions
- Ecosystem nurturing

Tactical level
- Urban/digital planning
- Platform governance
- Regulation
- Financing
- SECAPs

Operational level
- Contracts
- Technology
- Business cases
- Staff capabilities
- Data management
- Citizen engagement

Innovation
- Municipality
- Academia
- Citizens
- Industry

Innovation Cooperation

Other actors
Business
Utilities
Start-ups
Research
Citizens
Tech partners
investors

Local governments seeking to develop a successful Urban Data Platform have to work on both an operational, tactical and strategic level within the municipal administration in order to effectively cooperate with the other partners of the quadruple helix (Municipality, Academica, Citzens and Industry)

Urban Data Platforms in the Lighthouse Cities

Rotterdam

Partners embedded their work within the wider municipal vision for an Urban Data Platform (R9) from the beginning, and Proofs of Concept were done.

The work in Rotterdam has included the development of a 3D Digital Twin that will support Rotterdam in:

1. Crowd and public space management

2. Smart mobility

3. Electricity and thermal grid planning and operational optimisation

4. Energy and resource efficient waste collection and processing

5. Ensuring increased data is accessible for all through visualisation
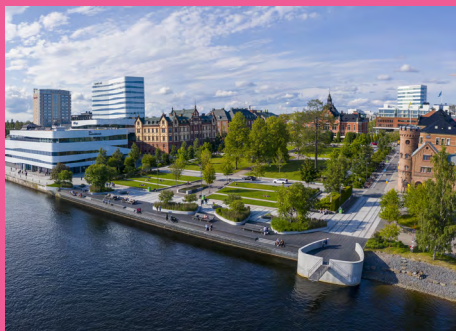
Umeå

The Decision Support Platform (U8) in Umeå supports citizens and planners in short and long-term decision-making towards a fully sustainable and smart city. It visualises a wide range of data sources and, within RUGGEDISED, several municipal departments have been adding data to the platform on a wide range of issues – from the types of trees in Umeå, to environmental data and high-resolution aerial photos.

Supporting the delivery of citizen services is one value case of the platform and it allows citizens and public officials to browse data through different visualisations (map-based, chart-based etc.). Another value is the transparency it provices in terms of sharing data.

Glasgow

The platform in Glasgow, named the Data-Based Decision Platform (DBDP) (G7), is integrated within wider city work with open data. The DBDP will be integrated with wider city work, to allow the city to make informed decisions around issues such as planning and road closures. The purpose is threefold:

1. Provide a means to understand the impact of an intervention through realtime visualisations

2. Provide a tool to combine data from different interventions and existing data within the council

3. Help non-data 'experts' explore the data to help with city planning, stakeholder engagement, etc.

Bonus: Fellow City Data Platform in Brno

The City of Brno is fast becoming a digital pioneer in its own right and has built an impressive Open Data Platform readily available for users – citizens, municipal officers and experts.

Find it on https://datahub.brno.cz/

Welcome to Brno Open Data Platform!

ENTER CATALOG

Taking city leadership on Urban Data Platforms

RUGGEDISED research concludes that **governments should remain in the lead for most Urban Data Platforms (UDPs)** but in close collaboration with the private (and other) sectors to complement their own capabilities. In RUGGEDISED, cities have taken that leadership upon themselves and have overcome different challenges in doing so.

CHALLENGE

ENSURE RELEVANT CAPABILITIES IN CITY DEPARTMENTS

Tactical approach: Remember that the digitalisation is different from procuring ICT and the digitalisation of processes, markets and society at large is a different game requiring a different approach. The successful implementation of Urban Data Platforms requires more focus on governance.

