

SMARTER CITIES AS CONTINUOUS PROCESS

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A world map at night, showing the glowing lights of cities and urban areas across all continents. The map is dark blue, and the city lights are bright yellow and white, creating a high-contrast image. The lights are most concentrated in North America, Europe, and East Asia.

CHALLENGES AND CHANCES IN URBAN AREAS

In 2050, 6.3 billion people will live in urban areas, double as many as of today

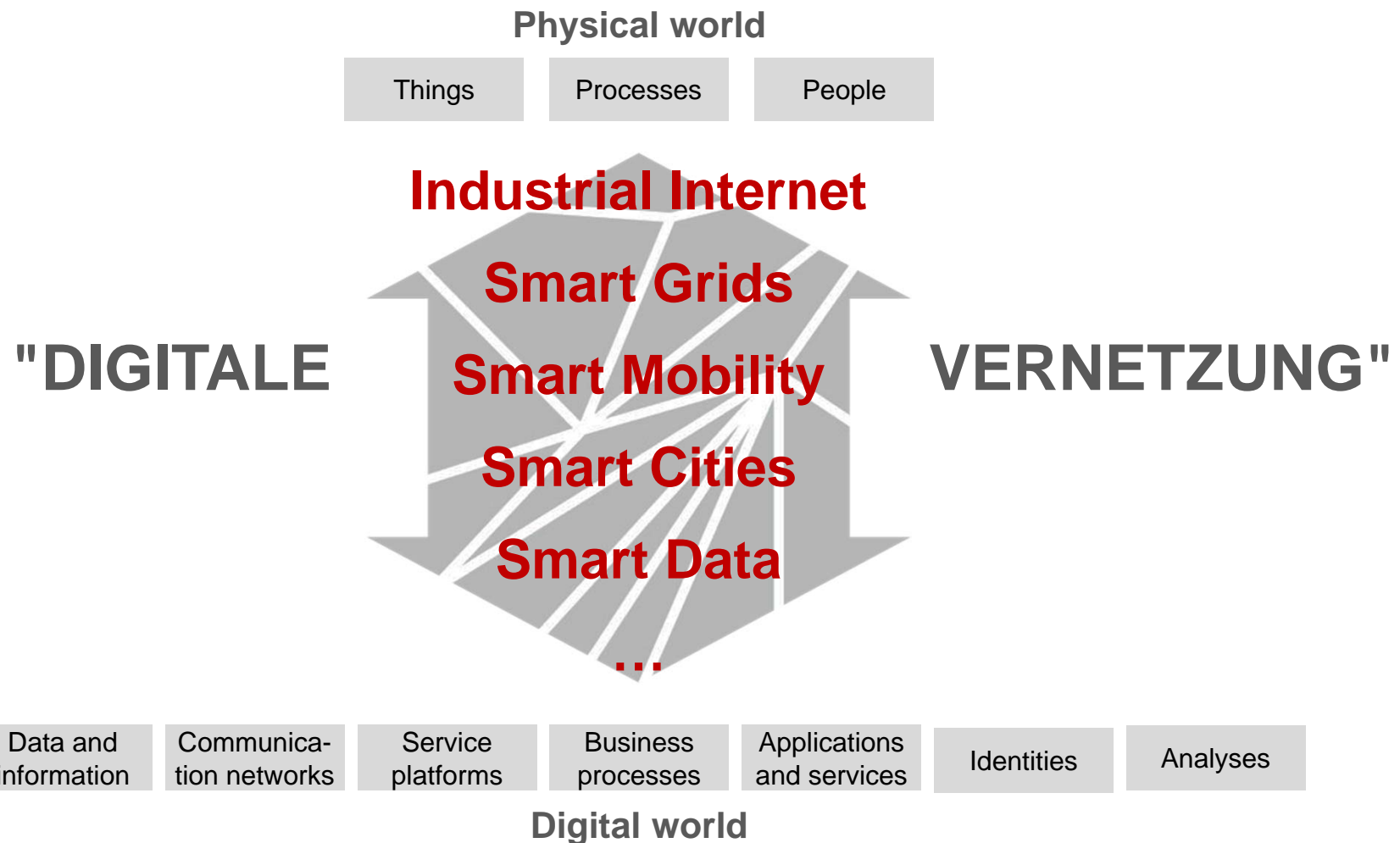
Cities **consume** ...

