

Prezentace projektů URBIS a UrbanTEP

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Prezentace projektů URBIS a UrbanTEP

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Prezentace projektů URBIS a UrbanTEP



Informační podpora udržitelného rozvoje měst s využitím dat DPZ

<u>URBIS</u> - produkty zacílené na potenciál měst pro (re-)development

<u>Urban TEP</u> - podpora globální komunity v oblasti udržitelného rozvoje měst

Keywords: urban sprawl, resource efficiency, land take, green infrastructure, densification, land development potential, SDGs



URBIS Project

Overview of the project, its objectives and main achievements

















- FP7 ICT PSP Project: CIP Pilot actions, GA: 621125
- Call Focus: Open data experimentation and innovation, building on geographic information
- Timespan: April 2014 March 2017
- Themes: Open Data from Copernicus programme,
 Information Services for Sustainable Cities
- **Project Objective:** to develop, implement and validate in real environment innovative information services related to urban vacant land, based on open geospatial data, to support planning of European Large Urban Zone's (LUZs) in a sustainable way.





URBIS Project Partners

• **GISAT s.r.o. (CZ)** (Coordinator)



Systèmes d'information à Référence Spatiale (SIRS SAS) (FR)



Universitaet Osnabrueck (UOS) (DE)



- Universita Degli Studi Di Genova (UNIGE) (IT)
- Projektgruppe Stadt Und Entwicklung, Ferber,
 Graumann und Partner (Stadt+) (DE)
- Agence De Developpement Et D'urbanisme Du Grand Amienois Association (ADUGA) (FR)





Subco: David Ludlow - UWE (UK)









URBIS Pilot Cities/Regions

- Moravian-Silesian Region (CZ)
- Greater Region of Amiens (FR)
- City of Osnabrück (DE)







Ostrava

Osnabrück







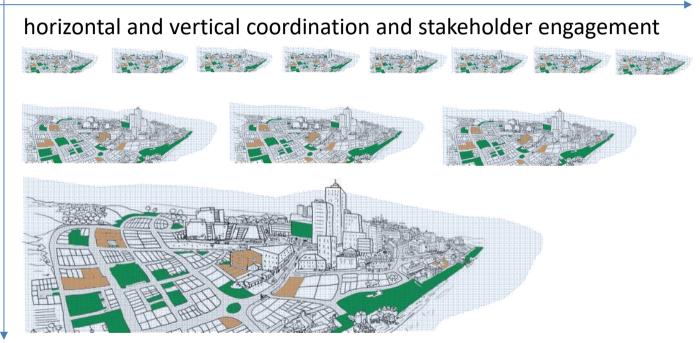
URBIS Project Focus

Open Data (Copernicus programme) & multilevel, harmonized and comparable information basis

European level

Regional level

City level



Services supporting utilization of city potential for (re-)development: greening - green infrastructure improvement and densification / compacting - vacant land and brownfields re-use in the actual city development context urban sprawl & change dynamics



URBIS project phases







Р3

User Requirements Service potential PDA typology

Methodological issues Data potentials vs. limitations Service elements development

prospects

SHB

Service specification Service architecture **Implementation**

Dissemination Sustainability SHB animation



WP3

Other

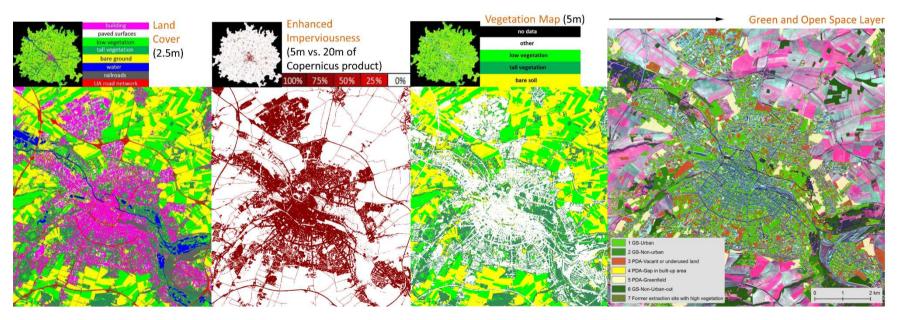
Pilot studies Service validation and adjustment



URBIS Project Achievements



URBIS Methodologies and image based products based on current Copernicus data and services Future looking activities with VHR optical/SAR data