Operational approach: When designing the governance of a UDP it is recommended that the capabilities of proposed platform managers or platform management partners are assessed on each of the required capabilities to successfully manage the platform. This can help ensure the right mix between public-private partnerships and ensure adequate training for staff when necessary.
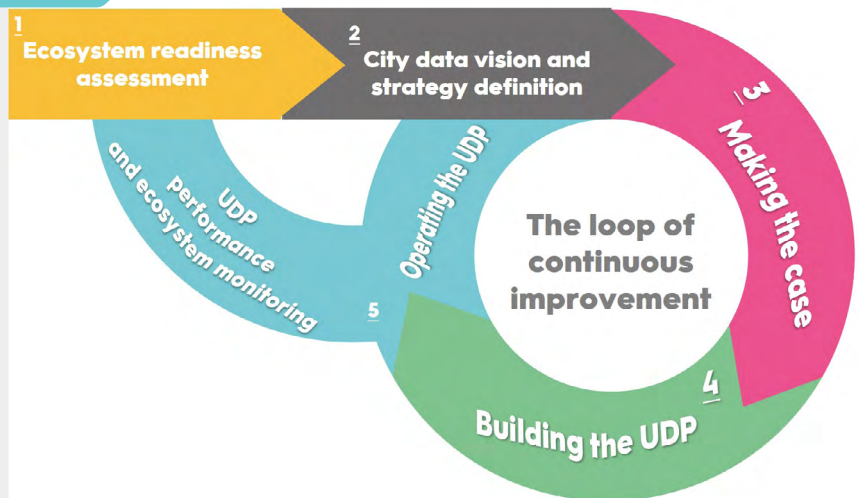
The suggested guide for continuous improvement to develop a UDP in your city. Source: 'Figure 6.2 in Governance, Trust and Smart City Business Models: the Path to Maturity for Urban Data Platforms' adapted from the approach suggested in RUGGEDISED's 'Guidance on Smart City Design and Decision Platform'

CHALLENGE

TRUST BETWEEN STAKEHOLDERS MUST BE HIGH TO SUCCEED WITH A COLLABORATIVE URBAN DATA PLATFORM
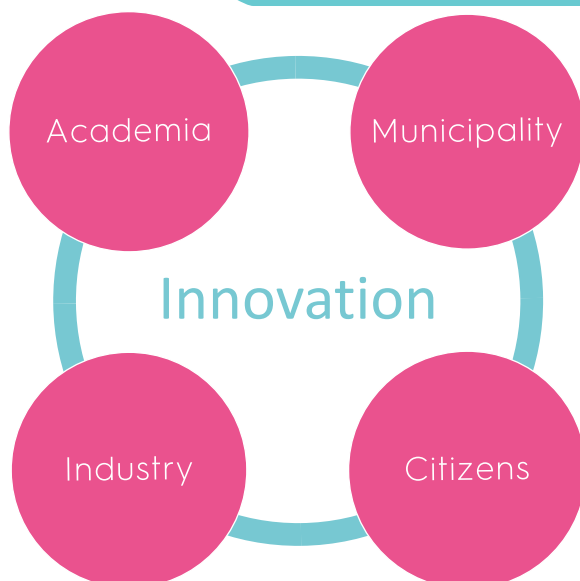
Local Governments should work closely with other partners in a city's or region's ecosystem in the so-called quadruple-helix (Municipality, Academica, Citzens and Industry)

Operational/tactical/ approach: Invest in the development of trust through experimentation between the relevant actors. Notably, develop the Urban Data Platform through the Quadruple Helix, meaning in close collaboration among private and public actors, academia and citizens. This approach will help create mutual trust not only between the essential partners, but also for the platform itself and the governance scheme.

Strategic approach: A clear city vision and strategy on city data and the role of the Urban Data Platforms should be established early in the process if not already there. This can then be operationalised through tactical policies and plans. If a city vision is already in place it should be updated. Such a vision helps prove commitment to external and municipal actors.

Creating business models for Urban Data Platforms

Today, the value cases for UDPs are primarily driven by the public to support local governments looking at the triple bottom line – social, environmental and financial – in lowering CO2 emissions, **making operations more efficient or sharing information with their citizens and companies.** In RUGGEDISED, cities have had experiences with the triple bottom line and have drawn conclusions on what's needed to develop business models with the private sector.

