What Cities Need

Mechanisms that take us from fragmented pilots to mainstream market built on trust

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Chair, AU Smart Cities, Aarhus University

OPEN & AGILE SMART CITIES

AARHUS UNIVERSITY

OPEN & AGILE SMART CITIES

Mission: To create a global smart city market based on the needs of cities and communities

—

Demand-side

—

Global network of national networks

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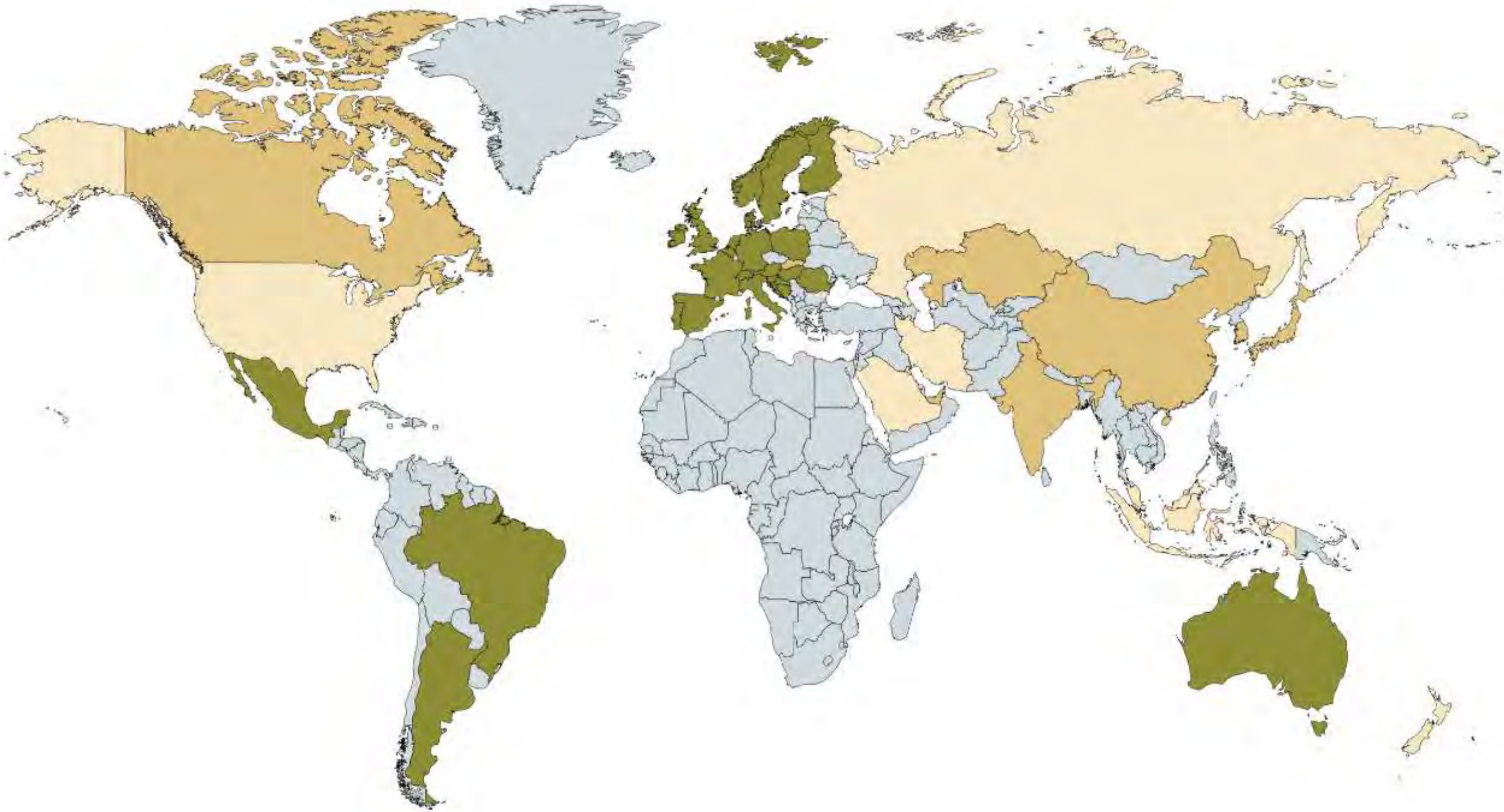
150 cities
30 countries
Europe, Latin America, Asia-Pacific

