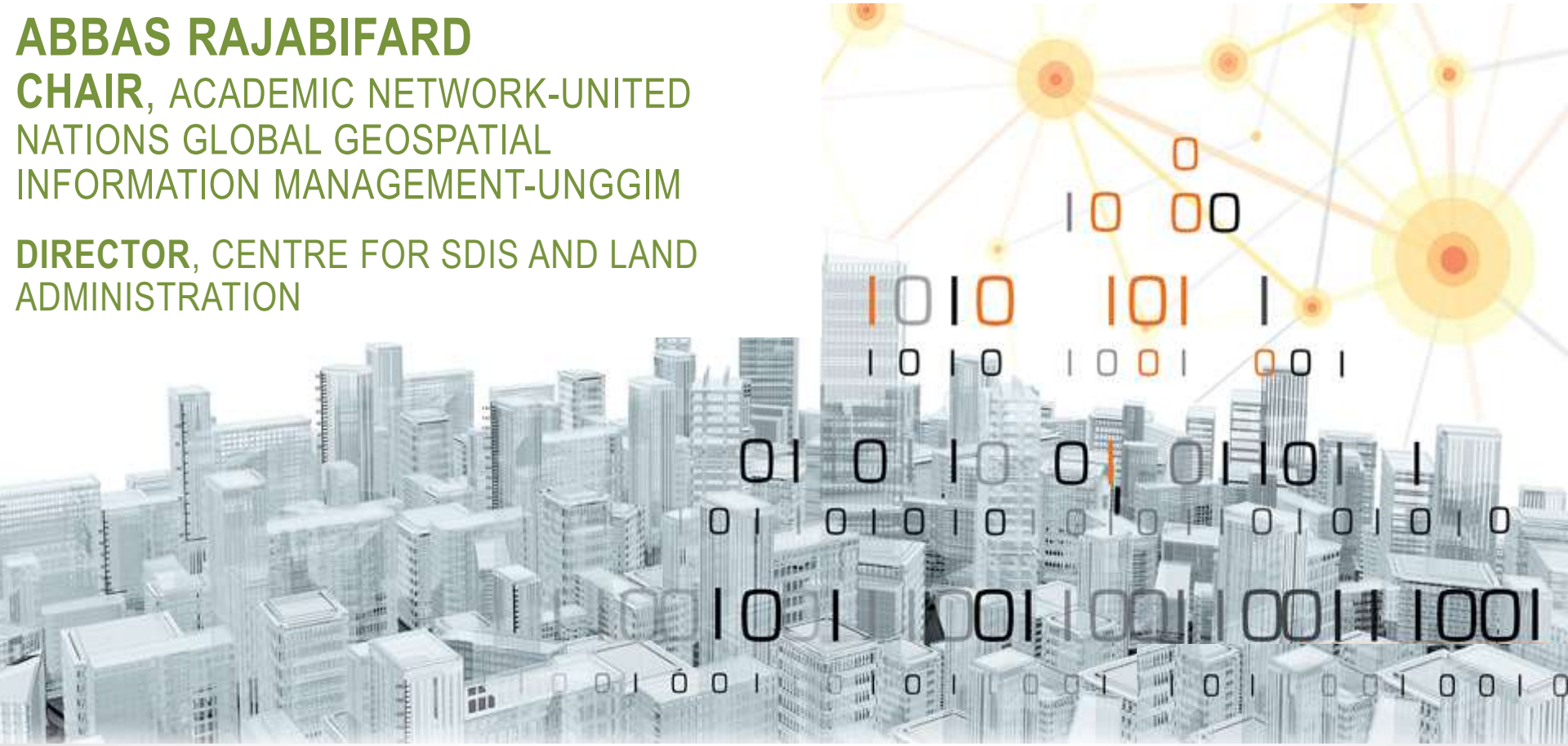
SPATIALLY ENABLED SOCIETIES AND SMART COMMUNITIES