... **75%** global natural resources

... **80%** global energy and **produce** ...

... **75%** global CO₂ emissions.

SERVICES @ THE SPEED OF THOUGHT



WHAT MAKES A CITY SMARTER?

Environment

Cities that produce **almost no CO₂-emissions** and are **highly energy-efficient**.

Resilience

Cities that are able **to mitigate the effects of climate change and terrorism**.

Resources

Cities that are profoundly **resource-efficient**.

Quality of life

Cities that provide the **best quality of life** for all residents.

The **Smarter City** intelligently interlinks all its potentials and city systems

Society

Cities that **allow for political participation** of all their inhabitants.

Government

Cities that **open** up their public **administration** data and processes.

Climate Change

Cities that can easily adapt to the **effects of climate change**.

E-Mobility

Cities that foster the **change towards electro mobility**.

ALMOST 2000 SMART CITY DEFINITIONS, BUT ALL BASED ON DIGITAL NETWORKING

Study Mapping Smart Cities in the EU,
DG Internal Policies 2014:

*A city seeking to address public issues **via ICT based solutions** on the basis of a multi-stakeholder, municipality-based partnership.*



ICT as Enabler and Integrator for Smart Solutions

- National Platform City of the Future: Research and Innovation Agenda 2015
- acatech Integrating ICT for the City of the Future, 2014
- Morgenstadt City Insights Reports, 2013
- FOKUS Smart Cities Portal, Sept. 2011
- Münchener Kreis Smart Cities Conference in Berlin, Juli 2010

THE „SENSIBLE“ CITY



URBAN ICT AS CRITICAL INFRASTRUCTURE

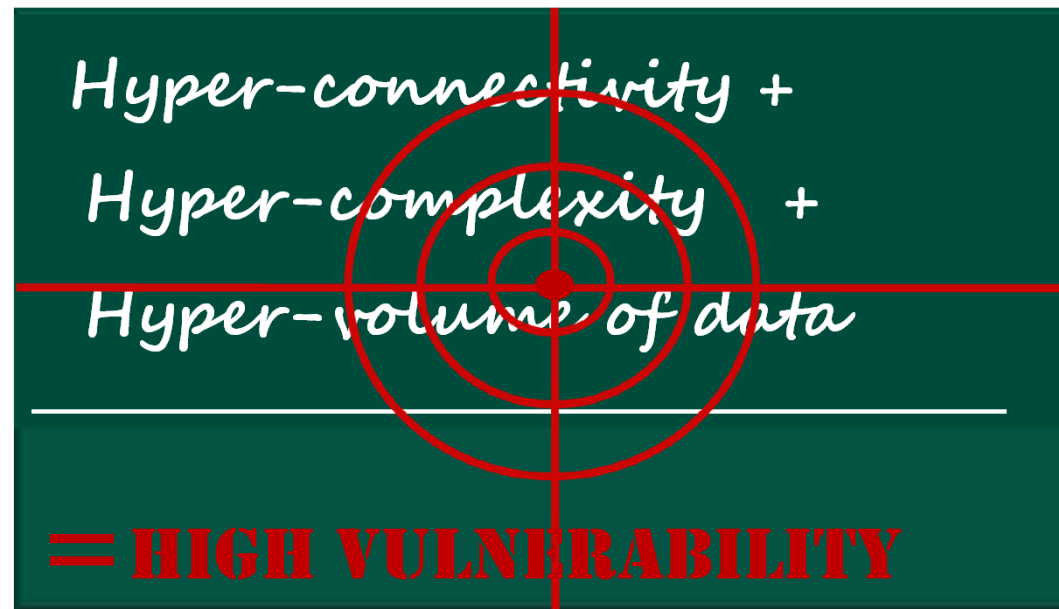
Smart cities imply ...

- High complexity of the ICT systems
- Highly interconnected components
- High volume of data generated

... and need to be designed with...

- Cyber security
- Privacy
- Integrity
- Compliance
- Reliability
- Resilience

...in mind.