—

Council of Cities Coordinator: Ghent (Belgium)
Board representative: Vienna (Austria)



Global community

European Commission

UNITED NATIONS

WORLD ECONOMIC FORUM

ITU

ISO

ETSI

EURO CITIES

EIP-SCC
European Innovation Partnership on Smart Cities and Communities

European Committee of the Regions

European Network of Living Labs

eit

BDV BIG DATA VALUE ASSOCIATION

tmforum

FIWARE FOUNDATION

CITY PROTOCOL SOCIETY

AIOTI

The Foundation For Public Code

smart city expo WORLD CONGRESS

CATAPULT Connected Places

AARHUS UNIVERSITY

imec

BUSINESS TAMPERE

GATE 21

دبي الذكية SMART DUBAI

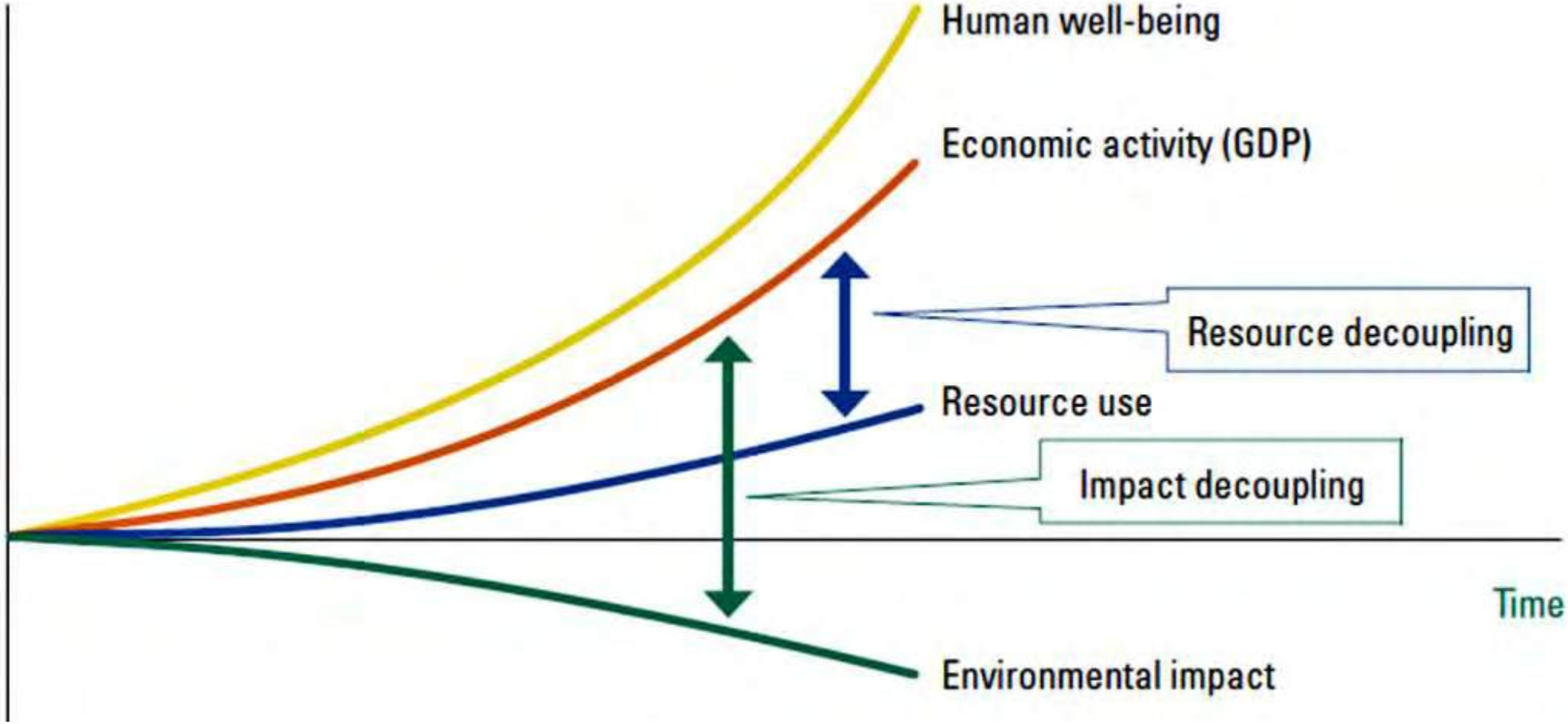
CRISES

SOCIAL

ECONOMIC

ENVIRONMENTAL

Sustainable, Open Innovation



Source: Decoupling Natural Resource Use and Environmental Impacts from Economic Growth, UNEP (United Nations Environmental Programme) 2011

EPSC Strategic Notes

Issue 30
July 2019

Rethinking Strategic Autonomy in the Digital Age

European **Political Strategy** Centre

In the 21st century, **those who control digital technologies are increasingly able to influence economic, societal and political outcomes.** Policymakers around the world are waking up to the critical imprint that digital technologies have on their countries' strategic autonomy and a global race for technological leadership has ensued.