ABBAS RAJABIFARD

CHAIR, ACADEMIC NETWORK-UNITED NATIONS GLOBAL GEOSPATIAL INFORMATION MANAGEMENT-UNGGIM

DIRECTOR, CENTRE FOR SDIS AND LAND ADMINISTRATION



CSDILA

UN-GGIM ACADEMIC NETWORK

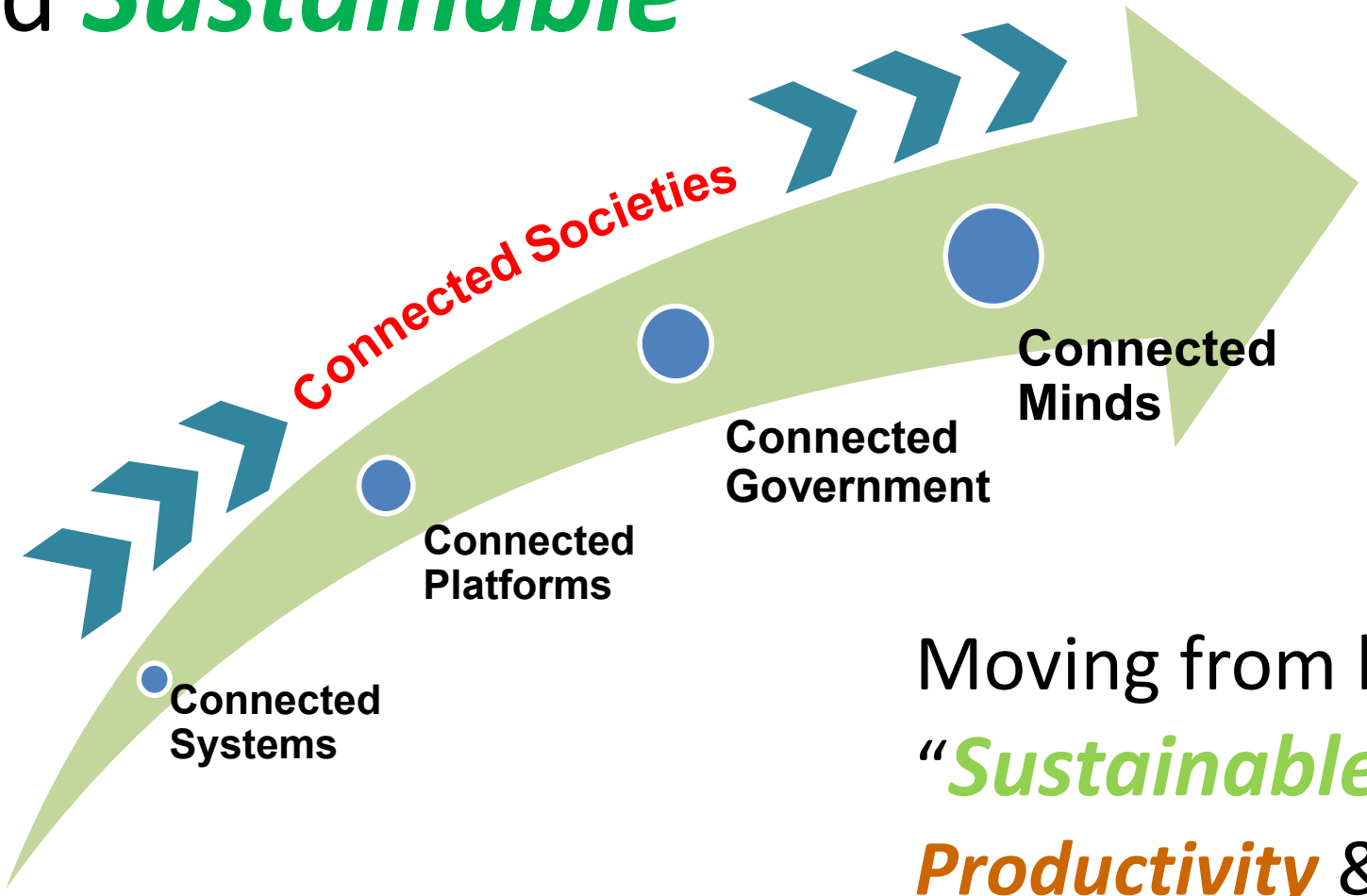
THE UNIVERSITY OF MELBOURNE

Sense of the World

Through the Lens of

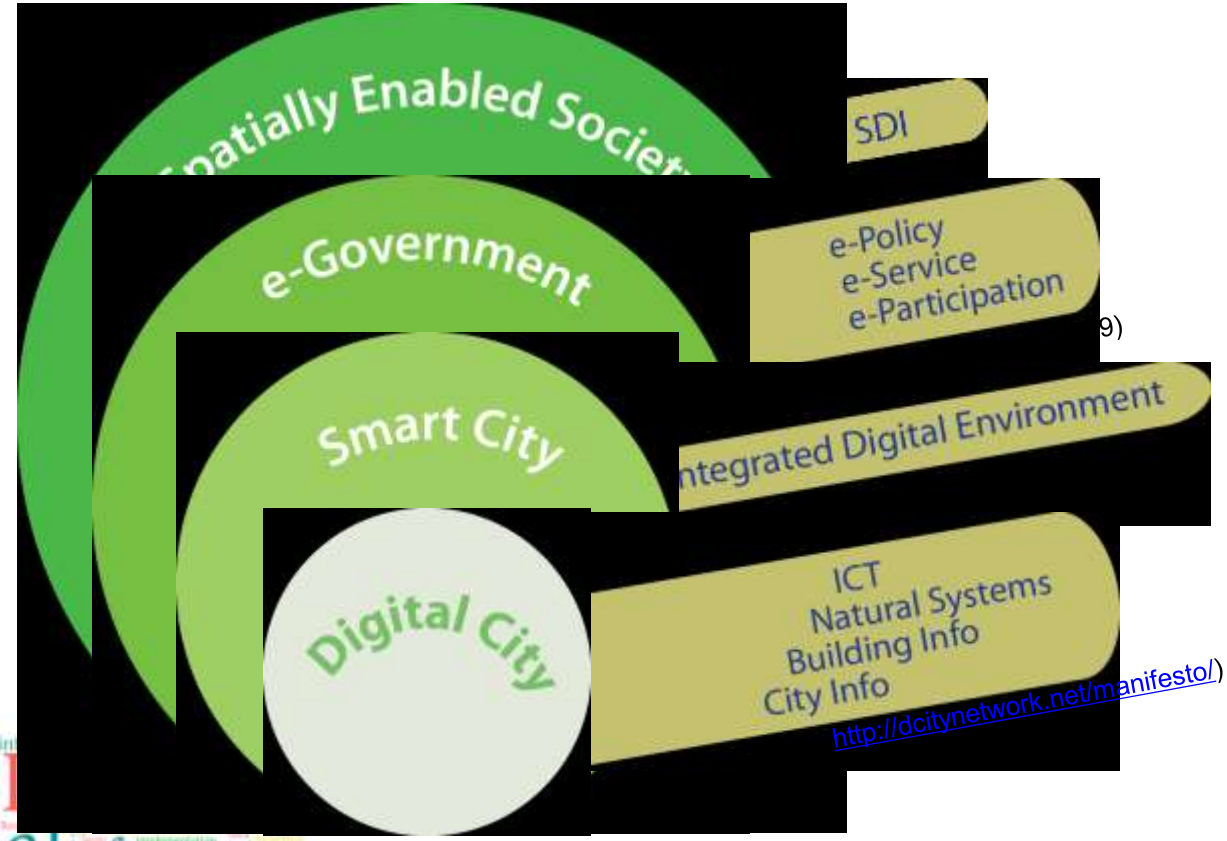
Location & Spatial Enablement

Future is Smart, *Connected* and *Sustainable*



Moving from being "*Sustainable*" to *Productivity* & "*Regenerative*"

Key Developments and Initiatives



9)

http://dcitynetwork.net/manifesto/)

The "Game Changers"

- Linked Data
- Blockchain
- BIM + Land Admin
- Cloud Computing
- Locally relevant global data sets
- Social Media and Crowdsourcing
- Networks of networks
- Big Data
- Open Data, Open Government
- Open Standards
- Governance
-

Key Drivers

- **Population Growth & Increasing** urban complexity;
- Connected, automated and shared services;
- Digital Economy;
- Needs and opportunities in the context of future cities;
- 3D land and property info to support future planning and management of urban environment (e.g. leveraging BIM, PIM) / vertical Living;
- Big Data and cybersecurity;
- Making sense of smart data, smart utilities, 4D data.

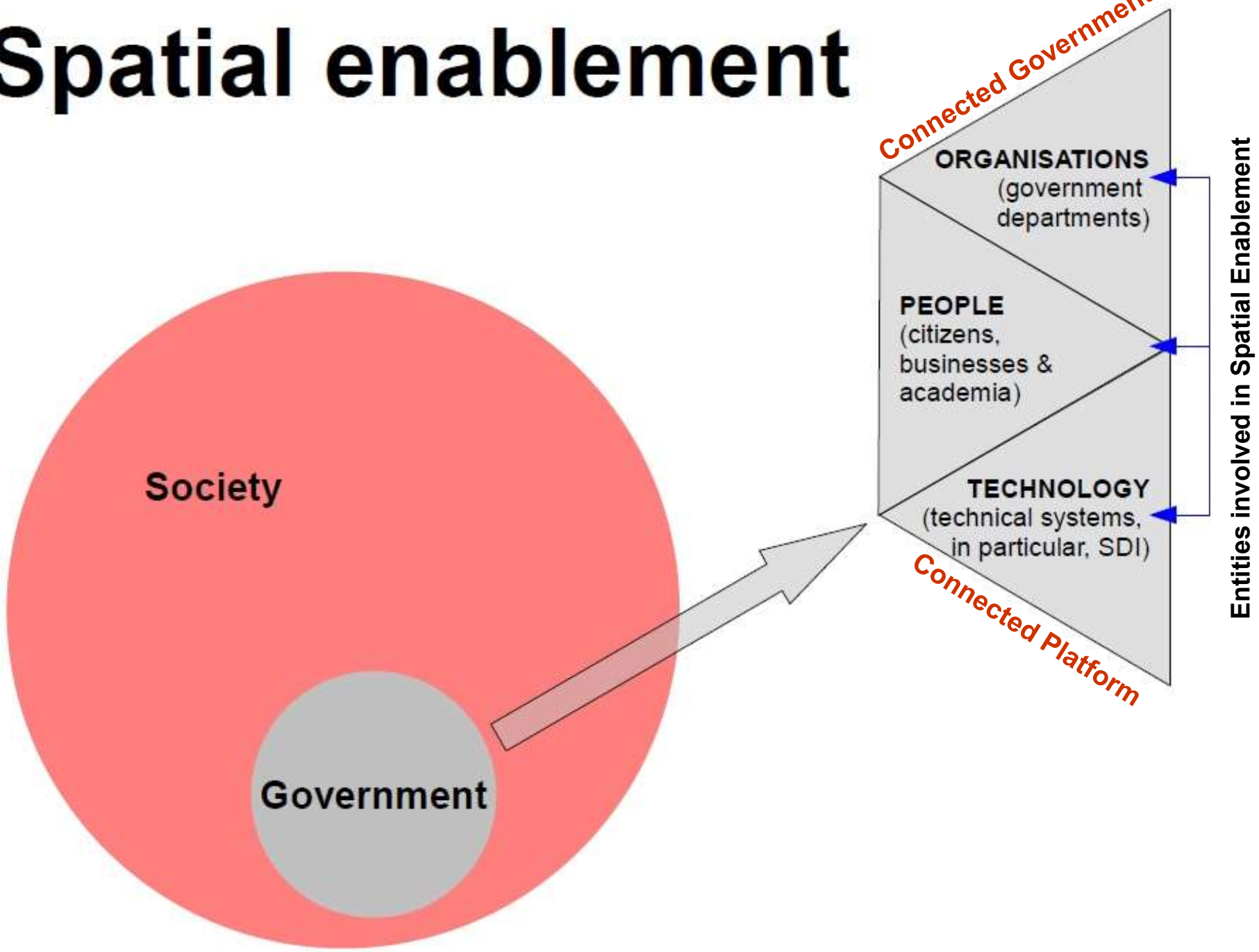
Spatial Enablement

A society or government can be regarded as **spatially enabled** when spatial information and location **are widely used to manage information and processes** to encourage more creativity and product development, and they become a ubiquitous **part of eGovernment** and broader **Government ICT strategies**.

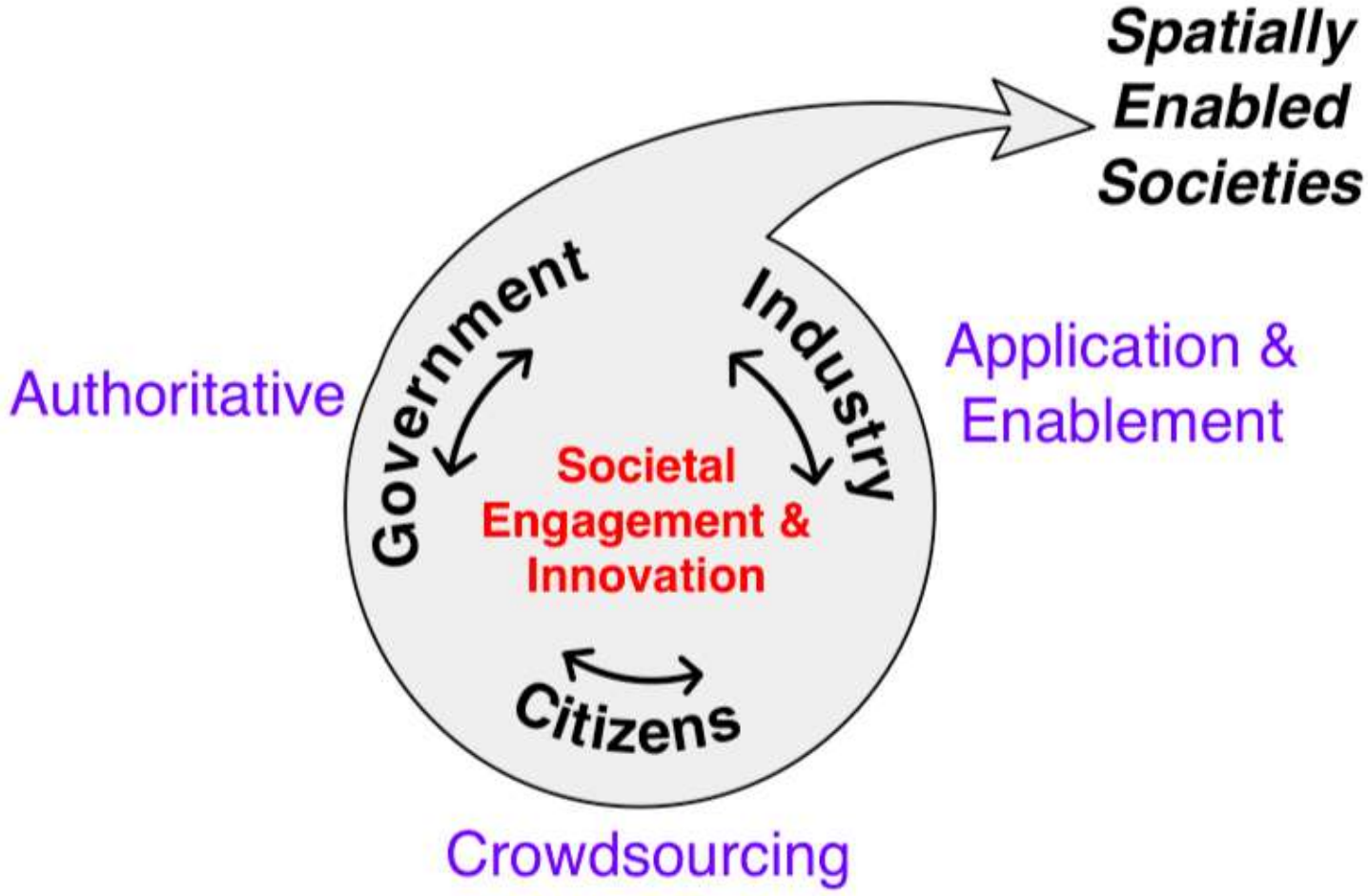
and

It is also defined as an **innovator and enabler** across society and a promoter of **Citizen Centric**.