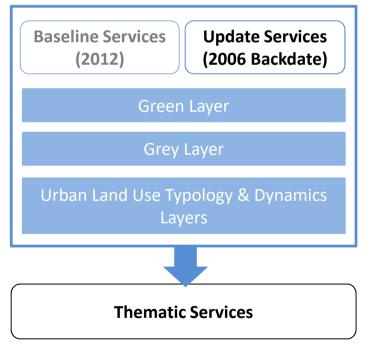


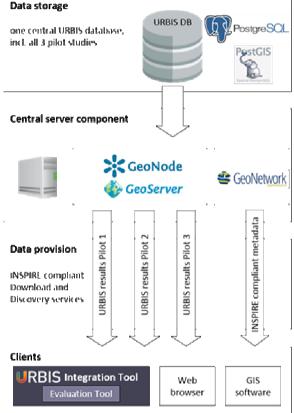
URBIS Project Achievements



URBIS Services methodology and service infrastructure

Interoperability aspect INSPIRE compliancy









URBIS Project Achievements



URBIS Solutions

URBIS Land Resource Management Services:

- Green infrastructure planning and connectivity
- Urban sprawl analysis and dynamics
- Land development potential assessment

URBIS Thematic Services:

- Urban Renewal Cost Estimation
- Flood Risk Assessment
- Solar and Biomass Energy Potentials

<u>URBIS Integration Tool</u>: interactive web-based platform supporting visualization, assessment, evaluation, benchmarking...







Green Infrastructure/Re-Naturing the City

<u>Nature-based solutions</u> to societal challenges are inspired and supported by nature as living solutions. <u>Green infrastructure</u> is a key driver of nature-based solutions in cities. Green infrastructure planning objectives are set in the strategic planning framework that extends across the administrative boundaries from city centre to hinterland at the local level.

<u>URBIS</u> solutions support is focused on

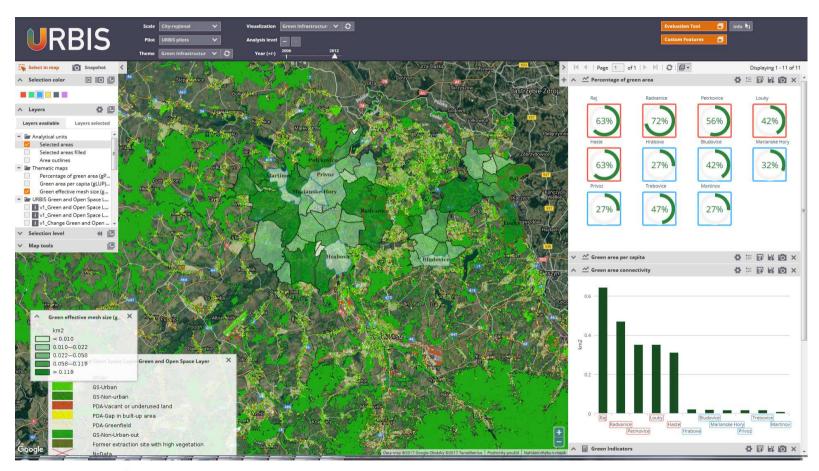
- detection of amount of green areas
- classification of green area types
- describing connectivity of the network of green infrastructures





Green Infrastructure Service

Ostrava(CZ)





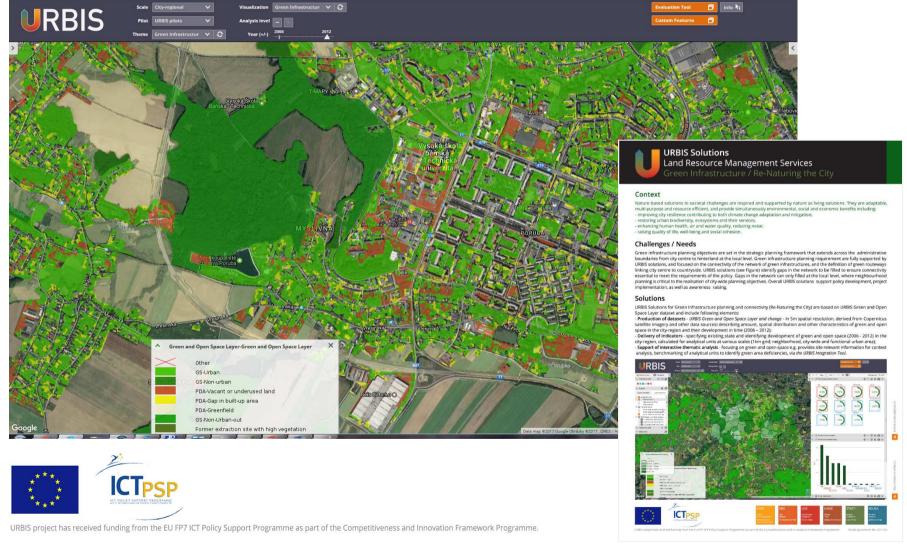




Green Infrastructure Service

Ostrava(CZ)