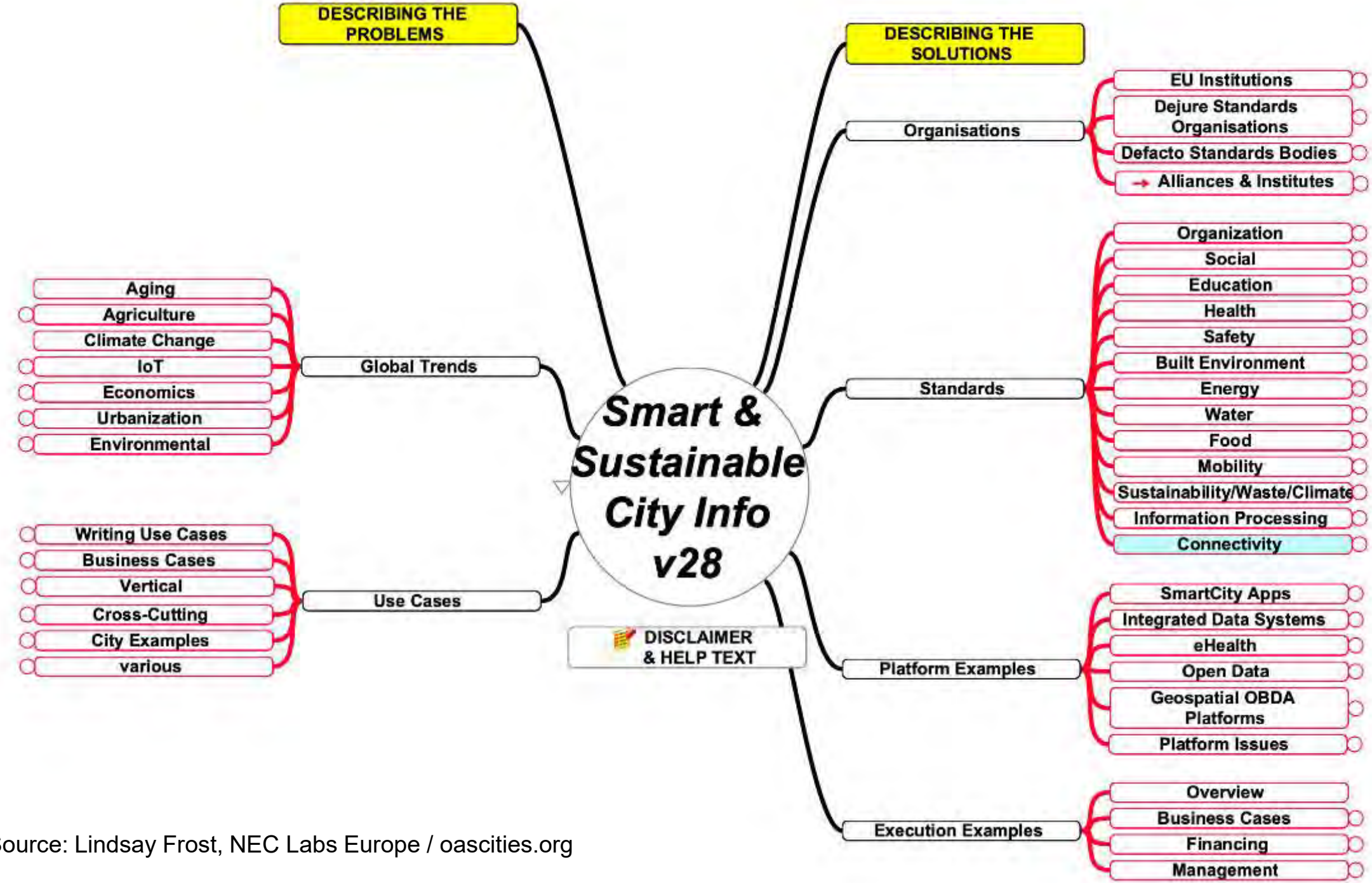
PROTECTION

+

INNOVATION