CHALLENGE

### PROVIDING (AND PROVING) THE 'PUBLIC GOOD'
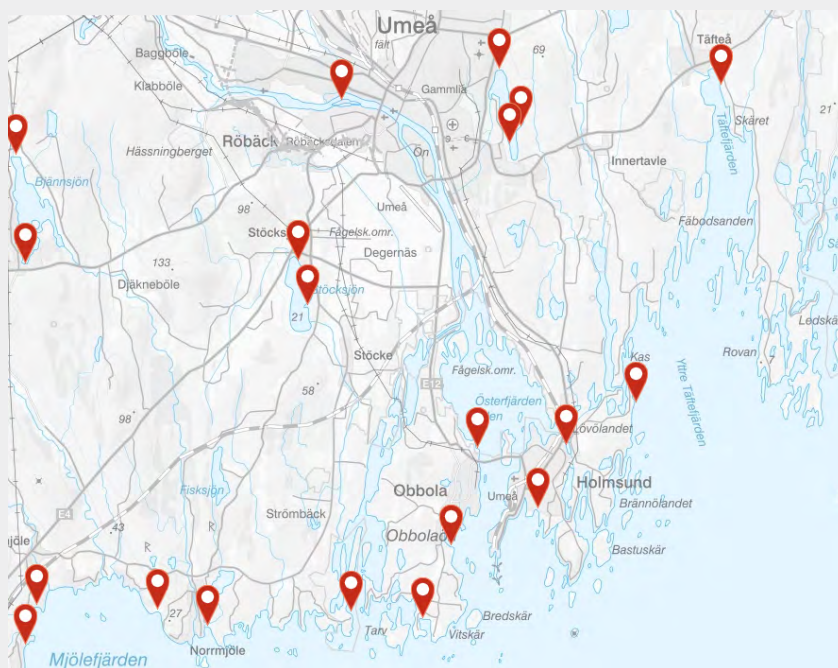
Operational approach: Citizen engagement should be an objective from the start as citizen use and acceptance supports the overall value creation for Urban Data Platforms. Research in RUGGEDISED has not clearly identified when to include citizens, but it is encouraged to plan that engagement – whenever it may appear – from the beginning.

In Umeå, one approach to providing for the public good is sharing what the public seeks. The above visualisation shows the major public beaches in the municipality and is one of the most popular datasets.

Source: opendata.umea.se

Tactical approach: Create regional clusters where several cities collaborate to share experiences and learn from each other. With collaboration between cities it will be easier to involve technology providers and other partners – this is especially important for smaller municipalities. It is also possible to share the same digital infrastructure to cut costs and/or improve efficiency.