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Urban Sprawl Dynamics Service

<u>Urban sprawl</u> and the uncontrolled expansion of built development and infrastructures of transport around cities has different impacts depending upon the type of land use involved. <u>Compact cities</u> form critical elements in strategic policy frameworks to counteract urban sprawl.

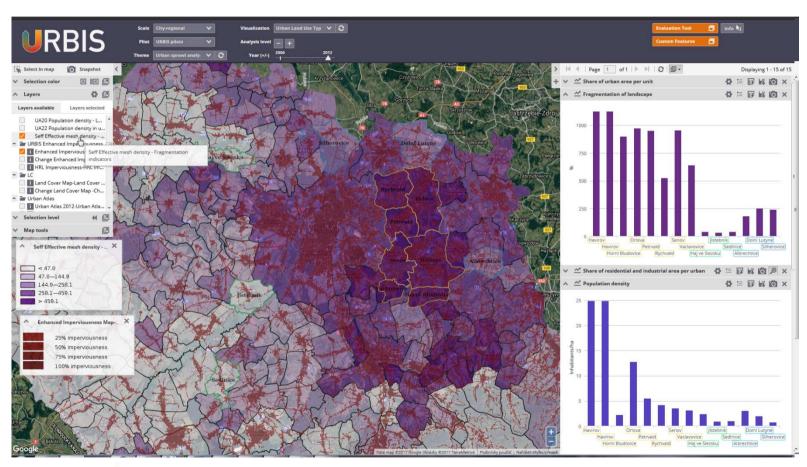
URBIS solutions support is focused on

- detection of rate, intensity and spatial distribution of urban sprawl in peri-urban and the urban hinterland
- classification of urban sprawl causes and effects
- providing information on urban sprawl axes & trends
- provide information on city densification





Urban Sprawl Dynamics Service Ostrava(CZ)

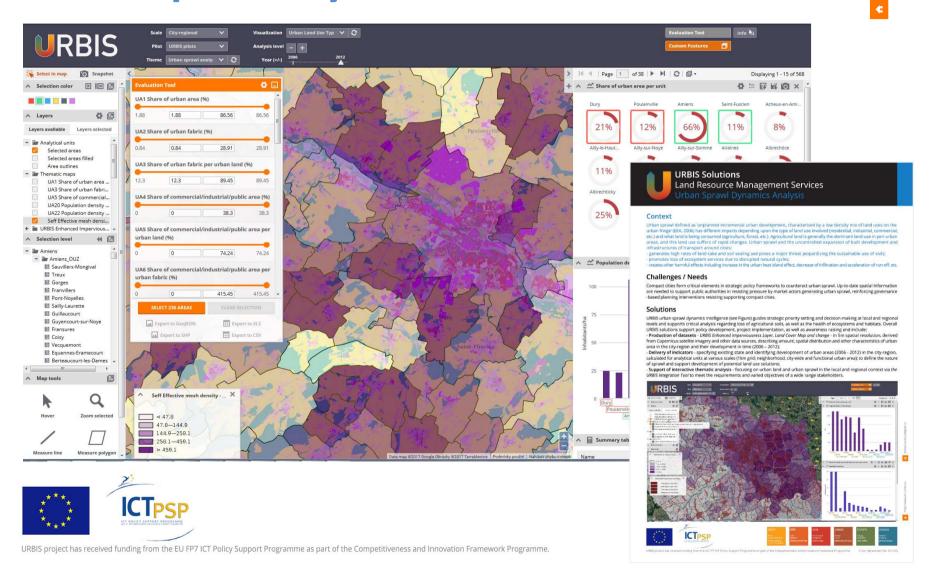








Urban Sprawl Dynamics Service Ostrava(CZ)



Land Development Potential Service

Potential development sites can include for, example, brownfields sites as well as other vacant and under-used areas within the existing urban environment. The re-use of these sites supports sustainable land use management objectives, including the minimization of land consumption and de-sealing initiatives, as well as an opportunity to rethink city planning and improve urban design.