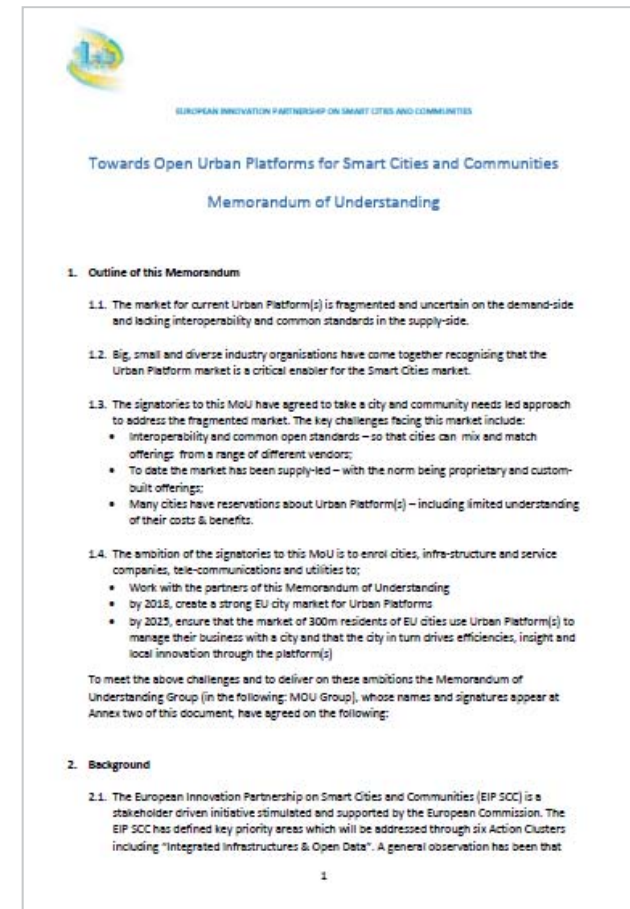
ANOTHER PERSPECTIVE

Cities develop
from solution providers to
platform providers !

EUROPEAN INNOVATION PARTNERSHIP ON SMART CITIES AND COMMUNITIES

Memorandum of Understanding “Towards Open Urban Platforms for Smart Cities and Communities”

- 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)



EC EIP on Smart Cities and Communities, Mai 2015

EXAMPLES



Monitoring,
Control,
Optimization



Smart urban apps,
Open innovation,
Digital ecosystems



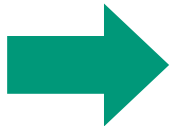
Crowdsourcing,
Digital
Engagement



Integration, Analysis and Collaboration Tools



Open Interfaces and Open Standards



Urban Data and Service Platforms



Public IT Infrastructures



NEW URBAN AGENDA

„We will implement the **creation, promotion, and enhancement of participatory data platforms** using technological and social tools available to transfer and share knowledge among national, sub-national, and local governments and other stakeholders, including non-state actors and people to enhance **effective urban planning and management, efficiency, and transparency through e-governance, ICT- assisted approaches, and open data.**“ ([Habitat III Zero Draft](#), p 20)



