

# Smart Healthy City Governance

David Ludlow,  
Assoc. Professor European Smart Cities  
University of the West of England, Bristol

# RTPI overview of the issues

- \* Rise of health challenges such as non-communicable diseases combined with urbanisation on an unprecedented scale - cities will determine the health and well-being of the majority of the population in the 21st-century
- \* Environment in which we live, work and spend leisure time – both physical nature of places and the social environment – has an enormous impact on our health and well-being - Health problems such as obesity, chronic heart disease, stress and mental health issues are linked to the urban environment
- \* Lack of effective proactive planning for urbanisation can result in unhealthy places - well planned cities can prevent many unhealthy outcomes – and also promote better well-being, quality of life and opportunity for all

**Promoting Healthy Cities - why planning is critical to a healthy urban future – report of the Royal Town Planning Institute 2015**

<http://www.rtpi.org.uk/knowledge/research/planning-horizons/promoting-healthy-cities/>

# Green City Solutions - promoting societal health and wellbeing

- \* Public parks, pathways, playing fields, cycle paths and jogging tracks encourage outdoor activity and promote good physical health
  - \* Urban vegetation, i.e. allotments, trees, green roofs and private gardens regulate air quality and reduce the 'urban heat island' effect
  - \* Wetlands, grassed areas and urban forests reduce the risk of flooding, sewage overflow and clean water contamination
  - \* Communal parks, village greens and town squares enhance community attachment, social cohesion and a sense of environmental responsibility
  - \* Green spaces in a residential community attract tourism and investment and improve employment and income potential
- 
- \* **The Multi-functionality of Green Infrastructure - EU Report 2012**
  - \* <http://ec.europa.eu/environment/nature/ecosystems/studies.htm>

# Delivering Green Healthy Cities - RTPI assessment

- \* **Develop more integrated strategies for healthy planning**
  - \* Cross-sectoral action is required to improve health, as well as location policies supporting health. In addition, health providers need to work much more closely with urban planners and other infrastructure providers
- \* **Gather greater intelligence**
  - \* Decision-makers need a clearer picture of the social and economic determinants of health to guide decisions and investments. Currently there are limitations and gaps in the evidence that prevent health issues from being effectively incorporated into planning decisions
- \* **Reform and strengthen institutions**
  - \* More effective governance and greater integration of health and other policies are crucial as cities become an important scale at which to tackle health issues - requires powers and strategies at city level promoting better urban health
- \* **Involve professions and communities**
  - \* 'Health' needs to be better understood and included in policy decisions outside of healthcare and public health, including by planners - crucial to involve communities in urban planning

# Delivering Green Healthy Cities – EU perspectives

- \* Integrate nature-based solutions into urban design and planning - promote the flexibility of spaces and services, and stimulate change through adaptability and innovation
- \* Nature-based solutions resonate with urban publics, and citizen empowerment and citizen-driven innovation are crucial to capitalising on the potential benefits of nature-based solutions for urban social regeneration
- \* New forms of stakeholder engagement and citizen participation in urban design and planning must be explored in order to harvest these innovative capabilities, resources and cooperation.
- \* Particular attention must be paid to the involvement of society and individuals in restoration and other nature-based solutions, with the aim of re-connecting people with nature, raising awareness of societal benefits, and creating a public demand for healthy natural environments
- \* **Nature-based solutions and Re-naturing cities**
- \* <https://ec.europa.eu/research/environment/index.cfm?pg=nbs>