<u>URBIS</u> solutions support is focused on

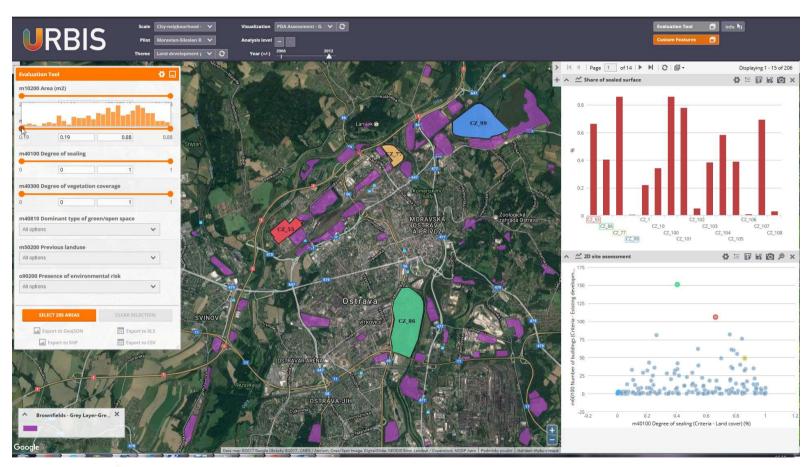
- a first estimate of the type, scale and distribution of sites available for urban redevelopment
- classification of sites development potential
- providing these information in the above city context





Land Development Potential

Ostrava(CZ)



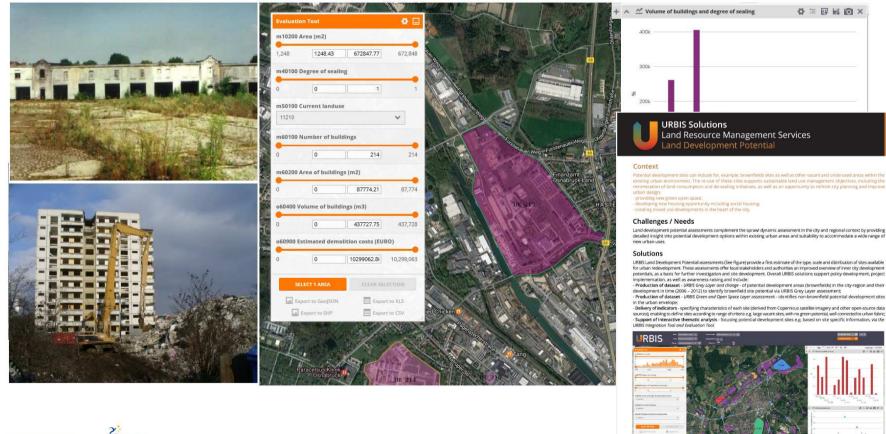






Urban Renewal Cost Estimation Osnabruck(DE)







URBIS project has received funding from the EU FP7 ICT Policy Support Programme as part of the Competitiveness and Innovation Framework Programme.

URBIS Solutions Support Focus

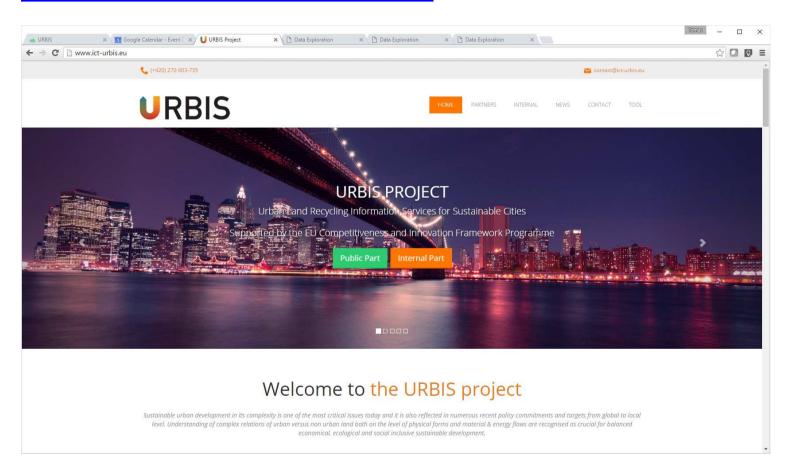
- **Information and intelligence** supporting evidence-based policy making, decision-making and implementation associated with the planning process;
- Assessment and evaluation supporting territorially defined assessment of alternative site development options by provision of land potential information and linking URBIS Solutions to other information/intelligence sources;
- Stakeholder and inter-agency communication fostering communication with urban stakeholders including the local community, as well as between urban and regional development agencies at the local level, and between levels of government from local to EU.





