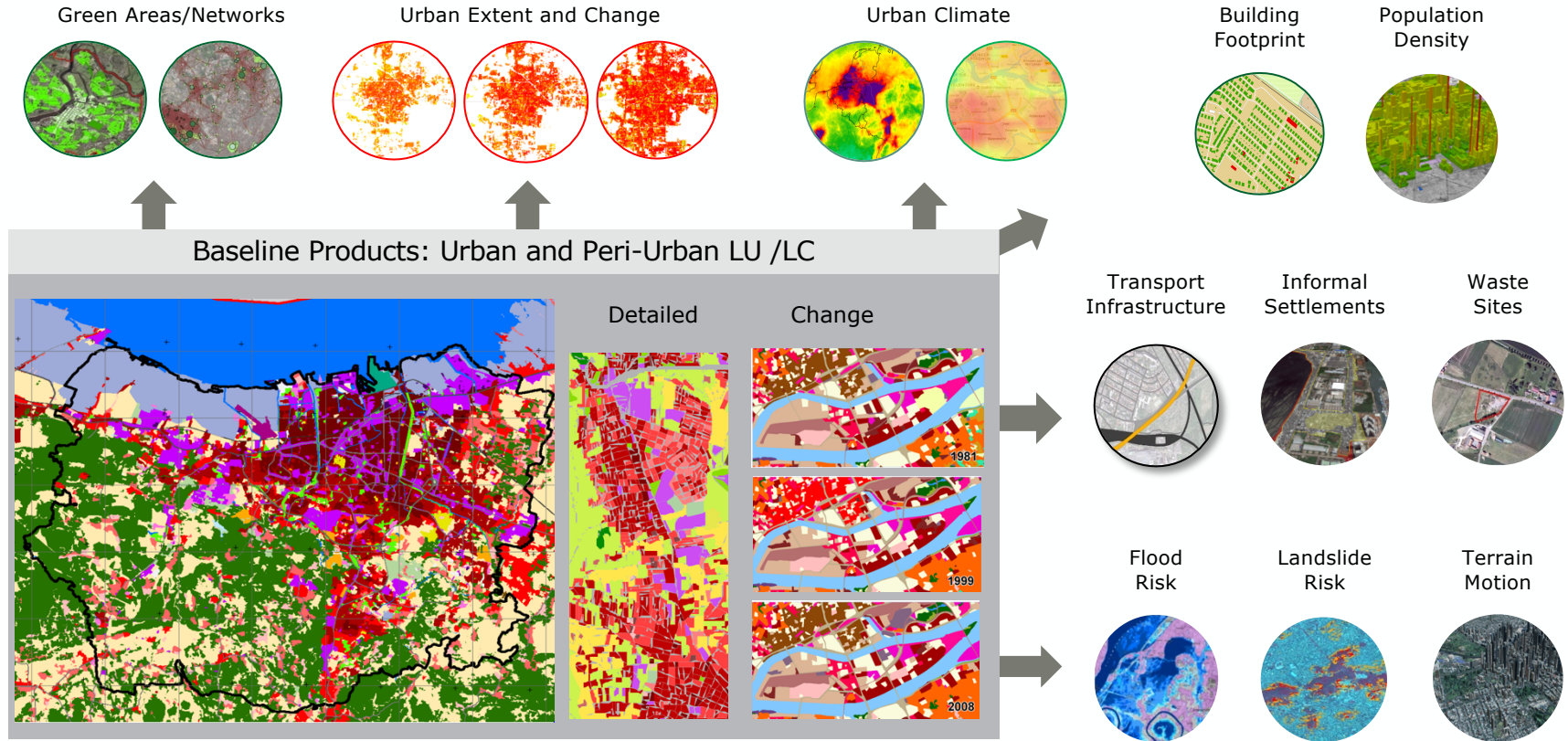


Space for Twin Cities: Digital Cities

Marc Paganini,
Science, Applications and Climate Department
Directorate of Earth Observation Programmes
European Space Agency