Spatial enablement

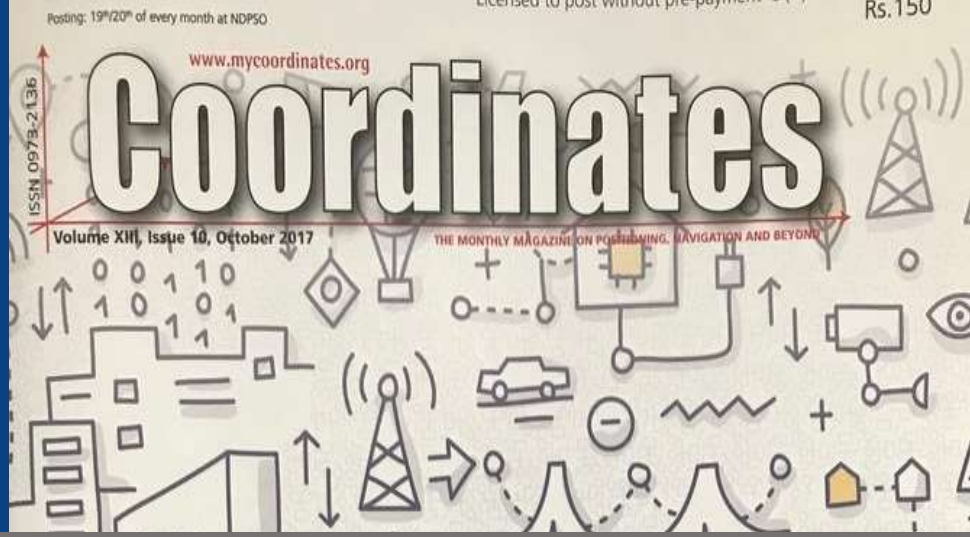


SES and Societal Engagement



Q:

What knowledge base,



Location – 4th driver for Decision Making

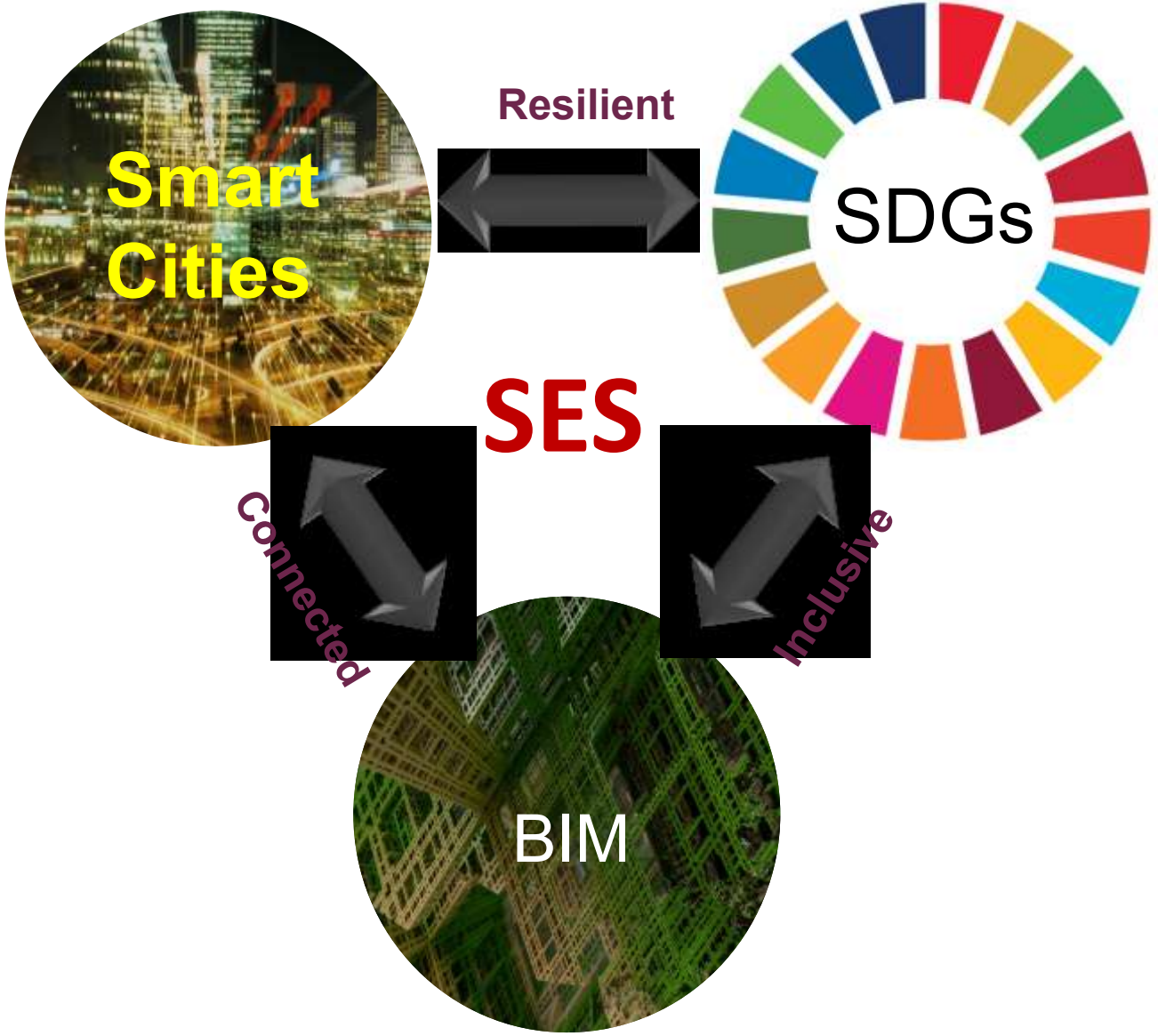
(Why, When, What, Where)

Location - links us to where we are and what we are doing.

become

*"**smart and sustainable for all**"?*

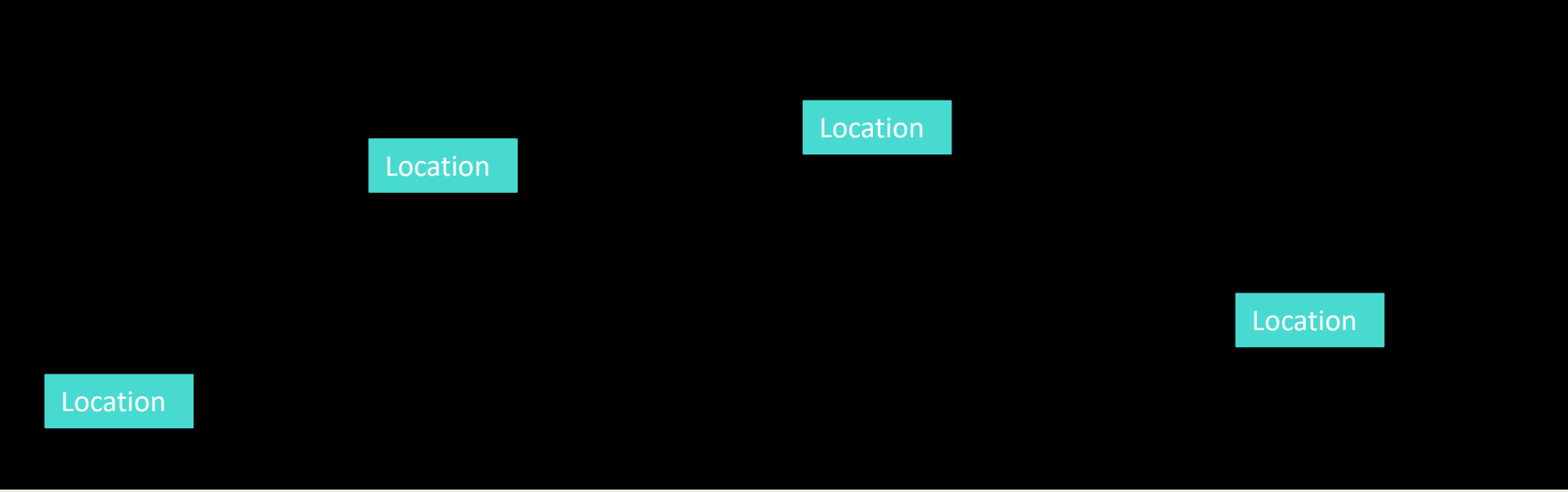
INTERCONNECTED FUTURE FOR ALL



SES-Facilitating of Smart Cities and Smart Communities

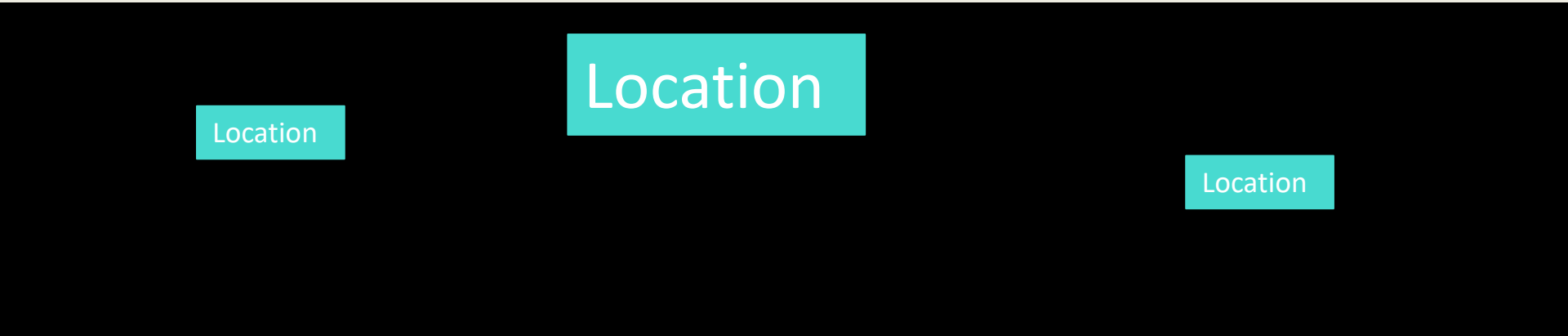
Smart City Transitions and nD System Challenges and Opportunities