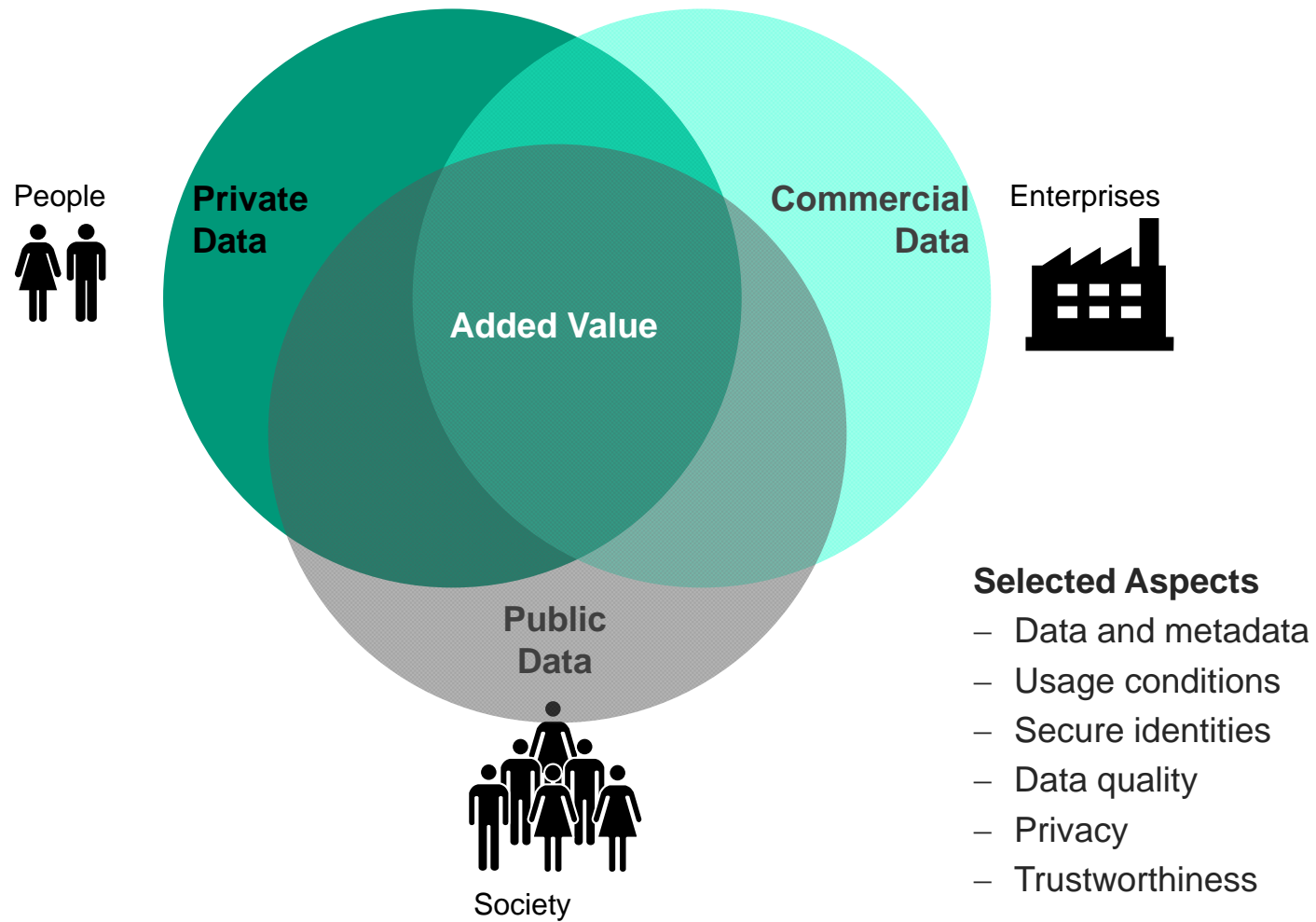
HABITAT III
ZERO DRAFT OF THE NEW URBAN AGENDA

06 May 2016

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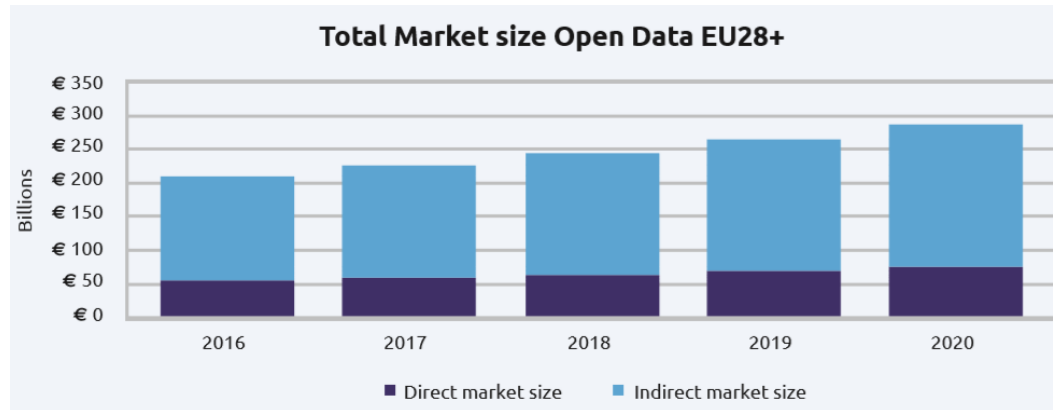