EO for sustainable and resilient cities



Advent of steady satellite data streams

>15 TB per day

Mobilise the data revolution

Data are the foundation
of urban development
policies and program
implementation

Building on ICT advances

High Performance Computing Infrastructures



The emergence of "big data" exploitation platforms

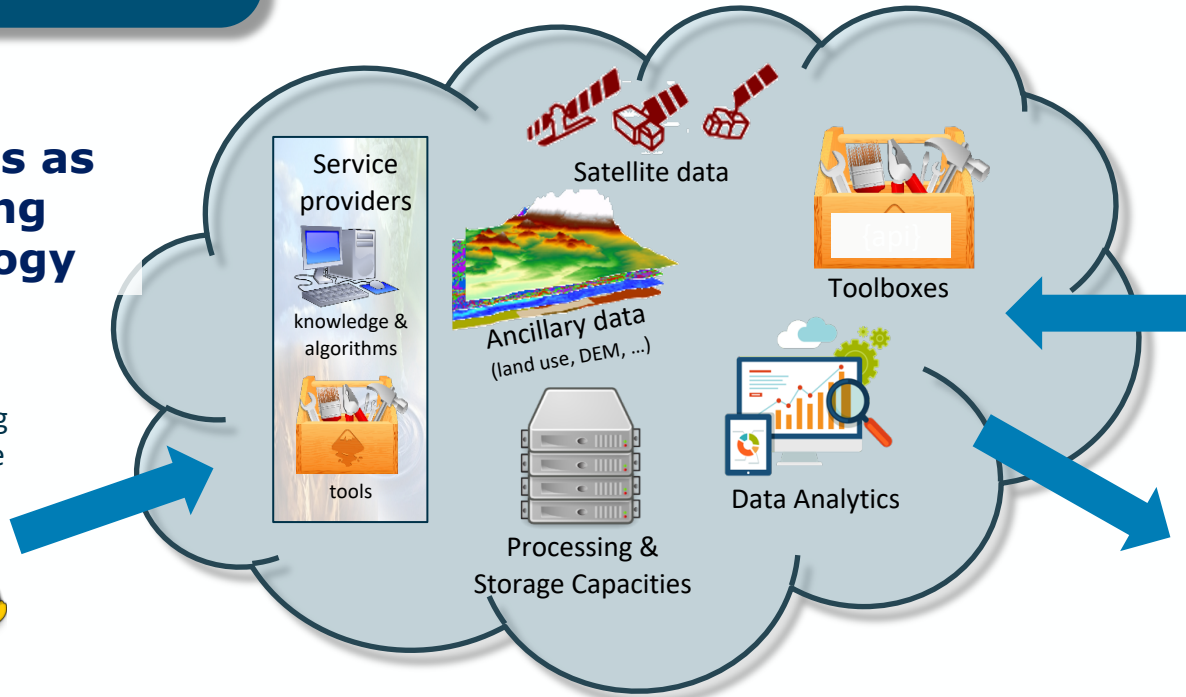
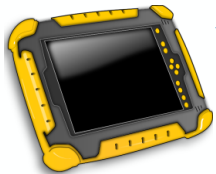
The power of the
Cloud
The power of
Partnerships

"Bringing the users to the data"

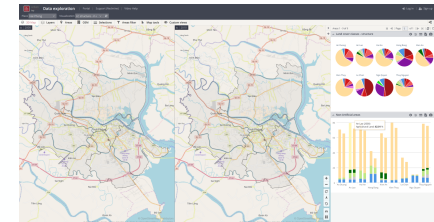
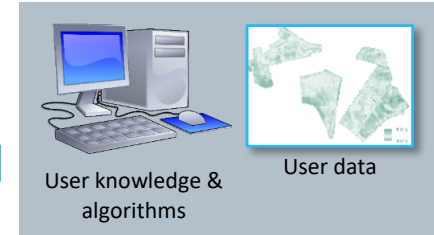
Simplify the extraction of information from GI/EO data
Enable large scale exploitation of GI/EO data
Stimulate innovation with GI/EO data

**Platforms as
enabling
technology**

Mobile data
Crowdsourcing
citizen science



Remote access for users



User generated results

World Settlement Footprint (WSF)