- Smart city → smart citizenry
- 3D → nD
- Automation-substitution → transformative innovation

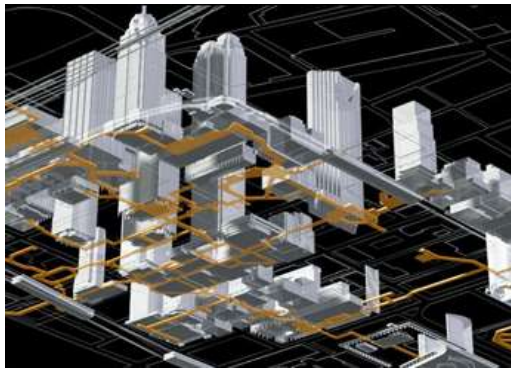


Technology and society are driving the Data Ecosystem-

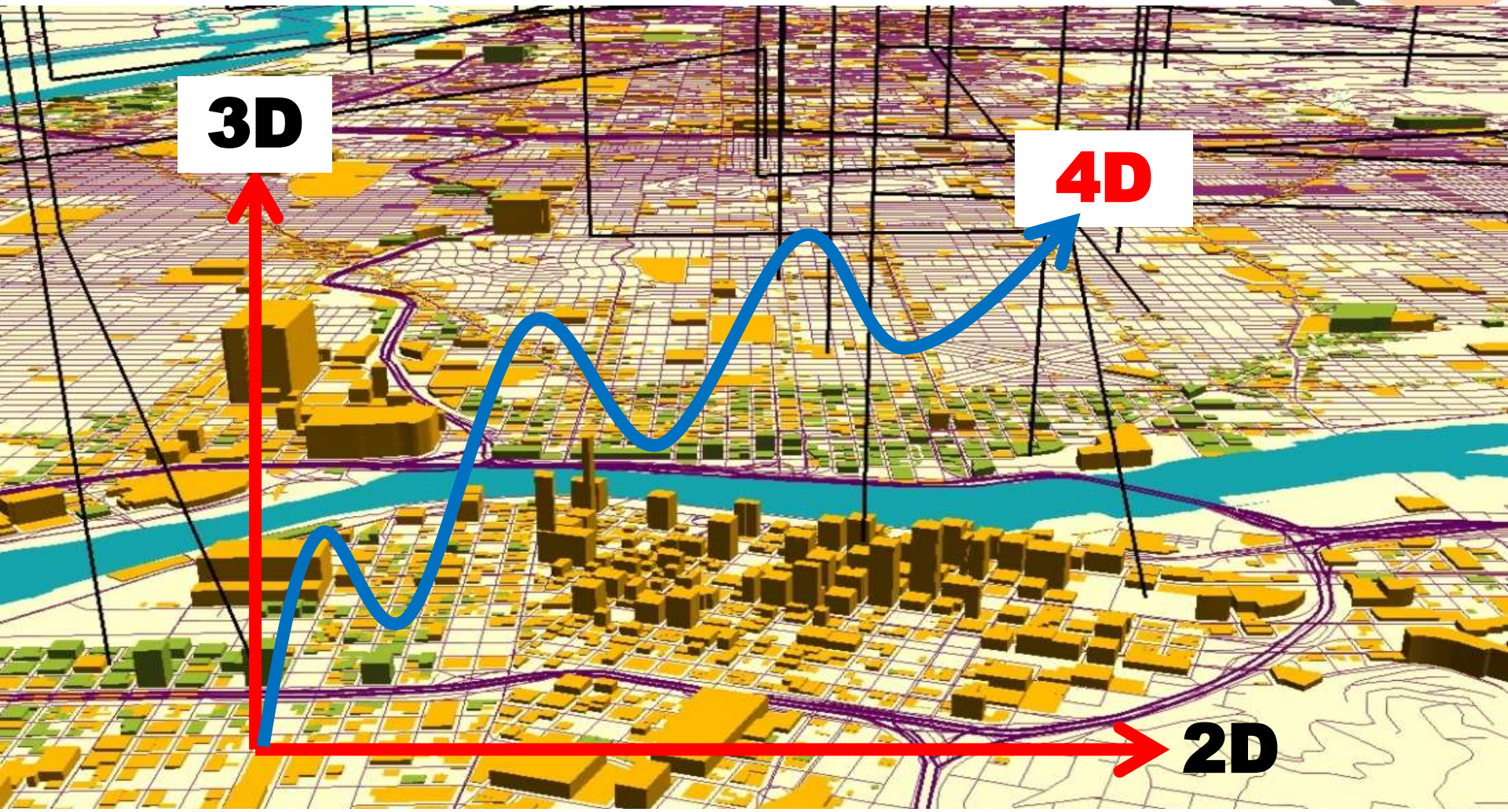
Delivering Spatial Enablement



Complex Urban Environment



Complex urban Interdependencies

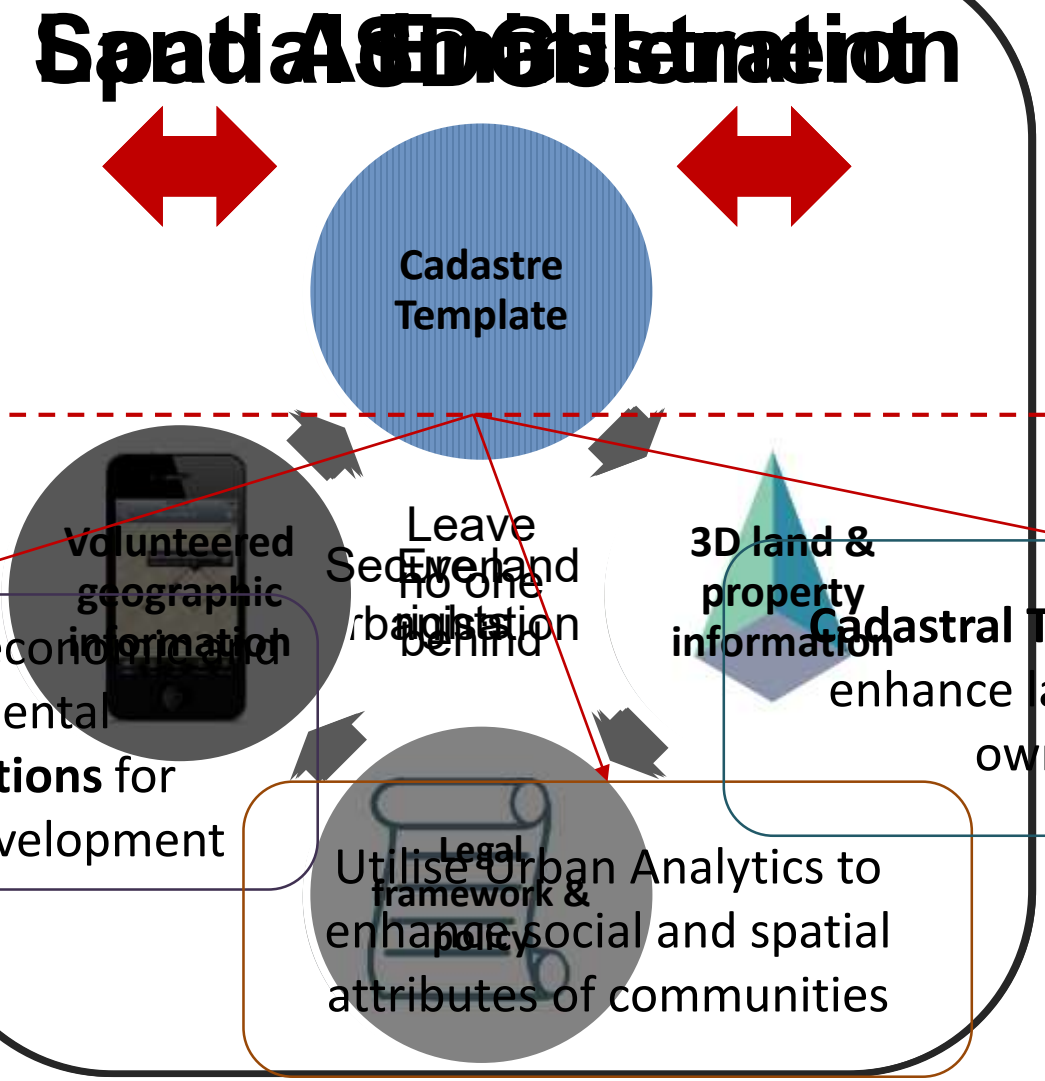


***Need** for multi-dimensional land/spatial information.*

City and *Spatially Enabled Societies (SES)*

SES

SDGs/Spatial Enablement/Land Administration



Mapping social, economic and environmental **interconnections** for sustainable development