URBIS Project Web Site

http://www.ict-urbis.eu











UrbanTEP Project

Motivations, objectives and main achievements





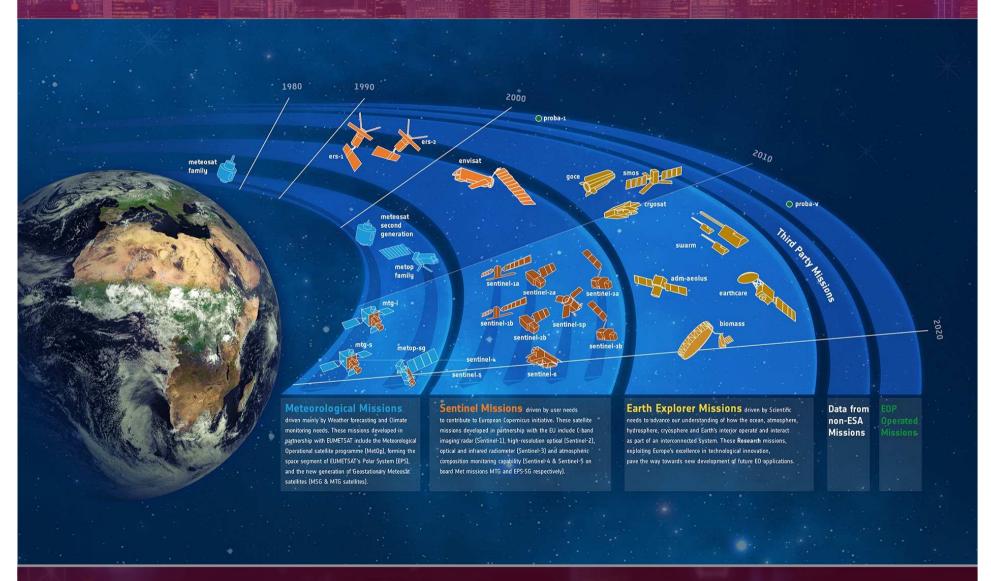






Motivation1 - EO coming of age...





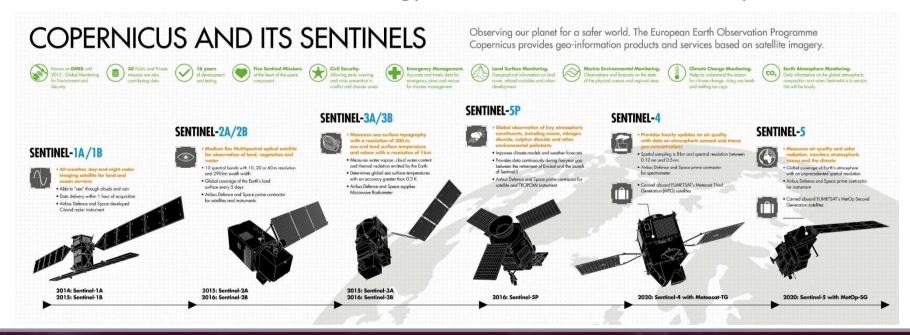
Motivation2 - Copernicus Programme



Free and open data policy for the Sentinel data as the most effective way to develop the downstream market and generate pull on the upstream.

An enormous amount of data generated: e.g. each Sentinel-1 will provide 1.8 TB/day, with Sentinel-2s providing 1.6 TB and Sentinel-3s providing 0.6 TB.

Access to the large volume of generated data is a challenge, but can be solved with the advancement of technology and innovative distribution options.







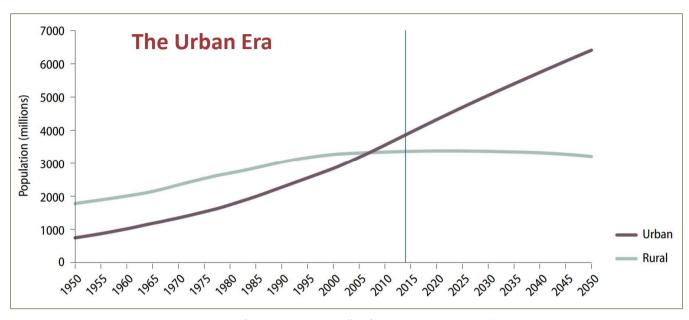






Motivation3 - Urban Development





Source: United Nations Department of Economic and Social Affairs/Population Division 5. World Urbanization Prospects The 2014 Revision.