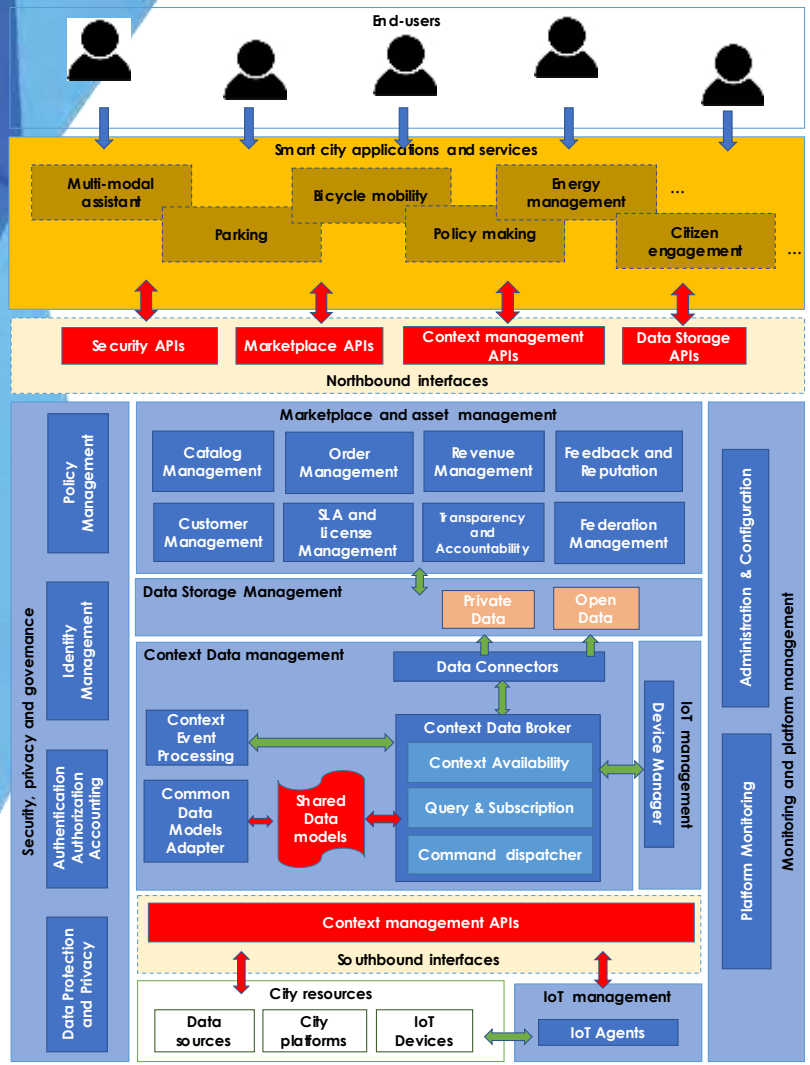
LACK OF TRUST

STANDARDS?