Cadastral Template 2.0 to enhance land rights and ownership

Utilise Urban Analytics to enhance social and spatial attributes of communities

Why the SDGs Matter

Interconnected Network of Challenges

Inclusive

Leaving no one behind and improving the quality of life for everyone

Interconnected

Acknowledging the connectivity of our problems and future challenges

Global Action

Multi-stakeholder and cross-sector mobilization

SDGs and Future Opportunities

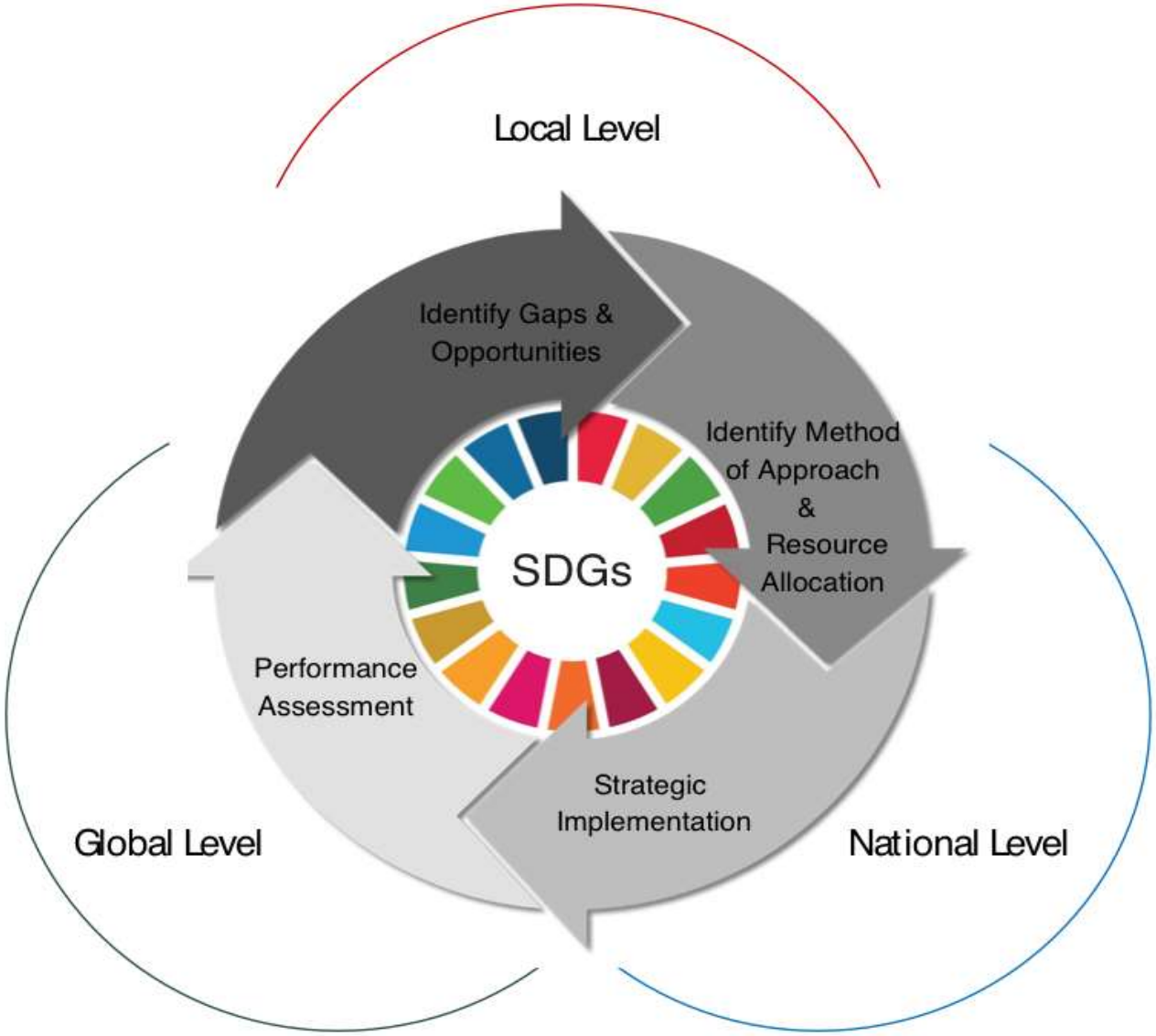
Smart Investment

Smart Policy

Smart Technology

Growing The Innovative Economy

SDGs and SES Levels



THE 2030 AGENDA and SDGs

NEED GOOD LAND SPATIAL INFORMATION

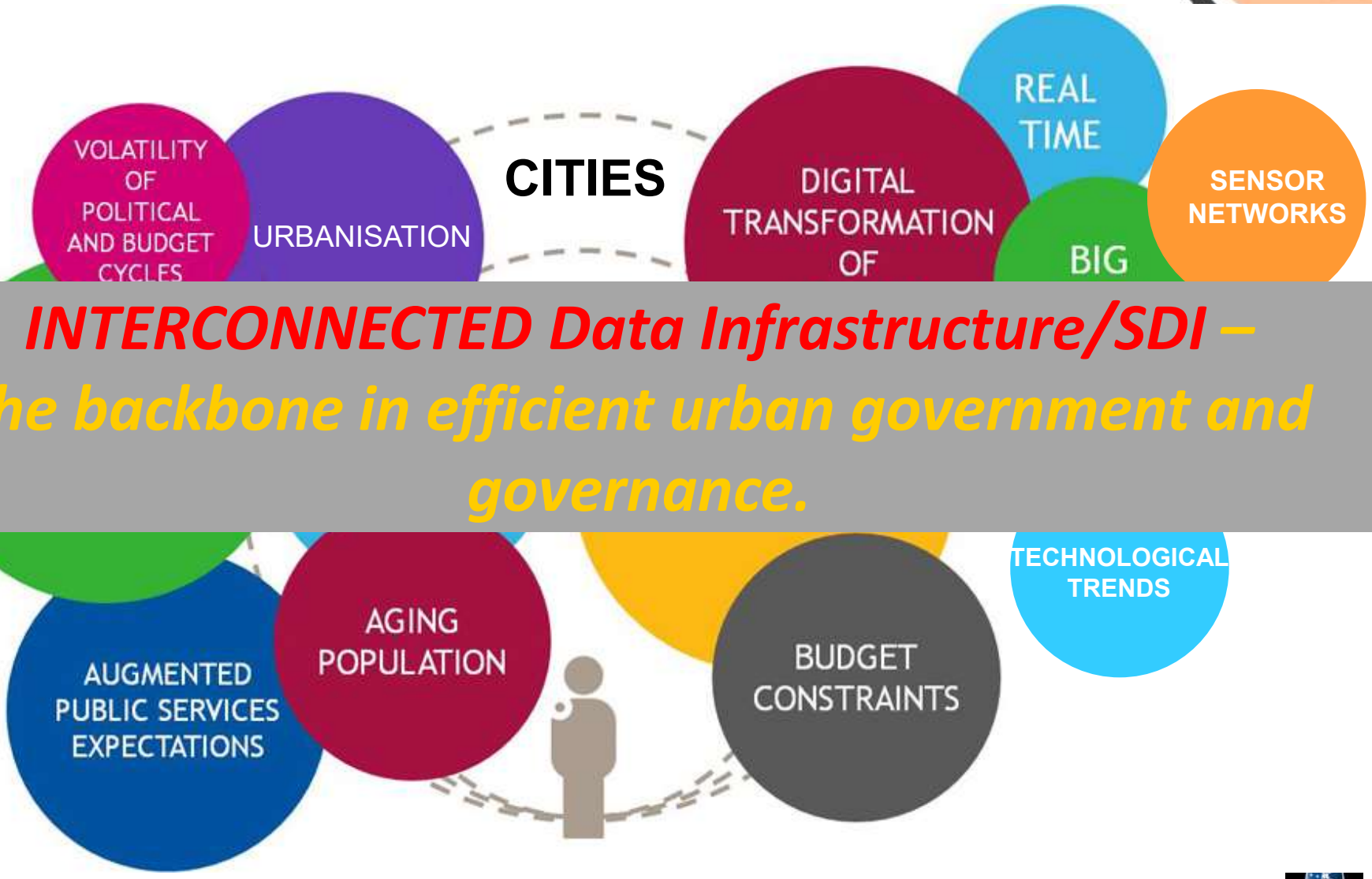
BY 2030…

“Make cities and human settlements inclusive, safe, resilient and sustainable.”

Indicators:

- Housing and basic services
- Transport systems and road safety
- Inclusive and sustainable urbanisation
- Protect and safeguard cultural and natural heritage
- Reduce impact of disasters; Hyogo framework
- Reduce environmental impact of cities
- Access to green and public spaces
- National and regional planning
- Sustainable and resilient buildings using local materials

Complex Urban Interdependencies



INTERCONNECTED Data Infrastructure/SDI – the backbone in efficient urban government and governance.

Multi-scale Analytic Platform

GIS

From an individual property and building level to a city level

This requires spatially accurate map-base and cadastre as a foundation.