Harnessing the power of
dense satellite data streams

WSF
2015

S1 and Landsat 8

Released
in June 2019

WSF
Evolution

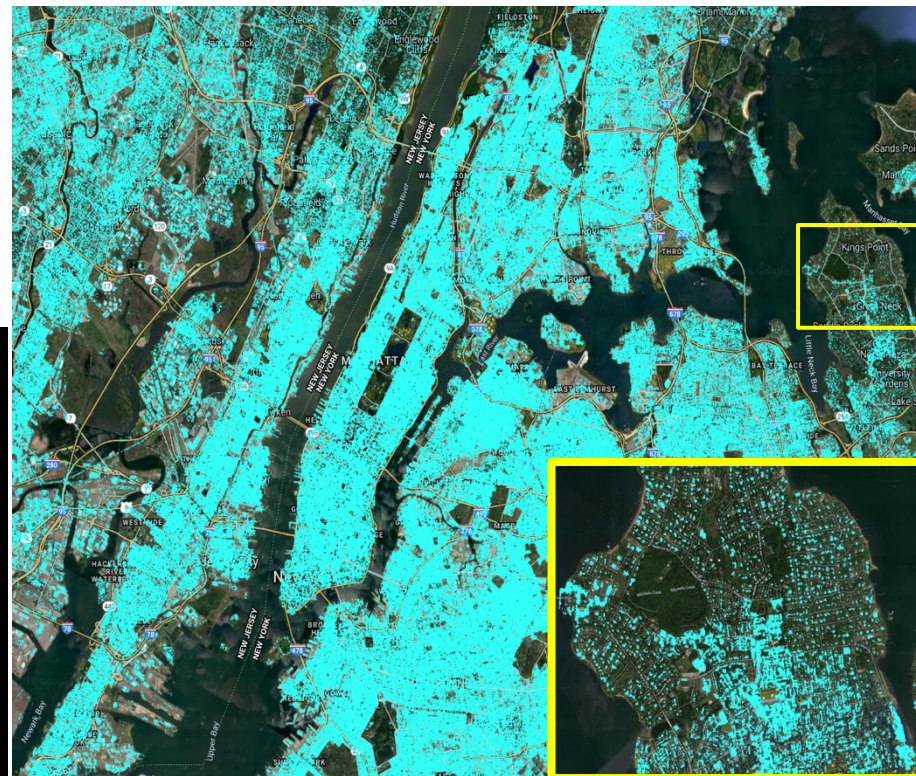
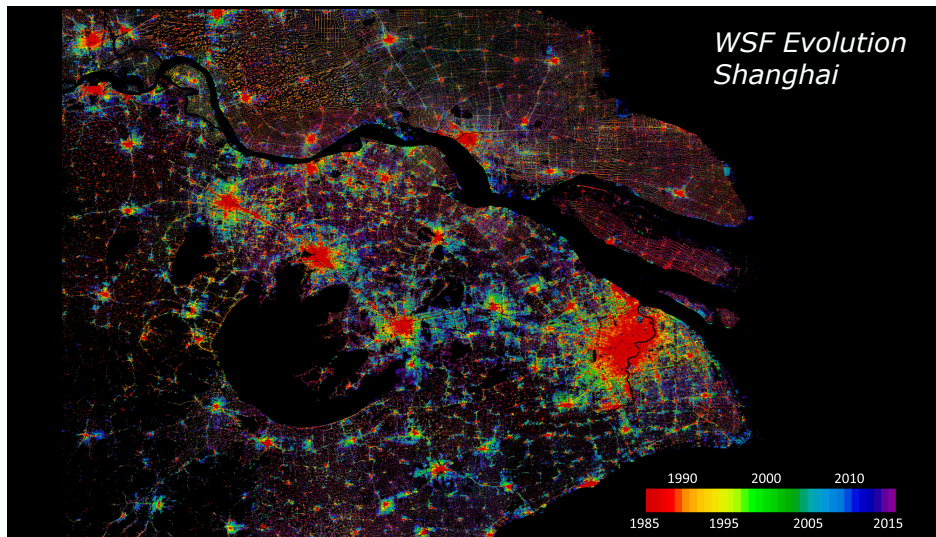
Landsat