DATA SPACES



OPEN DATA MARKET

Creating Value through Open Data, Nov. 2015

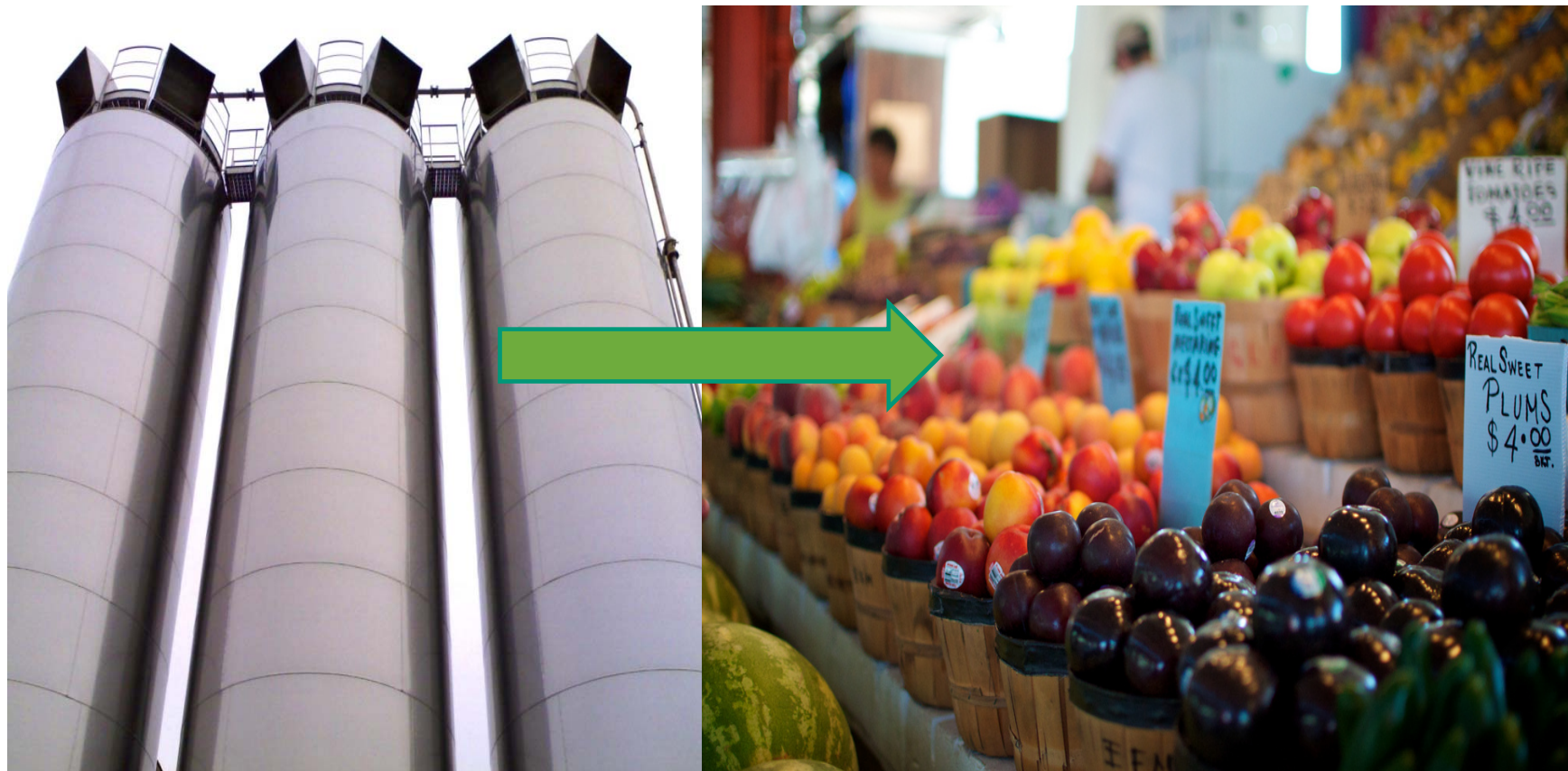


**Share PSI Analytical Report:
Digital Transformation and Open
Data, Dez. 2015**



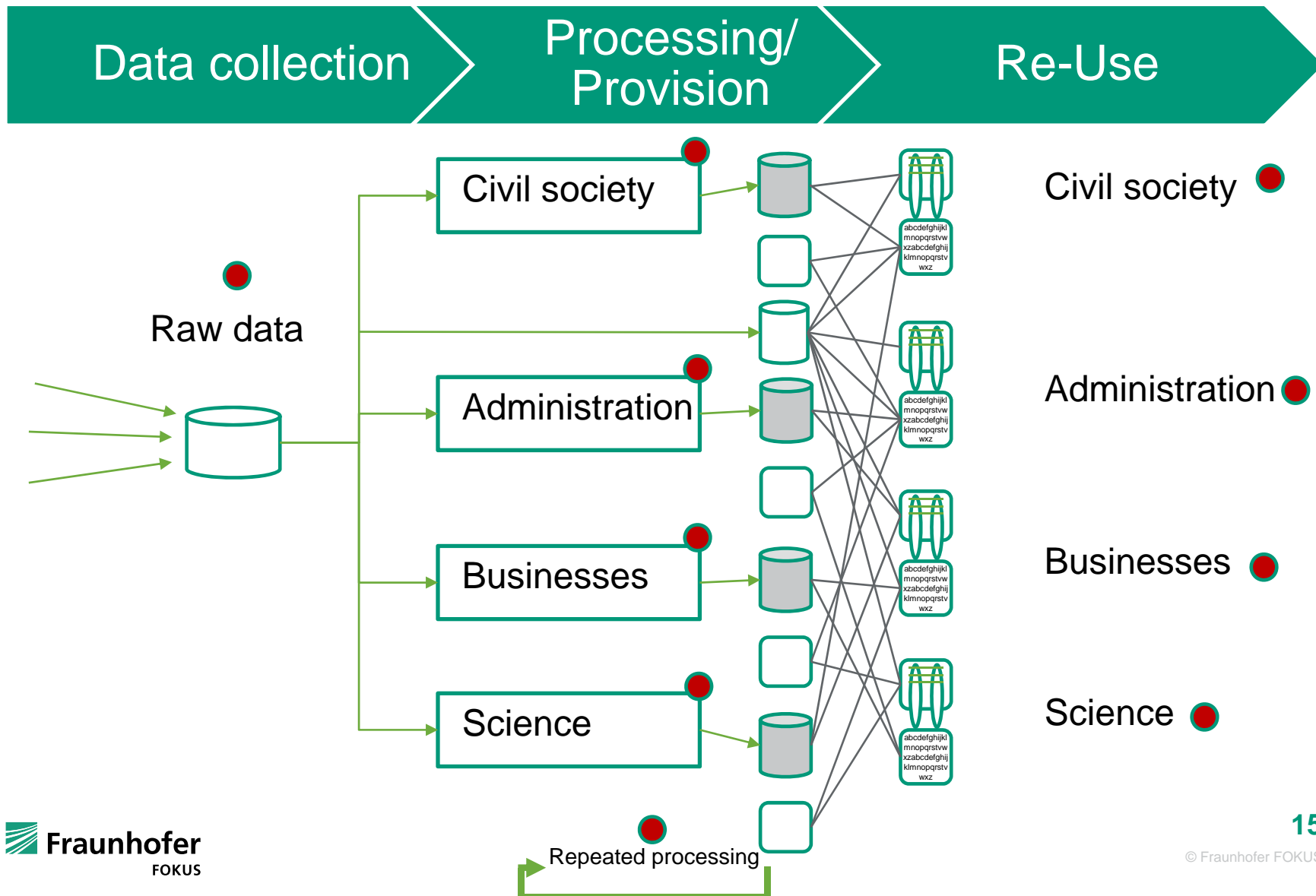
OPEN URBAN DATA FOR INTEGRATED/SMART PLANNING

From data silos to accessible and ready to use data

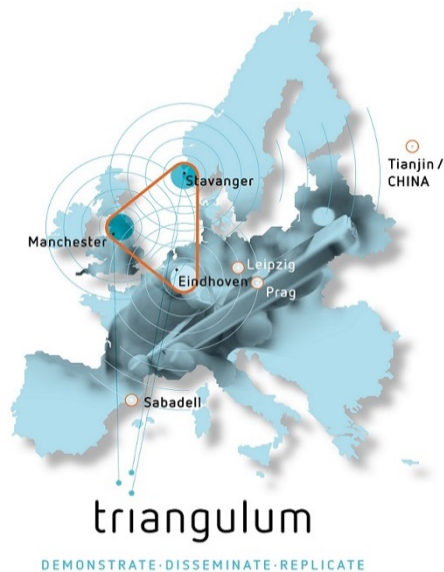


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SUPPORTING AN URBAN DATA ECOSYSTEM



TRIANGULUM: SMARTER CITIES REFERENCE ARCHITECTURE



In the context of the EU's Horizon 2020 initiative, Triangulum will lead the way towards a smart and sustainable development in European cities.

Scientists of the Fraunhofer FOKUS SQC (System Quality Center) Competence Center develop a reference architecture according to the cities' requirements which will capture all ICT components to be integrated. Thus, an abstract model of smart city modules emerges. The model approach allows other cities to integrate existing concepts or modules into their own infrastructure.