Strategic approach: Deciding that (or if) the Urban Data Platform is 'vital infrastructure', i.e. it is of the utmost importance for the overall development of business models, and drives decisions also on design, funding, development, and management of the platform – now and in the future.
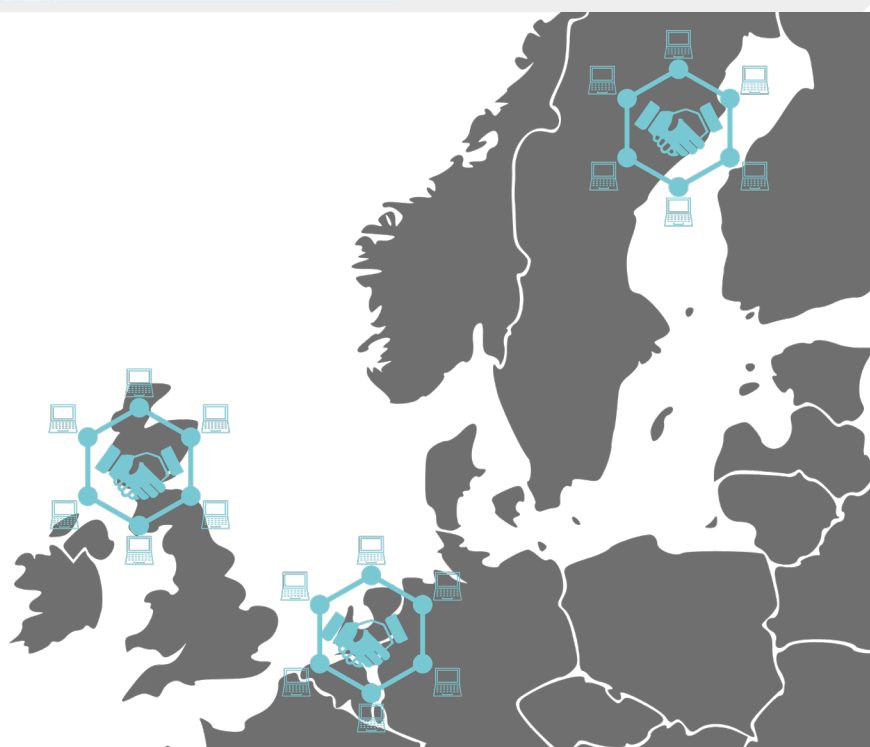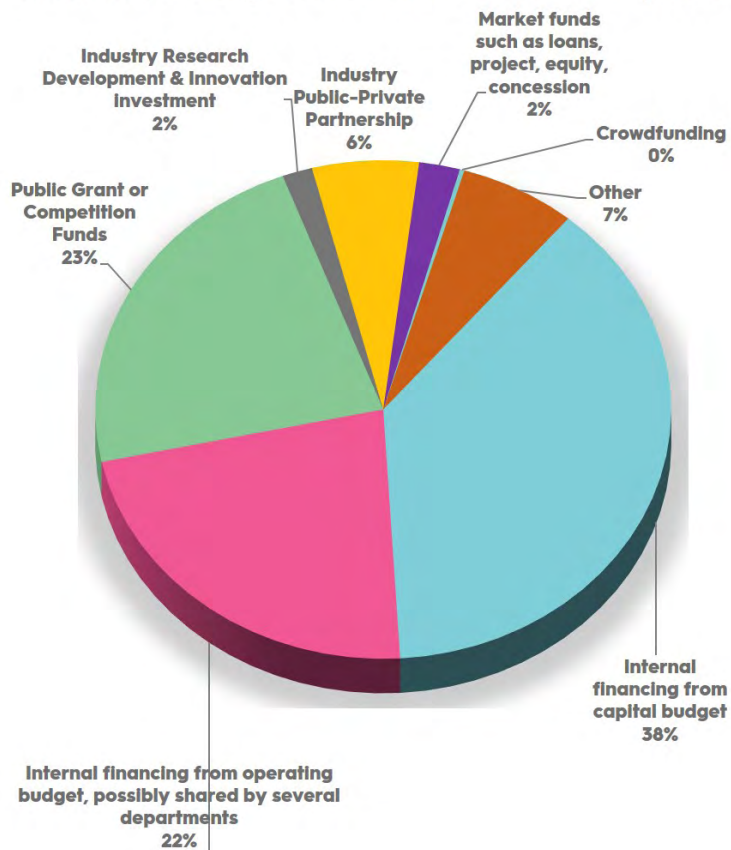
... business models for Urban Data Platforms

CHALLENGE

DEVELOPING NEW BUSINESS MODELS WITH THE PRIVATE SECTOR

Current funding sources for UDP Development

Industry Research Development & Innovation investment
2%

Industry Public-Private Partnership
6%

Market funds such as loans, project, equity, concession
2%

Crowdfunding
0%

Other
7%

Public Grant or Competition Funds
23%

Internal financing from capital budget
38%

Internal financing from operating budget, possibly shared by several departments
22%

How smart cities are funding their UDPs.
Source: The report 'Governance, Trust and Smart City Business Models: the Path to Maturity for Urban Data Platforms' (Erasmus Centre for Data Analytics.) and based on survey data from 2019

Operational approach: Adopting an agile mind-set is key as all Urban Data Platforms have business models that evolve and grow continuously. Most existing UDPs and ecosystems are still immature, as are the initial corresponding business models. The key is to take a long-term view and understand that co-creation with other stakeholders requires learning and remains subject to change. The use of agile development in short cycles and Proofs of Concepts is recommended.