To be released
in 2020 Q4

WSF
2019

S1 and S2

To be released
in 2021 Q1

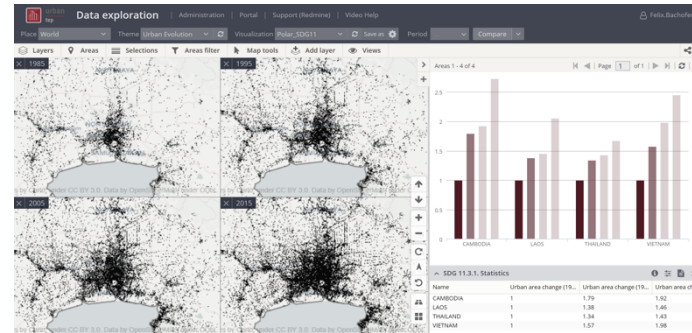


Urban Thematic Exploitation Platform

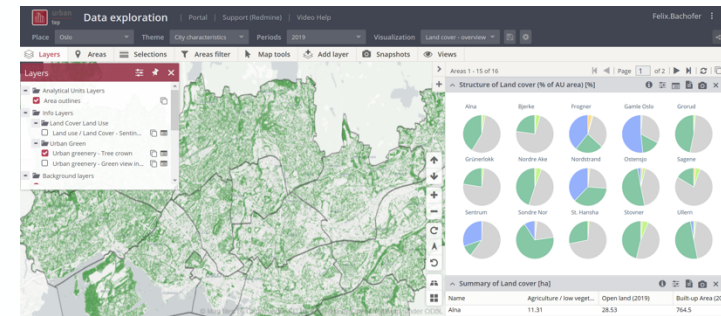
Urban TEP (U-TEP)

a collaborative on-line infrastructure
with multi-source
data processing and data analytics
for urban applications

- ... all **data** and **tools** needed to
- ... to access or generate **actionable information**
- ... in support of **sustainable** and **livable cities**...
- ... available at **one place**



Green Urban Areas
Inventory
Oslo, Norway



WORLD BANK GROUP



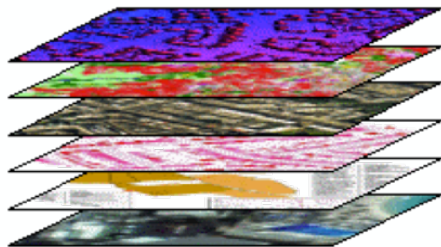
OECD



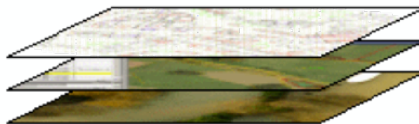
City datacubes for informed decision making



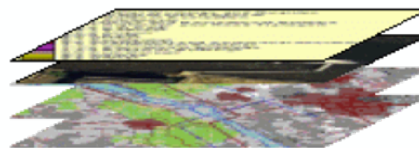
EO data – Sentinels, commercial data, drones, aerial data, ...



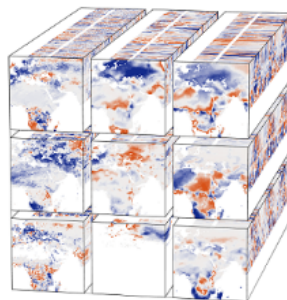
Non-EO data: socio-economic, mobility data, ...



Bring your own data



City data cubes

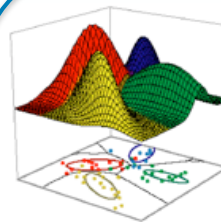


OGC

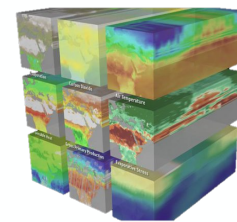
API

PYTHON

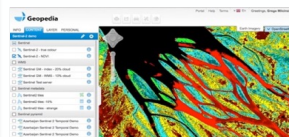
<https://www.eurodatacube.com>



Machine learning



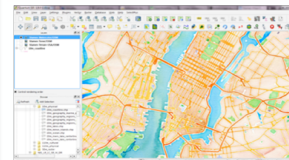
Ad-hoc analysis



Cloud GIS



Web / Mobile apps



Desktop (QGIS, ArcGIS...)



Scripting (R, Python, ENVI...)

Applications

AI4SC

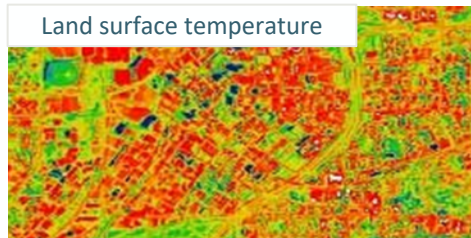
Digital Twin

Urban Pilot



EO-based & Ancillary Data Integration

Land surface temperature



Land subsidence



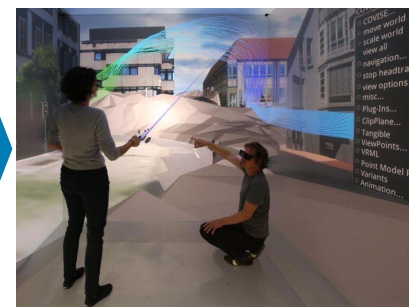
Mobility Information



3D Model Generation and Digital Twin Web Platform Design



Virtual & Augmented Reality



AI Integration