In future (next 15-20 years) cities will account for:

- 90 % of population growth
- 60 % of energy consumption
- 60 % of the world's population
- 80% of the global GDP

- urban area to double by 2030
- 41 megacities by 2030 (currently 28, 3 in 1975)
- emerging cities will create 50 % the global GDP











UrbanTEP Objectives



To Support Sustainable Development of Cities

- support to monitoring of global urbanization
 - Sustainable urban and rural development requires knowledge about status, properties, cross-linking and dynamics of settlements and their hinterland.
- support assessment of interrelation between various urbanization characteristics
 - Urban forms and growth patterns
 - Use of resources (soil, water, energy, materials)
 - Infrastructure and transport needs (commuting, informal settlements, slums)
 - Ecosystems and biodiversity (flora, fauna)
 - Human health (vulnerability, poverty, diseases, micro-climate, global warming)
 - Thermal comfort (urban heat islands, heat waves)
 - Food security (population growth, migrations, loss of fertile soils)
 - Socioeconomic development (political stability, crime, poverty, labor)





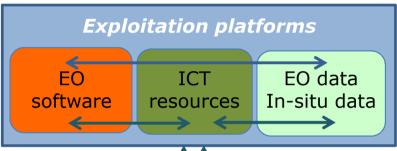






What is an Exploitation Platform (TEP) Cesa

"Move User activities to the Data"





An innovative operations concept: users access a work environment containing the data and resources required, as opposed to downloading and replicating the data 'at home'.

Exploitation platform (or community platform)

=

Virtual open and collaborative environment

bringing together:

- data centre (EO and non-EO data)
- · computing resources and hosted processing
- collaborative tools (processing tools, data mining tools, user tools, ...)
- concurrent design and test bench functions
- application shops and market place functionalities
- communication tools (social network) and documentation
- accounting tools to manage resource utilisation



UrbanTEP Objectives



UrbanTEP aims to provide

Complete work environment (data, software, processing resources) for thematic users community, enabling them to effectively perform data-intensive work

Close to the data which are organized and ready to use

Focus on expert work rather than data gathering or technical obstacles solving

- urban related datasets integration
- new user opportunities how to generate information out of data
- user community exchange and collaboration support
- new business models











UrbanTEP - Key Capabilities



- Web-based modular platform
- High-performance data access
- Multi-mission/multi-source data management
- Generic, high-level computing infrastructure
- State-of-the art pre-processing, analysis, and visualization techniques
- Customizing functionalities for transfer of algorithms/products into services
- Functionalities to support networking,
 communication, and dissemination activities
- Multi-scale focus















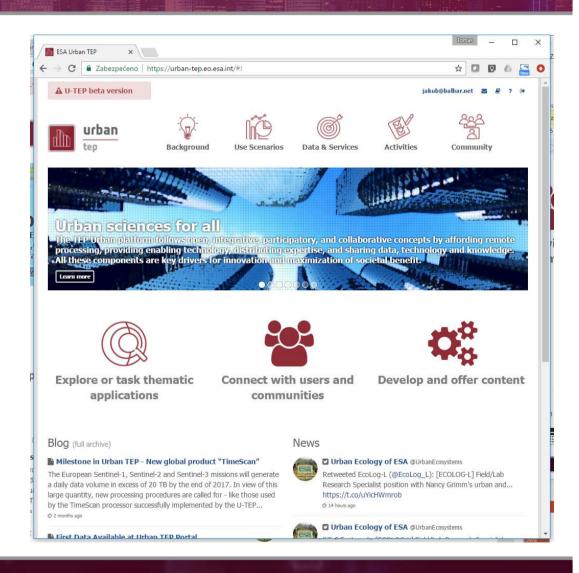




UTEP Platform (beta)