Precinct

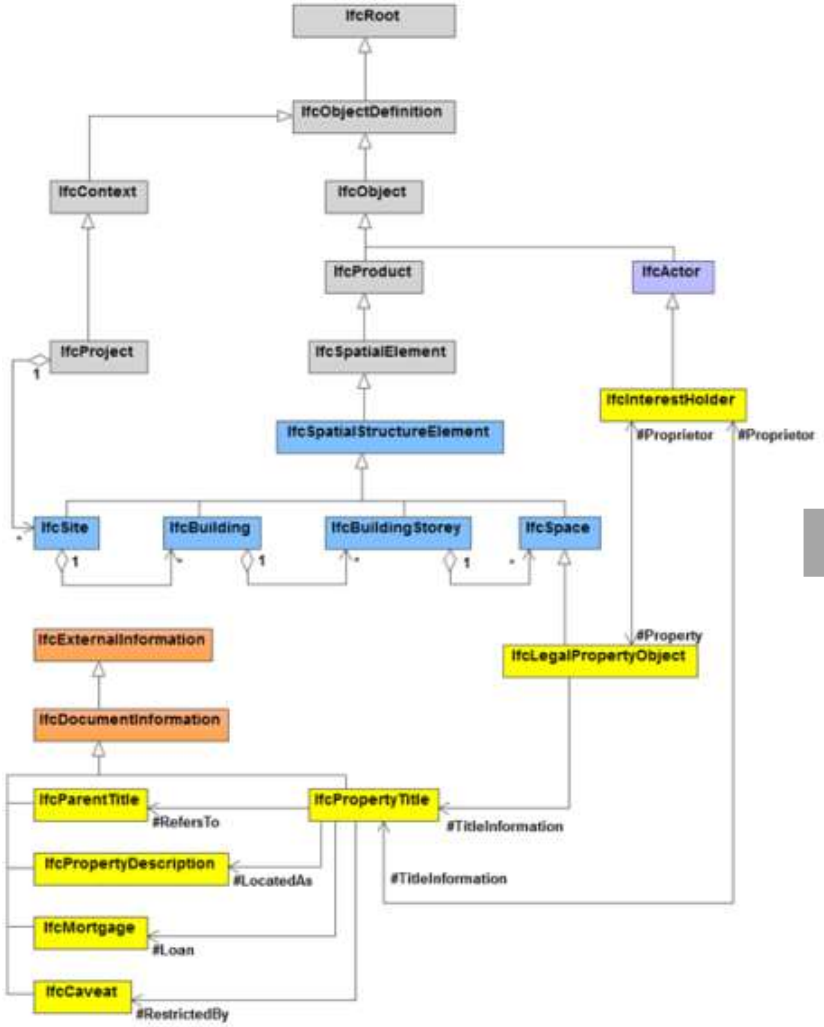
BIM

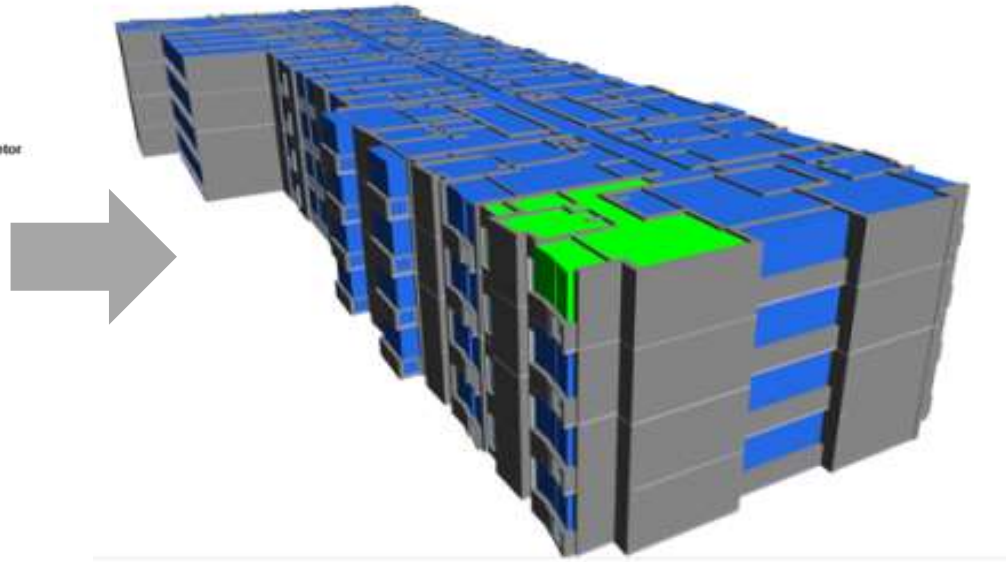
Building

BIM Advances Sustainability & SDGs

Digital Construction

BIM for Urban Land Administration



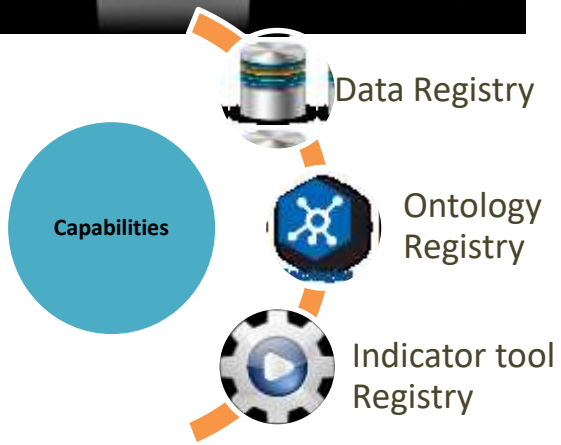


SES & SDGs - Future Actions

URBAN ANALYTICS DATA INFRASTRUCTURE

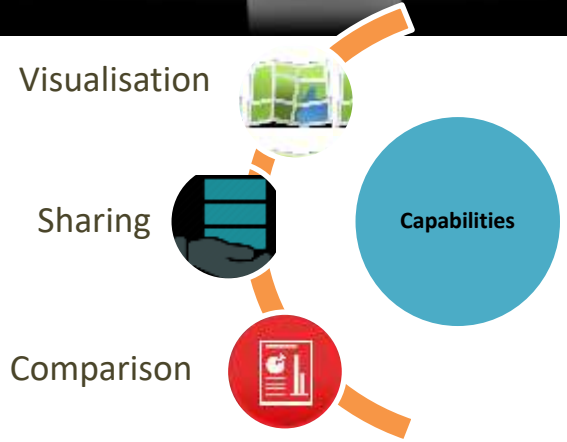
UADI Dashboard

http://apps.csdila.ie.unimelb.edu.au/uadi/index.html

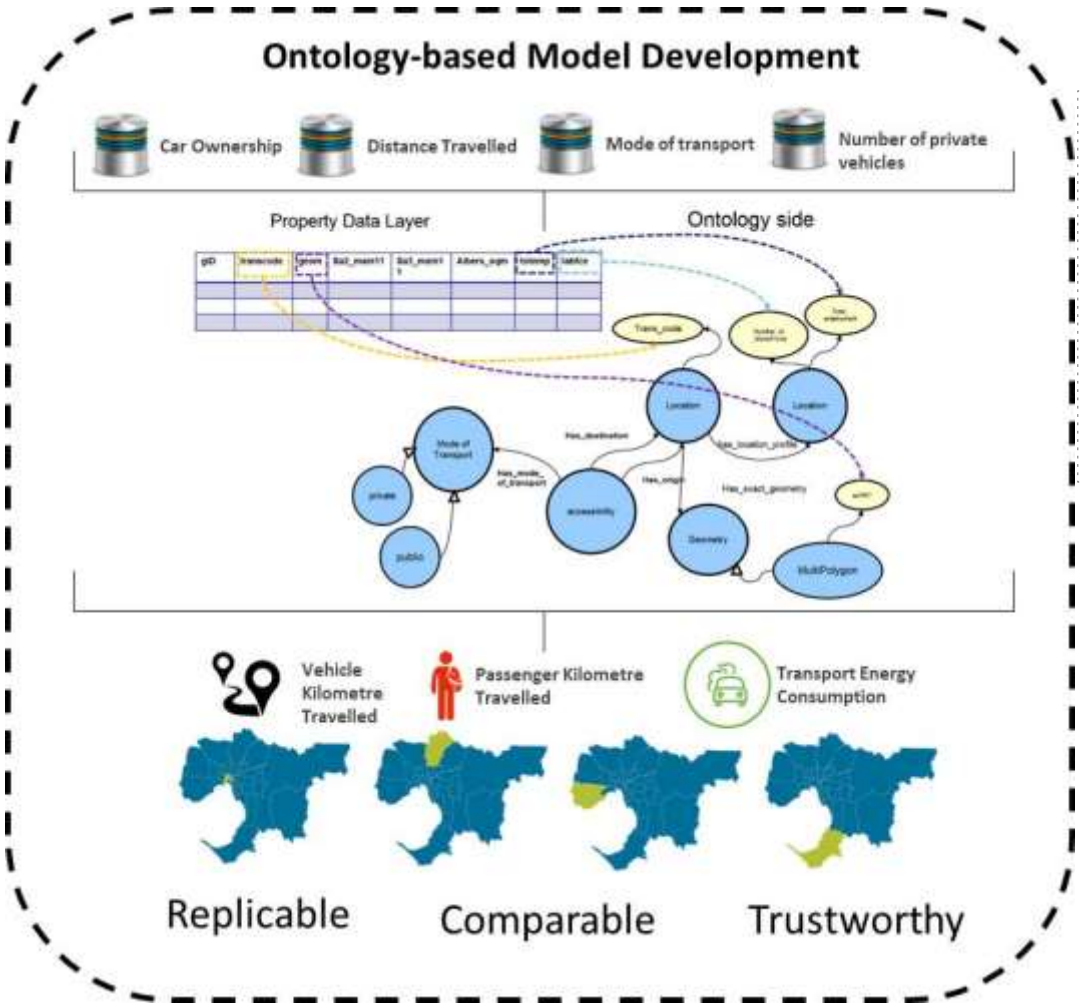


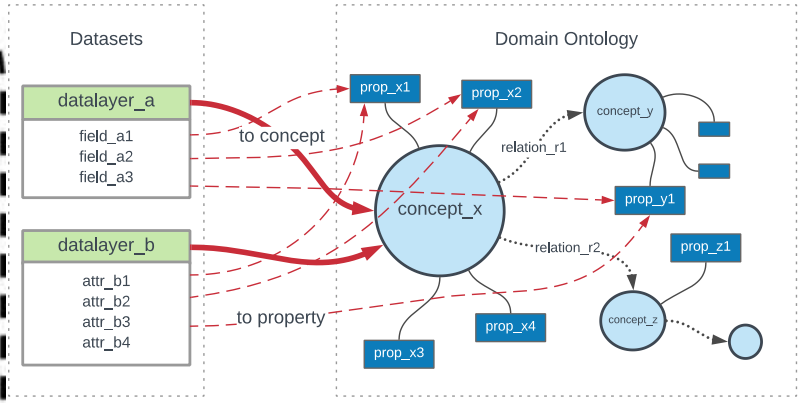
UADI Portal

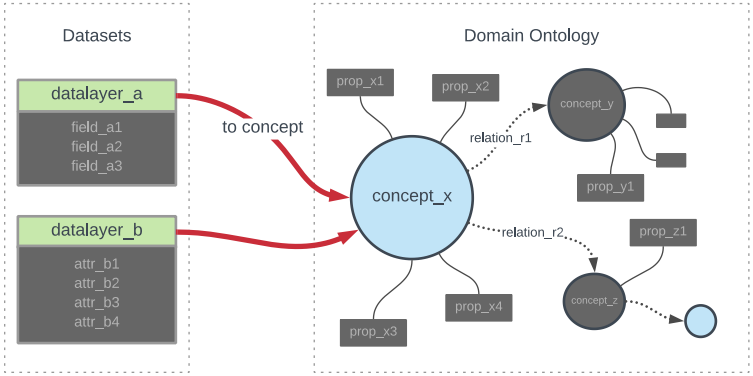
http://apps.csdila.ie.unimelb.edu.au/uadi-portal/index.html



ONTOLOGY-BASED URBAN ANALYTICS







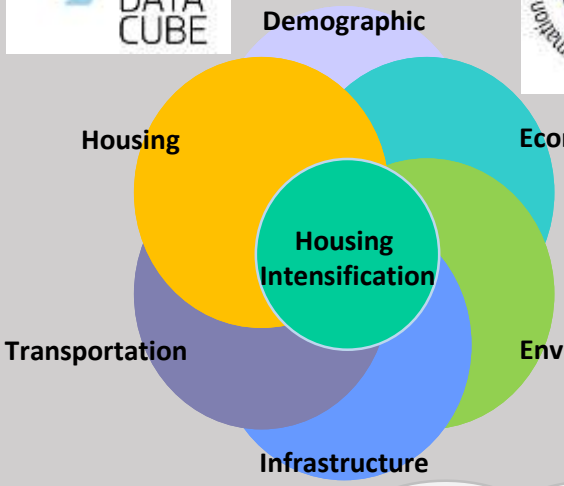
URBAN ANALYTICS DATA INFRASTRUCTURE

Green Space per Capita?