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GOVDATA.DE: OPEN DATA PORTAL FOR GERMANY



Developed in collaboration with the Federal Ministry of the Interior.

The Pilot/Prototype was officially online since the 9th of February 2013 until it shifted to official production wise operation in 2015:

<http://www.govdata.de>.

Fraunhofer FOKUS was responsible for the development and improvement of the prototype, the operation and maintenance of the underlying infrastructure, as well as for the data harvesting from various data repositories across Germany.



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EUROPEAN DATA PORTAL: OPEN DATA FROM 39 COUNTRIES



The European Data portal will bring together Open Public Data from numerous European countries and improves the discoverability and the ability to re-use open public data. With the Data Portal, the European Commission intends to unlock the economic potential of public data that is estimated of possible gains exceeding 40 billion Euros per year.

Fraunhofer FOKUS is one of the key technical partners in this ambitious Open Data project, responsible for developing the data repository and harvesting datasets from existing open data sources. The data repository bundles all different data entries based on their metadata while the harvesting-tools allow to collect data sets from various sources across all the EU countries.



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POLICY COMPASS: DEBATES ON POLICY ISSUES



Reference Solution 5:

Since April 2016: The pilot/prototype-Portal

<http://www.policycompass.eu> is an easy-to-use, highly visual and intuitive tool, enabling citizens and public officials to summarize and visualize debates on policy issues of interest (e.g. on smart urban development) with the help of argument maps and assess policy propositions based on interactive KPI graphs and charts.

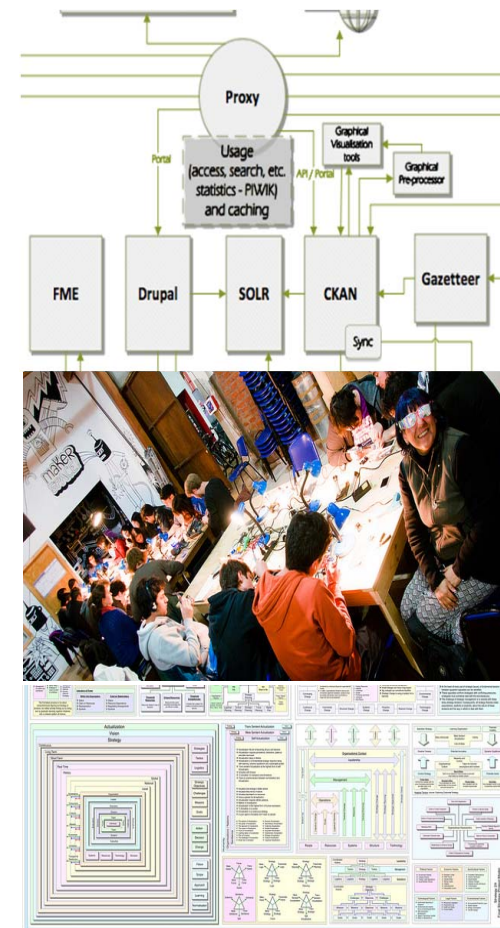
Concepts and realization by Fraunhofer FOKUS



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STRATEGIC ASPECTS OF URBAN DATA PLATFORMS

- Next to the technical provision of data:
 - Sustainability of data provision,
 - Cooperation with civic and other stakeholders
 - Willingness to learn from civic and other stakeholders
 - Inclusion of urban data infrastructure in themes and strategies of public bodies



<https://flic.kr/p/fQYRPb>

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STATUS OF SMARTER CITIES IN GERMANY

Cities and Communities

- Several Digital Agenda and/or Smarter City/Community Roadmaps
- Large amount of domain-specific pilots (some solutions transferred into normal operation), but often not cross-domain or platform-driven
- Often scattered responsibilities in different administrations and lack of know and expertise in digitization
- Various studies, metrics and rankings

Research and Development

- ICT for Smarter Cities Center at Fraunhofer FOKUS since 2011; eGovernment and Digital Public Services since 2003
- Fraunhofer Initiative Morgenstadt since 2012
- Acatech Initiative City of Tomorrow, 2012-2014
- National Platform City of the Future, 2013-2014
- Year in Science on City of the Future 2015
- European Innovation Platform Smart Cities and Communities since 2014

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