https://urban-tep.eo.esa.int

Access via ESA SSO





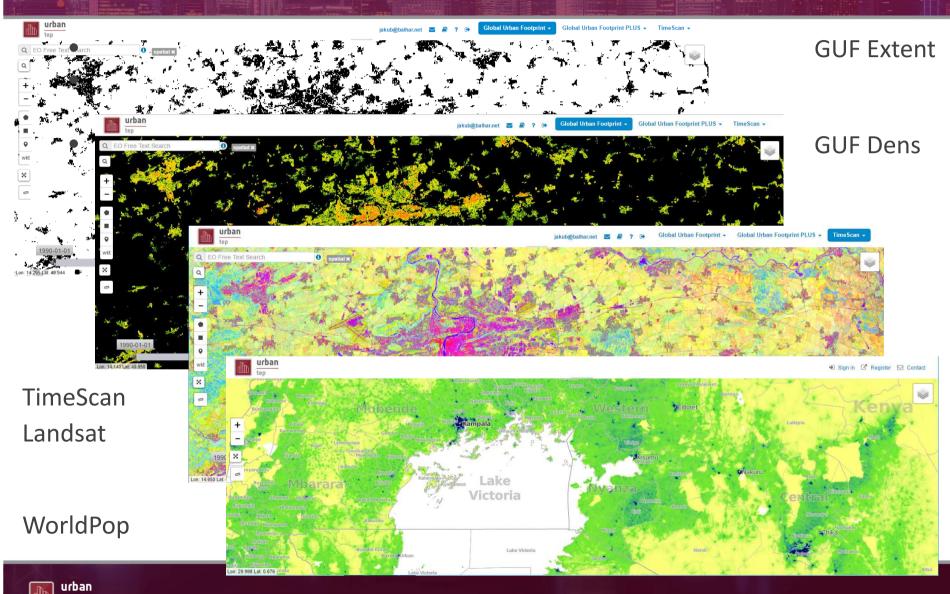
Global datasets integrated

- Global Urban Footprint (GUF) global 12m database of urban extent data
 - GUF Dens global sealing density data
 - GUF Nets global city network data
- TimeScan 500 Terrabytes of global Landsat data condensed
- Geotagged Tweets global geotagged tweets heatmap
- WorldPop global population distribution dataset by GeoData Institute
- Night Lights global inter-calibrated night radiance data by NOAA (DMSP OLS)
- GADM global administrative areas by gadm.org
- UN socio-economic statistics
- World Banks socio-economic statistics
- Early adopters datasets
- more in pipeline