Compact City?

Transit Oriented Development (TOD)

Access to Job?
Access to employment?



Climate Change

Audit

How can we integrate data to do transparent and comparable analysis in different cities?

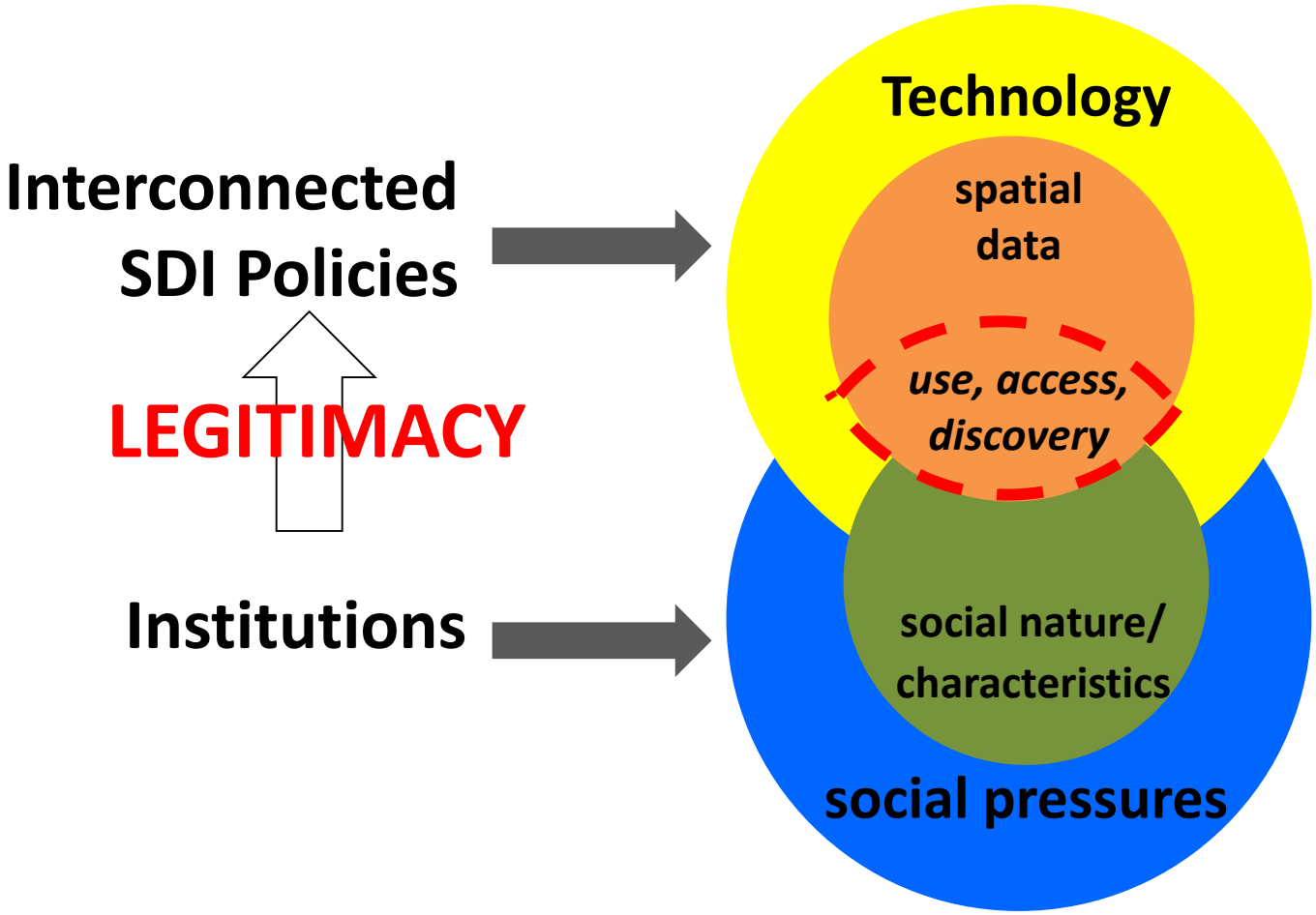
Forecast

Prediction

Monitoring

Australian Government
Australian Research Council

SES: Need for Awareness/Social - Technical



e.g. Giddens, 1984; Pinch and Bjiker, 1984; Barley and Tolbert, 1997; Orlikowski, 2000; Morton et al, 2006; Currie, 2011

SIDE EVENT

Forum on

The SDGs Connectivity Dilemma – *Urban Settlement, Resilience and Sustainability*

The 7th session of the United Nations Committee of Experts on Global Geospatial Information Management, is scheduled to be held from 2 – 4 August 2017

Date: 30 July 2018

Venue: UN Headquarter, NY

8th Session of the United Nations Committee of Experts on

30 July – 3 August 2018, NY, USA

International Symposium and Workshops

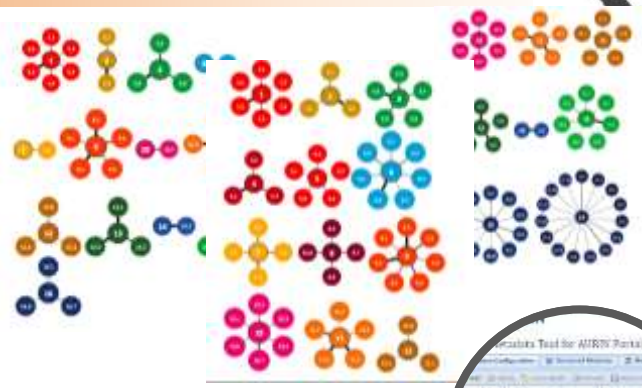
A SMART SUSTAINABLE FUTURE FOR ALL

Enhancing Resilience in a Changing Landscape

24-26 September 2018, The University of Melbourne, Australia

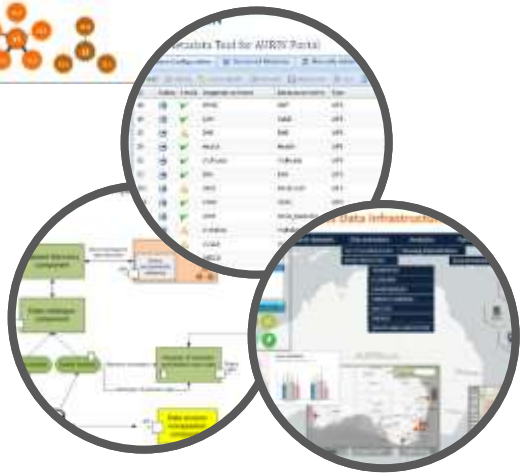
www.ssf2018.com

CSDILA Research Aim Towards SES



Mapping **interlinkages** and prioritize key challenges and opportunities to create **Strategic Road Maps** and **Blueprints**

Develop an innovative **SDG Indicator Registry Infrastructure** utilizing **ontologies** clarify interlinkages between targets and indicators- UNGGIM Academic Network



Improving Resilience and Resilience Impact of National Land and Geospatial Systems

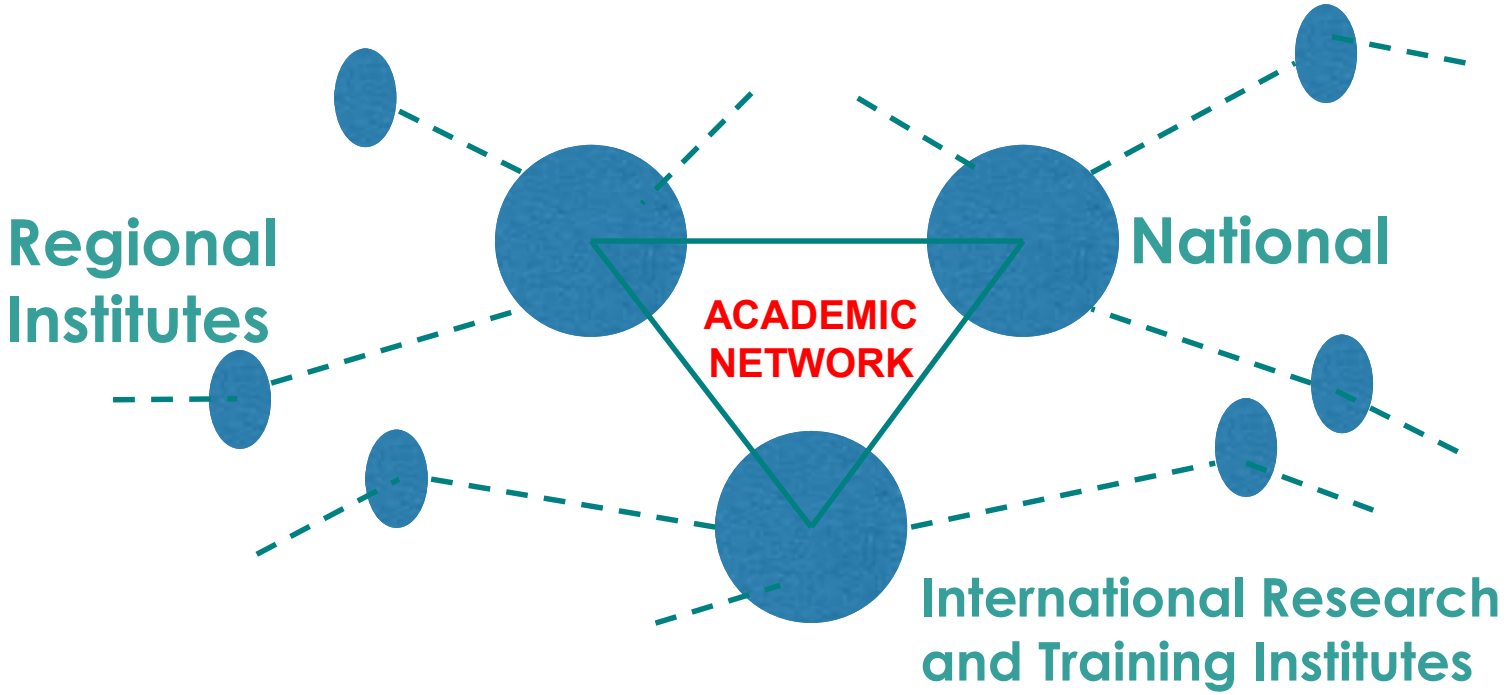
WORLD BANK 2017 – 2018 • Case studies

Using data collected by **Cadastral Template 2** from +50 countries to discuss global trends and propose effective local, national and global solutions