Source: Lindsay Frost, NEC Labs Europe / oascities.org

Architecture Framework Model



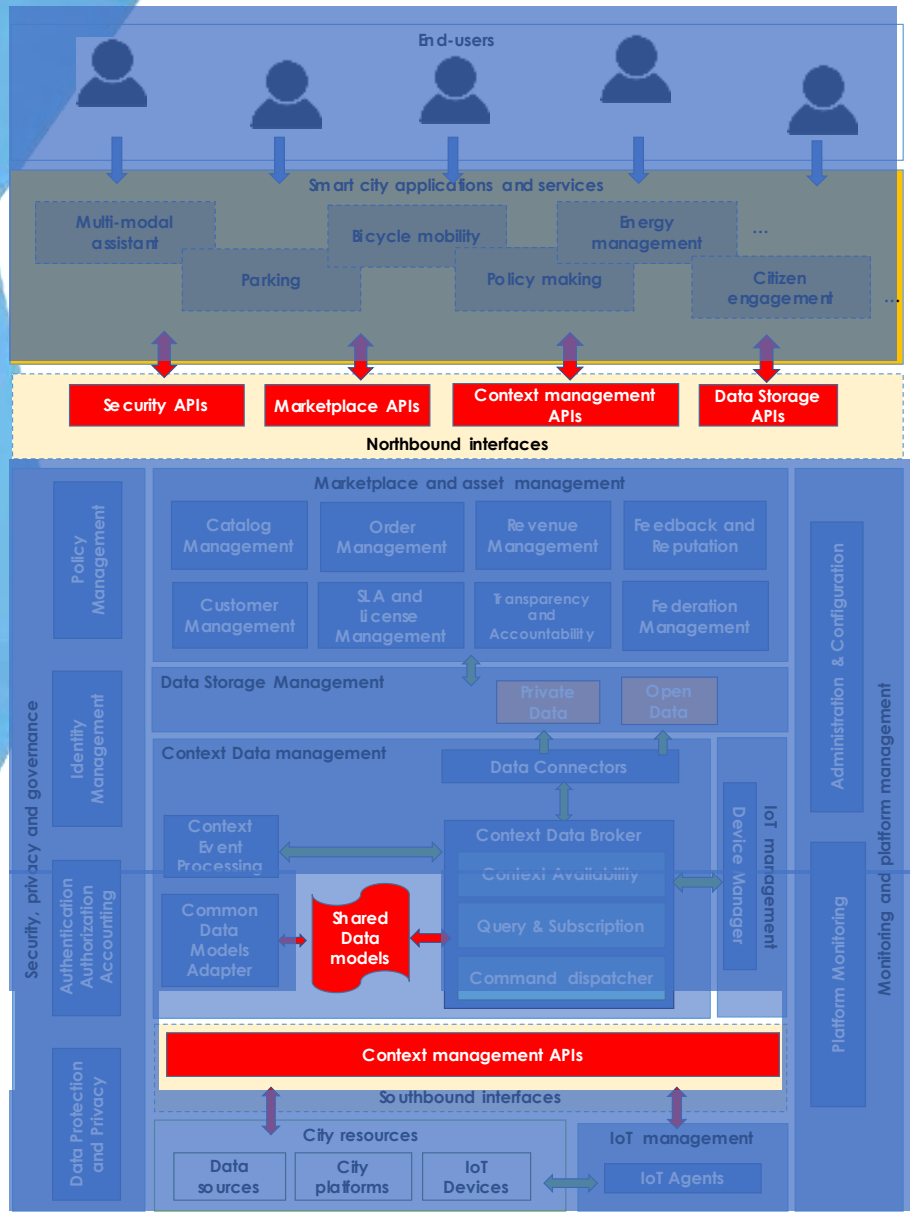
- **IoT Management:** to interact with the devices that use different standards or protocols making them compatible and available to the SynchroniCity platform.
- **Context Information Management:** to manage the context information coming from IoT devices and other public and private data sources.
- **Data Storage Management:** to provide functionalities related to the data storage and data quality interacting with heterogeneous sources.
- **Marketplace:** to implement a hub to enable digital data exchange for urban data and IoT capabilities providing features in order to manage asset catalogues, orders, revenue management.
- **Security**: to provide crucial security properties such as confidentiality, authentication, authorization, integrity, non-repudiation, access control, etc.
- **Monitoring and Platform management**: to provide functionalities to manage platform configuration and to monitor activities of the platform services.

Baseline: SynchroniCity Cities/Reference Zones, OASC, FIWARE, EIP-SCC, NIST IES-CF.