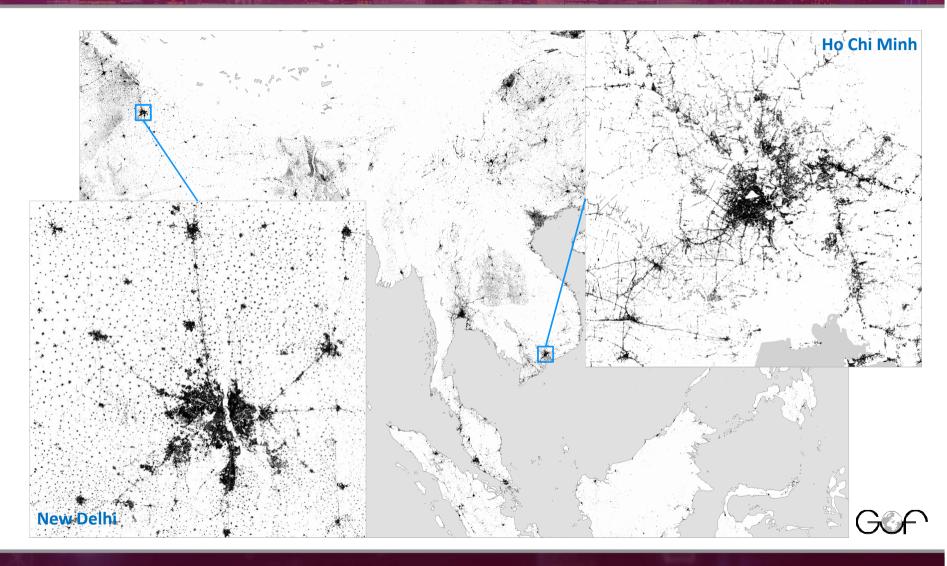




European Space Agency



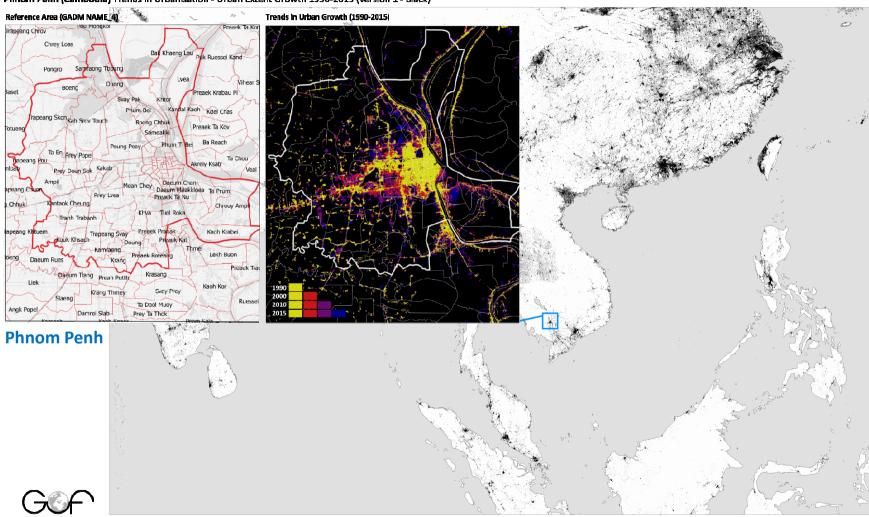








Phnom Penh (Cambodia) Trends in Urbanisation - Urban Extent Growth 1990-2015 (version 1 - black)

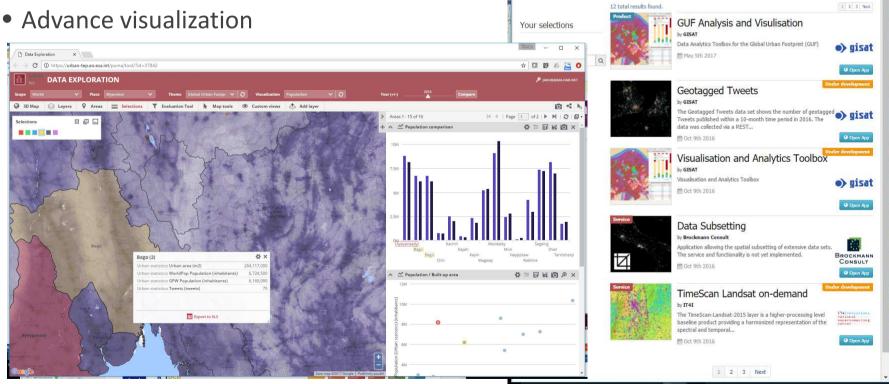






Thematic Application

- On-demand processing
- Integration and analysis



ESA Urban TEP

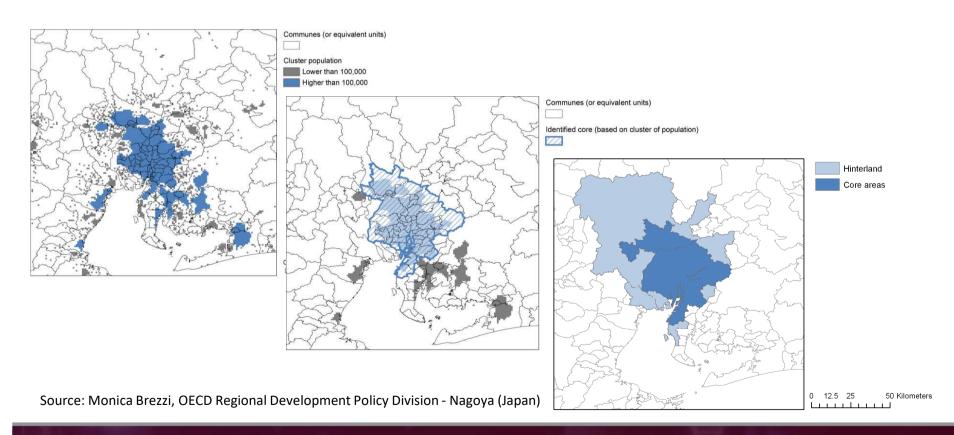
Thematic Applications

← → C ① https://urban-tep.eo.esa.int/#!thematic



Support to a New Definition of Urban Areas

Interactive Functional Urban Areas Definition (following EU-OECD methodology)



UrbanTEP - Current Status



- Pre-operational testing phase
- Restricted contents to grow
- Public contents to grow
- Pilot User: World Bank
- Early Adopters:
 UN, OECD, FAO, Bill Gates Foundation,
 Global Platform for Sustainable Cities
 (GPSC), WorldPop, Columbia State
 University, USA (CIESIN), Sultan Qaboos
 University, Oman, Indiana State
 University, Jean-Louis Weber, EEA,
 ESA and more...