Tactical approach : Use open standards ensuring interoperability not just internally in the platform, but also with other cities. One approach is to use "Minimum Interoperability Mechanisms" (MIMs) as promoted by the Living-in.EU Initiative. If different cities use the same standards for data models and APIs, then this will contribute to the interoperability of platforms and support the business model across city platforms.

Populating Urban Data Platforms

The potential of Urban Data Platforms lies in the integration of several sources of data to make a greater whole. It then follows that the natural first step is to **ensure data is available for that integration to happen**. In RUGGEDISED, the Lighthouse cities have experience with different approaches to ensure their platforms are populated with sufficient amounts of standardised data.
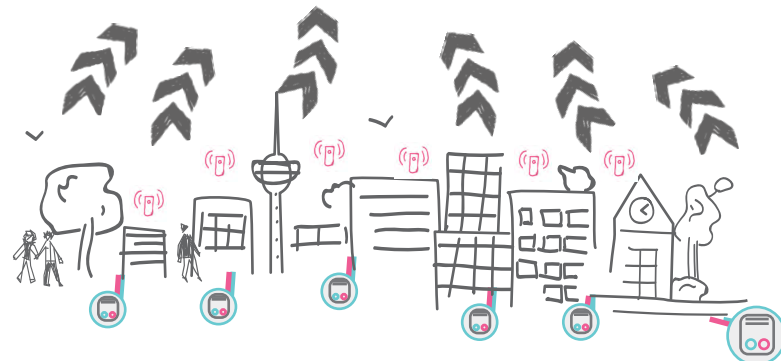
CHALLENGE

ENSURING STAKEHOLDERS SHARE CITY DATA

Operational approach I: When procuring services from private companies, for example waste companies, ensure ownership of the data, ensure data is being shared automatically and ensure data is delivered in an open data standard format that can be published through the UDP. Populating the Urban Data Platform with 'public' data is an efficient way to begin the feed-in of data allowing others to create value.

Operational approach II: The possibility to create personalised dashboards through the platform is an added benefit for some stakeholders as it shows an organisation, or individual, that by sharing data and creating dashboards using that data, they themselves benefit from it.

Tactical approach: There is no substitute for good relations and strong partnerships. For the actors to succeed with their Urban Data Platforms, time, work and experience is required. Pilot projects can help gather the key actors – citizens, local governments, businesses and academia – and begin to build the foundation for sharing more data.

Urban Data Platform

CHALLENGE

TRUST BETWEEN STAKEHOLDERS MUST BE HIGH TO SUCESSFULLY BEGIN WITH URBAN DATA PLATFORMS

Operational approach I: Deal with the data security challenge by linking the Urban Data Platform to the corporate GIS and data systems, to ensure that access to certain datasets is limited to authorised users within the specific groups.

Operational approach II: Introduce various levels of data access authorisation for external users to ensure security and privacy with potentially sensitive data.

Tactical approach: Guarantee data security and user privacy through effective governance schemes with adequate instruments and measures for proactive assessment and actions, without necessarily knowing what data will come on the UDP. The data governance program should be designed in an agile process. This means that the program should be designed in a small group, with an iterative, case-by-case approach (Van den berg 2020).

Recommended publications for expert info

Governance, Trust and Smart City Business Models: the Path to Maturity for Urban Data Platforms

This report details how eighty cities are organising data assets using state-of-the-art data platforms, and highlights the possible benefits cities can reap by establishing urban data platforms.

The report was written by Erasmus Centre for Data Analytics, with contributions from TNO and RISE.