Related standards: ITU-T SG20*/FG-DPM* (*drafts), ISO TC268.

Spec. doc.: Reference Architecture for IoT Enabled Smart Cities (D2.10)
http://synchronicity-iot/tech

Interoperability Points



- **Interoperability Points** represent the main interfaces that allow a city (or any Reference Zone, RZ) and applications to interact with SynchroniCity platform
- Interoperability points are independent from the specific software components that realize them and can be implemented by cities in different steps to reach different levels of compliance
- The architecture has been designed following the OASC principles and the definitions of **Minimal Interoperability Mechanisms** (MIMs). MIMs, are the actual specifications of the interfaces at the Interoperability Points: they are standard API and guidelines that have to be implemented by a city in order to be compliant with the SynchroniCity framework

OASC Minimal Interoperability Mechanisms (MIMs)

Benefit for Cities:

- Choice, flexibility, efficiency, value-for-money, independence, economic development

Benefit for Businesses:

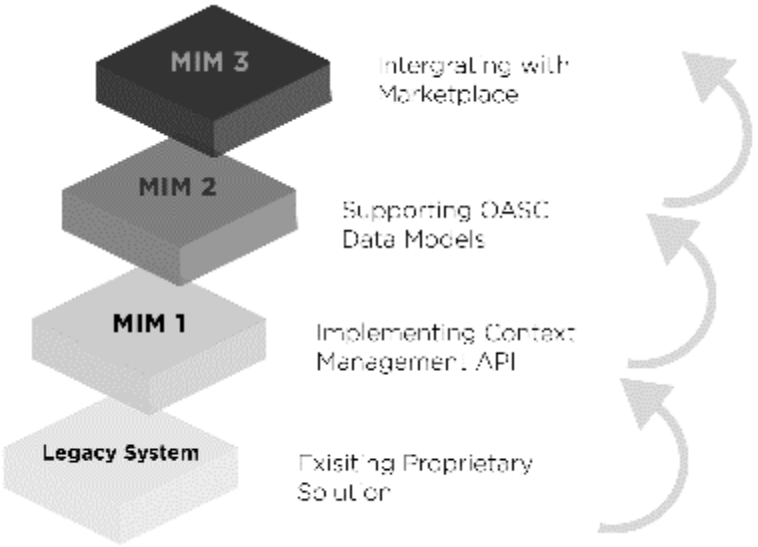
- Scale, agile development/deployment

Benefit for all:

- Reduced risk, increased investments, innovation

OASC MIMs: Common technical ground

- MIM 1: Context Information Management
  - Orion (EU CEF/FIWARE)
  - Scorpio (NEC)
  - Djane.io (Sensinov)
  - Obelisk (imec)
  - TBC (Atos)
  - TBC (South Korea)
- MIM 2: Common Data Models
- MIM 3: Ecosystem Transaction Management
- MIM 4: Personal Data Management (proposed)
- MIM 5: Fair AI (proposed)