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

UN-GGIM
ACADEMIC NETWORK

Academic Network



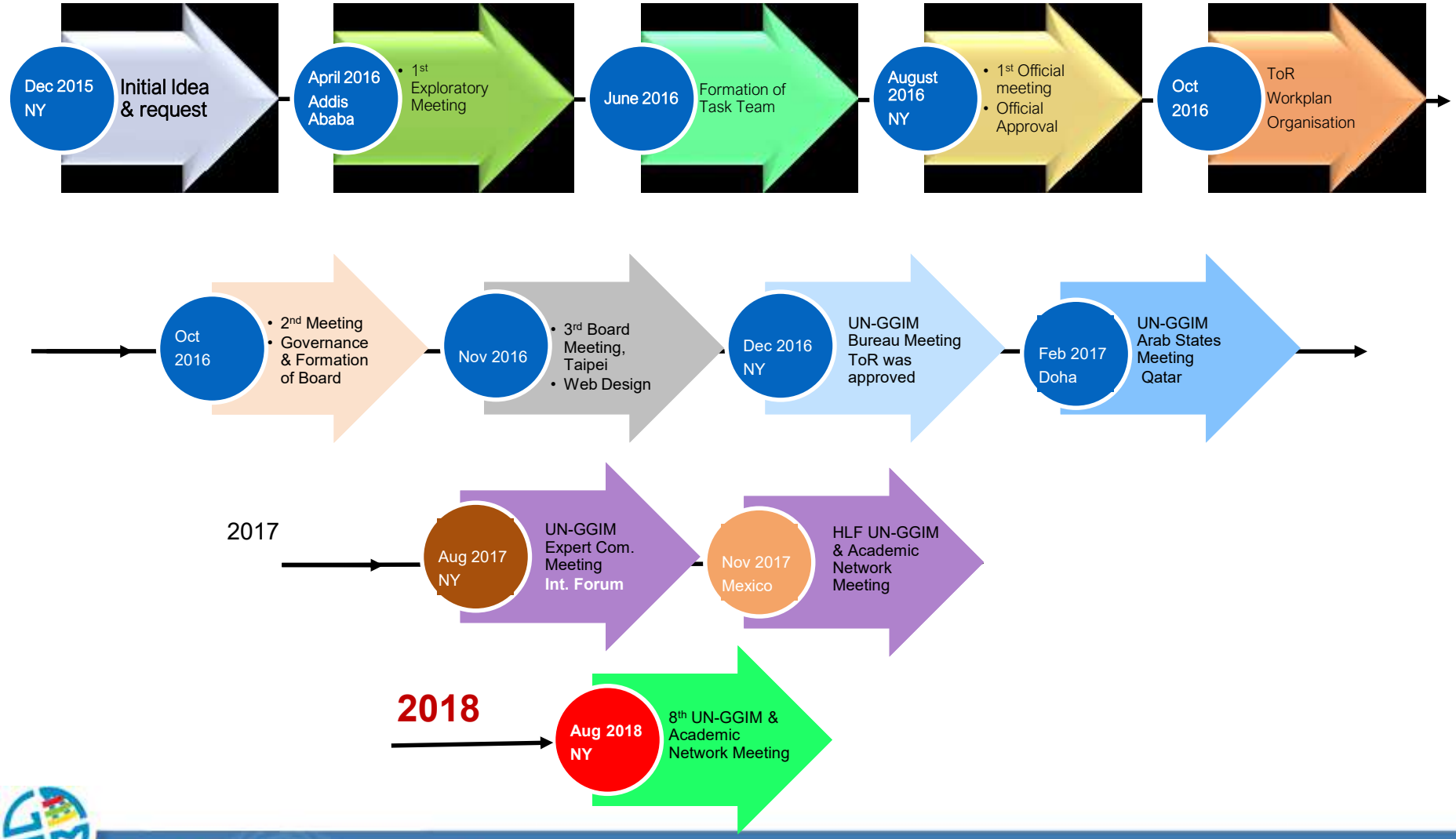
Academic Network

- The **Academic Network** **is a coalition of recognized universities, research and education centers** or equivalent involved in the research, development and training on geospatial and land information and related matters.

- The **Academic Network** **is a platform** for the academic community to contribute and support UN-GGIM in achieving its vision and goals and as **a strategic arm** to empower their process in the form of strategic knowledge, research, education and training,

- The **Academic Network** will provide both **research and education capabilities** for UN-GGIM, its Regional Organisations, WGs and affiliated members to identify and response to challenges and opportunities in which UN-GGIM can achieve their visions.

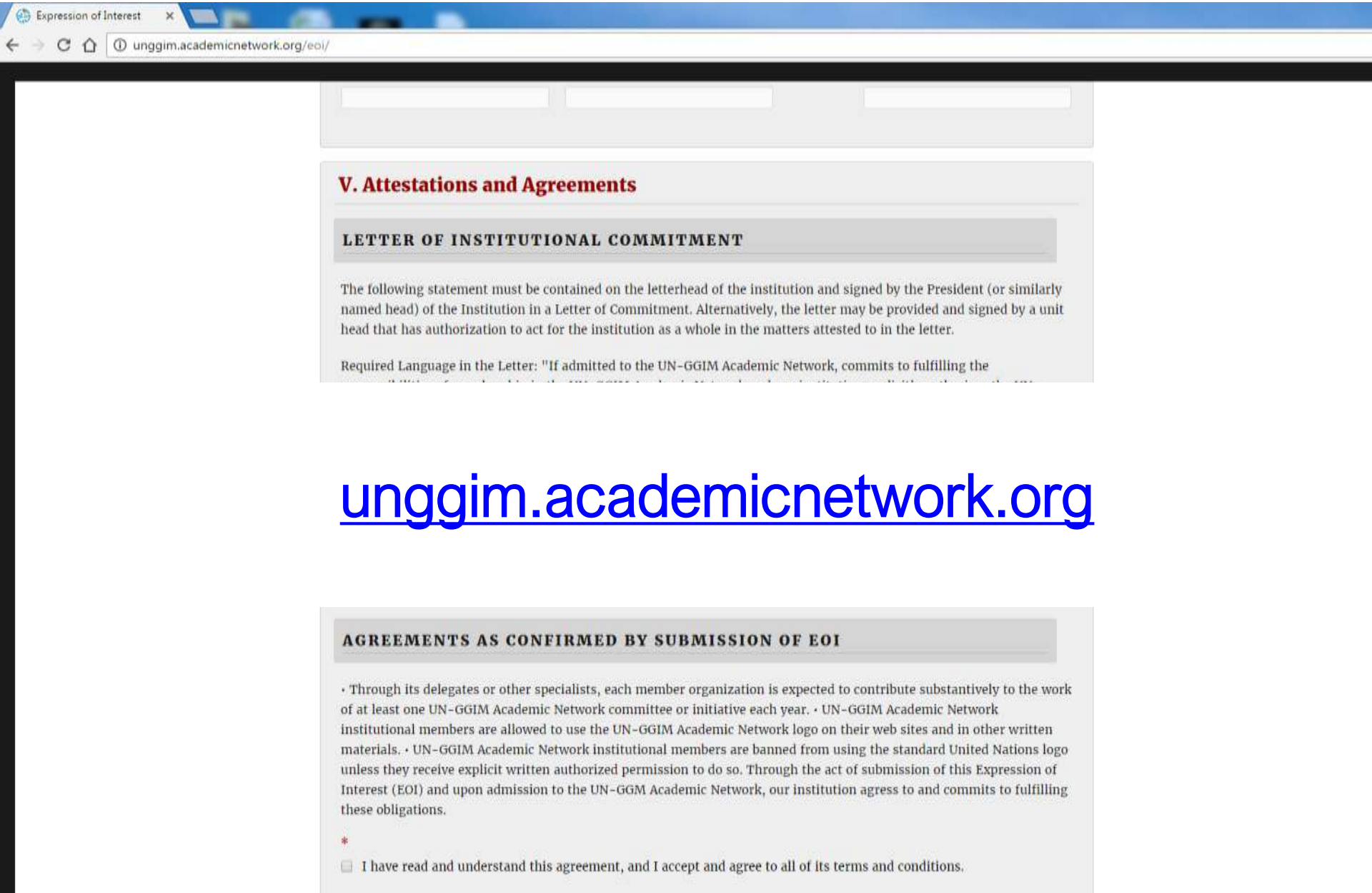
Major Activities and Steps



Current Members

UN-GGIM
ACADEMIC NETWORK

Academic Network Website



unggim.academicnetwork.org

THANK YOU

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www.csdila.unimelb.edu.au