Guidance on Smart City Design and Decision Platform

This report offers guidance for cities' working to set up platforms, open or internal, to improve their city operations. It highlights the lessons learned from the RUGGEDISED Lighthouse Cities and Fellow cities, but also draws on expertise elsewhere in Europe.

The report was written by TNO and the City of Rotterdam.
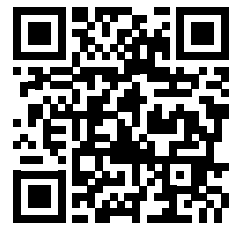
Implementation reports from the Lighthouse Cities
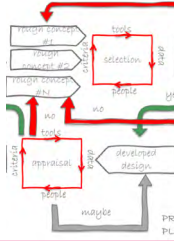
These reports detail the work undertaken by the Lighthouse Cities of RUGGEDISED to implement the cities smart solutions.

They are written by cities for cities and share the main considerations behind the smart strategies in Umeå, Rotterdam and Glasgow to support other cities in developing Smart City strategies and implement solutions.

Other RUGGEDISED material

The partners of RUGGEDISED have produced a large library of material relevant for all Smart Cities professionals. It will continue to be updated until the end of the project and covers everything from webinars to scientific publications on a wide range of issues - from European cooperation to the work done and planned in the Fellow Cities of Gdańsk, Brno and Parma.
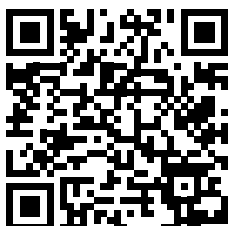
OTHER SOURCES ON URBAN DATA PLATFORMS

Guidance Packages and booklets from EU initiatives

The European Union is compiling lessons from the large Smart City Projects through the Smart Cities Marketplace and other initiatives. Find material specifically on Urban Data Platforms, and the potential for upscaling and replicating them, on the website..

About

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Date

10 / 2021

Authors

ICLEI Europe with input from all RUGGEDISED partners. Content based mainly on 'Governance, Trust and Smart City Business Models: the Path to Maturity for Urban Data Platforms' written by Erasmus Centre for Data Analytics, with contributions from TNO and RISE

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About the project

RUGGEDISED is a smart city project funded under the European Union's Horizon 2020 research and innovation programme. It brings together three lighthouse cities: Rotterdam, Glasgow and Umeå and three follower cities: Brno, Gdansk and Parma to test, implement and accelerate the smart city model across Europe. Working in partnership with businesses and research centres these six cities will demonstrate how to combine ICT, e-mobility and energy solutions to design smart, resilient cities for all.

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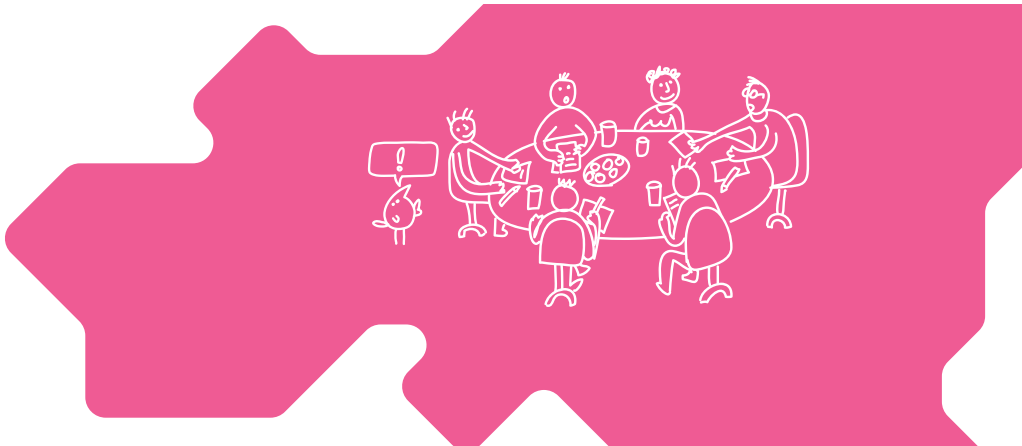
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