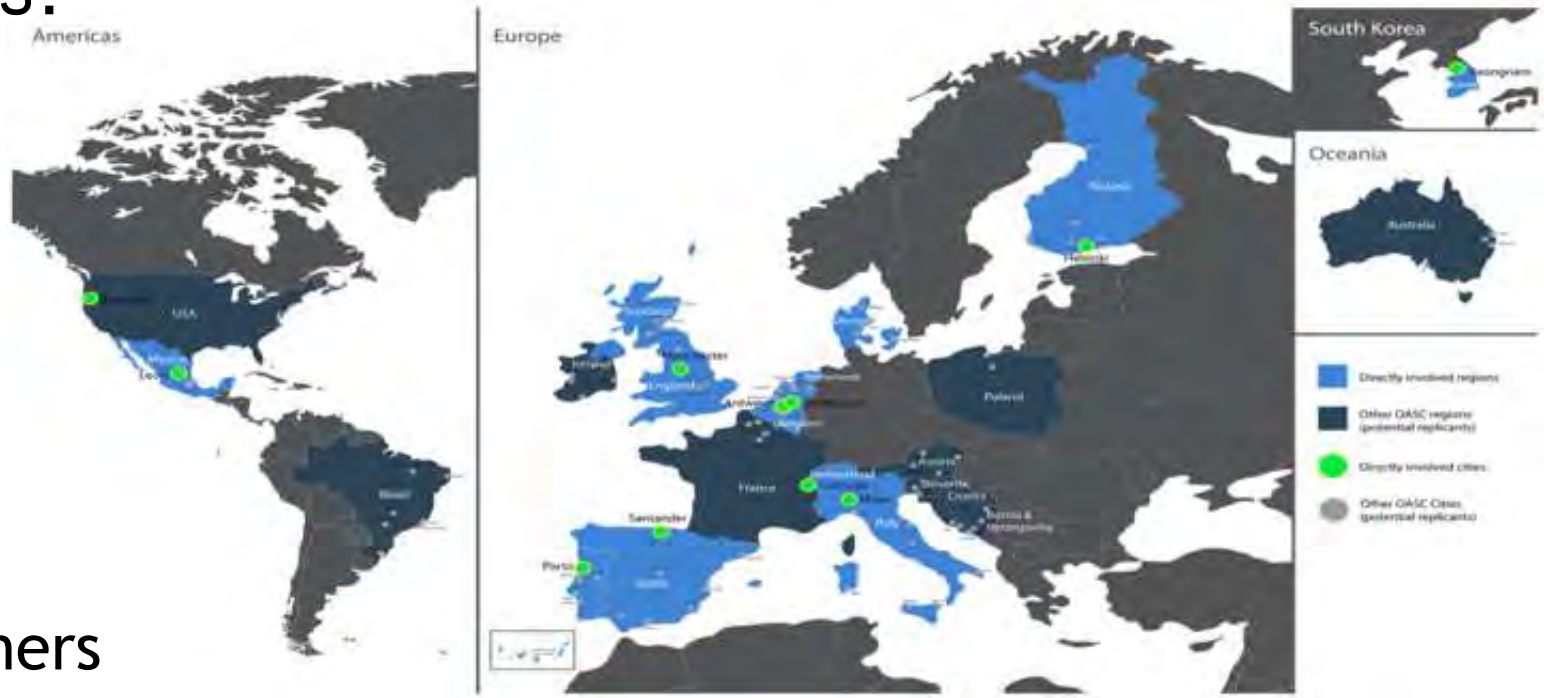
MIMs 1-3 adopted by the OASC Council of Cities January 16, 2019

SYNCHRONICITY

Demonstrating the Power of MIMs

Scaling up across cities:

- 50 services
- 21 cities
- 16 teams
- 6 months



Core project: 20m€ · 40 partners

More information: synchronicity-iot.eu

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Cities & Pilots Community Tech News Media

21 51

CITIES & PILOTS

www.synchronicity-iot.eu

32 SMEs
SynchroniCity Scale-up Workshop Milan, October 2019

SEE.SENSE
SMART CYCLING

Encouraging Cycling through use of Crowdsourced Data-Driven Insights

Pilot group: See.Sense and BT

Pilot cities: Manchester, Antwerp, Dublin

- 800 citizens engaged in the collection of cycling data
- Unique insights into the experience and behaviours of cyclists to help create evidence for data-led decision-making
- Good media media coverage (Cities Today, Cycling Weekly) and dissemination (ITS World Congress, VeloCity)

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Building Electricity Analytics and Control

- Who we are:
  An all-in-one infrastructure for building energy management.

- Our service:
  i) Hardware for data-acquisition and control; ii) A purpose-built infrastructure for electrical data communications and management; and iii) ML for analytics and load disaggregation.

- Biggest achievement:
  Installations in diverse building types. Standardised data model.

- Biggest difficulty:
  Data connectivity (WiFi). Developed hybrid GSM solution.

Installation in Porto

Detailed analytics in Milan

CASD : Clean Air School Districts

leapcraft

Clean Air School Districts is a holistic solution with sensor instruments, educational material, and consultation for students, teachers, and parents to collaborate on improving the school's indoor environment quality.

RainBrain

The smart blue-green roof

Healthier green roofs

- RainBrain monitors and predicts the vegetation's health
- Waters vegetation automatically when needed

The best of IoT and analytics combined

- Vegetation sensors, solar panel and LoRaWAN
- Weather data, machine learning and modeling
- RainBrain insights and controls through a mobile app

Optimized water availability

- RainBrain analyses the current and future water availability
- Anticipates on extreme weather: stores water to survive droughts, empties buffers to prevent floods

Developed by Sumaqua AGILIS GREENBEAT

Piloting in Antwerp (Belgium) Eindhoven (Netherlands)

Funded by SYNCHRONICITY synchronicity-iot.eu/

RAINBRAIN: THE SMART BLUE-GREEN ROOF

www.synchronicity-iot.eu

Upscaling Declaration coming!

EURO CITIES

OPEN & AGILE SMART CITIES

European Network of Living Labs

European Commission

JOIN, BOOST, SUSTAIN

Joining forces to boost sustainable digital transformation in cities and communities in the EU

We, decision makers at all levels of government together with organisations and networks of cities and communities of all sizes[1], believe that strong cooperation among all levels of government in the EU is key to turning our cities and communities into smart and sustainable places where people will enjoy living and working. Digital services, technologies, infrastructures and skills are powerful means of achieving these goals. Through co-creation with the citizens, the aim is to bring the economic and social benefits of this transformation to all local communities, in order to implement an inclusive digital Europe.

Upscaling Declaration

Thus, it is time to join forces among all levels of government in the EU, to boost upscaling of digital solutions so that at least 300 million European citizens can benefit from better quality of life by 2025[3].

We agree on the following principles:[4]

- A citizen-centric approach;
- A city-led approach at EU level;
- Technologies as key enablers;
- Ethical and socially responsible access, use, sharing and management of data, based on privacy by design principles;
- The city as a citizen-driven living lab and open innovation ecosystem;
- Interoperable digital platforms based on open standards and technical specifications, open Application Programming Interfaces (APIs) and shared data models.

We commit to working together on the following aspects:

- Financial
- Technical
- Legal
- Capacity building
- Monitoring and measuring

Within the first quarter of 2020, we commit to setting up and maintaining a multi-level governance Steering Board empowered to ensure the implementation and the monitoring of the above commitments by 2025. This will facilitate joining forces and resources, stakeholder dialogue and collaboration to boost the sustainable digital transformation of cities and communities.

Save the Date

- Smart City Expo World Congress
  - 19-21 November 2019
  - Barcelona
- **Connected Smart Cities and Communities ←**
  - 22-23 January 2020
  - Brussels
- Cities Forum
  - 31 January 2020
  - Porto
- **SynchroniCity LIVE Summit ←**
  - 16-18 June 2020
  - Copenhagen

The vision of the Open & Agile Smart Cities initiative is to create an open smart city market based on the needs of cities and communities.

FROM THE OASC VISION

OASC: Partner of G20 Global Smart Cities Alliance

October 14, 2019

Open & Agile Smart Cities (OASC), is one of 15 institutional partners that have launched a new partnership to advance the responsible and ethical use of smart city technologies. The G20

Get Ready for Smart City Expo World Congress 2019

October 21, 2019

Smart City Expo World Congress 2019 is just around the corner and Open & Agile Smart Cities (OASC) is getting ready. Meet OASC at the expo floor of the leading ...

CONTINUE

OASC Welcomes Lille and Kiel as new members

September 20, 2019

This September, Open & Agile Smart Cities welcomes two cities from France and

Virtual Workshops on City Data Models: Two More Sessions Approaching

October 21, 2019

How can standards support the digital transformation of cities and communities? A webinar series organised by ISO/IEC JTC1 WG 11 and the Toronto School of Cities takes a close look ...

CONTINUE

Future-Proof Smart Cities: the Case of Bordeaux

August 26, 2019

CONNECTED SMART CITIES CONFERENCE 2020

Save the date: OASC's annual Connected Smart Cities Conference will come to Brussels on **23 January 2020.** Don't miss a full day of high-level keynotes, interactive workshops and networking.

MOST RECENT CITIES TO JOIN OASC

OASC Argentina

Ameghino, Berisso, Carlos Casares, Coronel Suarez, La Plata, Lobos, Ramallo, Puan

OASC England

London

OASC France