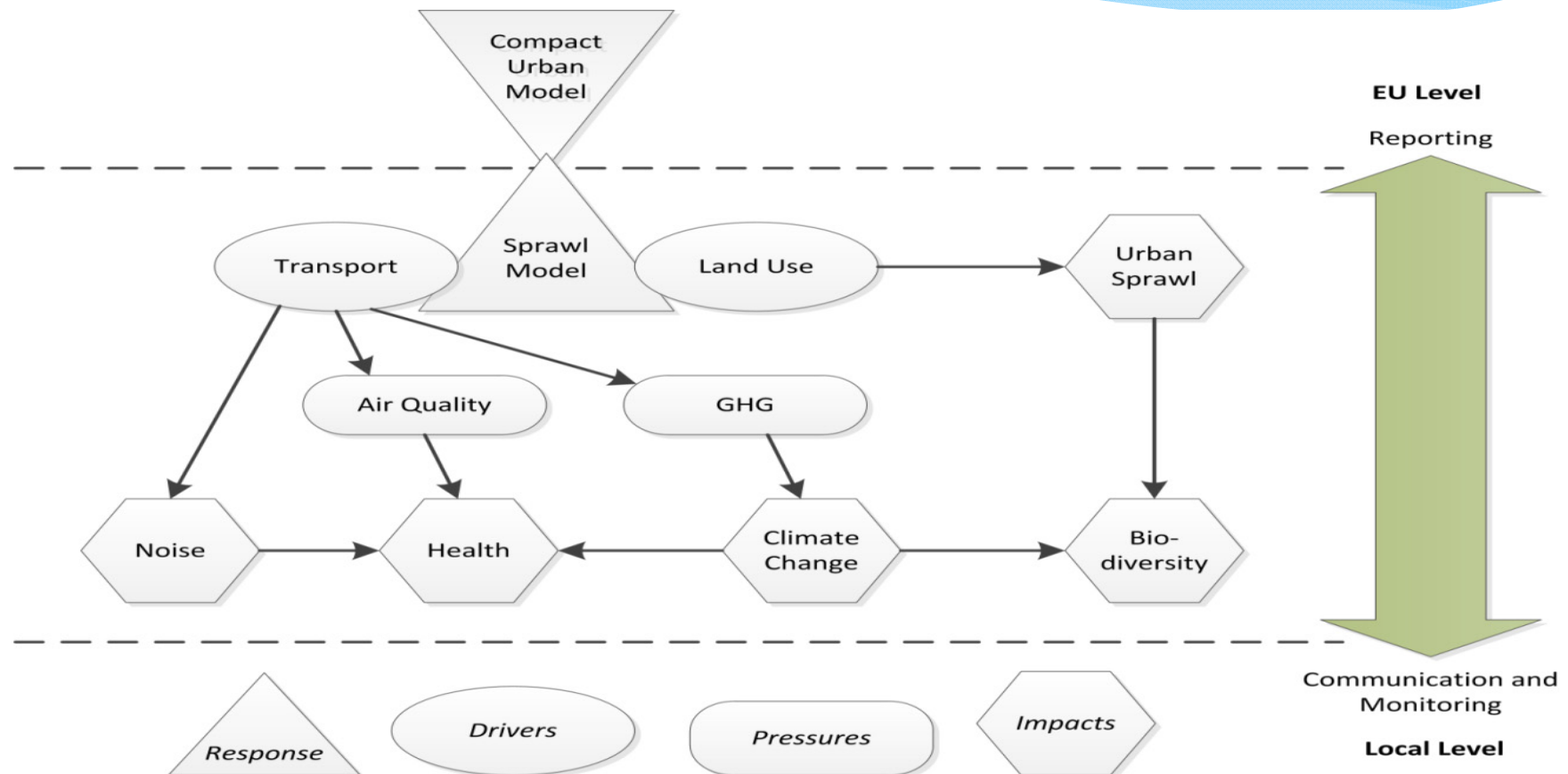
# Smart Healthy City Governance – EU project solutions

- \* **Smarticipate** – Smart Services for Calculated Impact Assessment in Open Governance (Horizon 2020, European Commission, 2016 – 2019)
- \* **URBIS – urban vacant land applications for urban atlas** (ICT-PSP , European Commission, 2014 – 2017)
- \* **DECUMANUS – Earth observation data supporting smart city applications for integrated urban governance** (FP7 space call, European Commission, 2013 – 2016)
- \* **urbanApi - urban planning tools and intelligence for integrated urban governance** (FP7 DG INFSO, European Commission, 2011 - 2014)
- \* **HUMBOLDT Integrated Project – Development of a Framework for Data Harmonisation and Service Integration** (FP6 DG Research, European Commission, 2006 – 2010)
- \* **BOSS4GMES integrated project – building operational sustainable services for GMES** (FP6 DG Research, European Commission, 2006 – 2009)
- \* **GSE Land – Urban Atlas** (European Space Agency 2006 – 2008)
- \* **IntelCities Integrated Project** (FP6 DG Research, European Commission, 2004 - 2006)

# Health and urban management challenges

- \* **Urban Management – multiple challenges**
- \* Healthy cities - and also.....
- \* finite resources and resource efficiency
- \* climate change impacts and environmental vulnerability
- \* demographic change and social cohesion
- \* economic and financial crisis
- \* Hence management complexity and **need an integrated governance to manage this complexity**
- \* **Drivers of change – global and local**

# urban complexity + integrated urban management





# Policy “Win – Win” potentials

- \* **Nature-based solutions for Healthy cities are adaptable, multi-purpose and resource efficient and provide simultaneously environmental, social and economic benefits:**
- \* In addition to improvements to human health and well-being – also  
.....
- \* improve city **resilience** to **CC** and natural **disasters** contributing to both **CC adaptation** and **mitigation**;
- \* restore urban **biodiversity, ecosystems** and their **services**;
- \* Improve air and water **quality**, reduce **noise**;
- \* improve **quality of life**, and **social cohesion**....
- \* **Hence offer prospect of substantial policy co-benefits and win-win solutions – *question how to unlock the potential***

# urban planning requirements

- \* Urban planning is central to managing complexity (socio-economic and environmental) in territorial context - and securing win-win policy solutions
- \* **Requires:**
  - \* integration of information and analysis (cross departmental/multi-scalar)
  - \* Information, intelligence and communication
  - \* assessment methodologies, visualisation, simulation
  - \* engagement of stakeholders and co-production of plans (bottom up)
- \* **All supported by ICT** tools and methodologies
- \* **Intelligence - communication – assessment - decision**

# spatial planning - operationalising intelligence

- \* **Intelligence - communication – assessment – decision**
- \* **policy cycle** – operationalising and mobilising intelligence - integrating governance with inter-agency communication
- \* **assessment** of socio-economic and environmental impacts of alternative territorial development options
- \* **stakeholder engagement** regarding alternative development options (co-design and innovation in solutions)
- \* **political decision making** and plan implementation (democracy, legitimacy, trust)

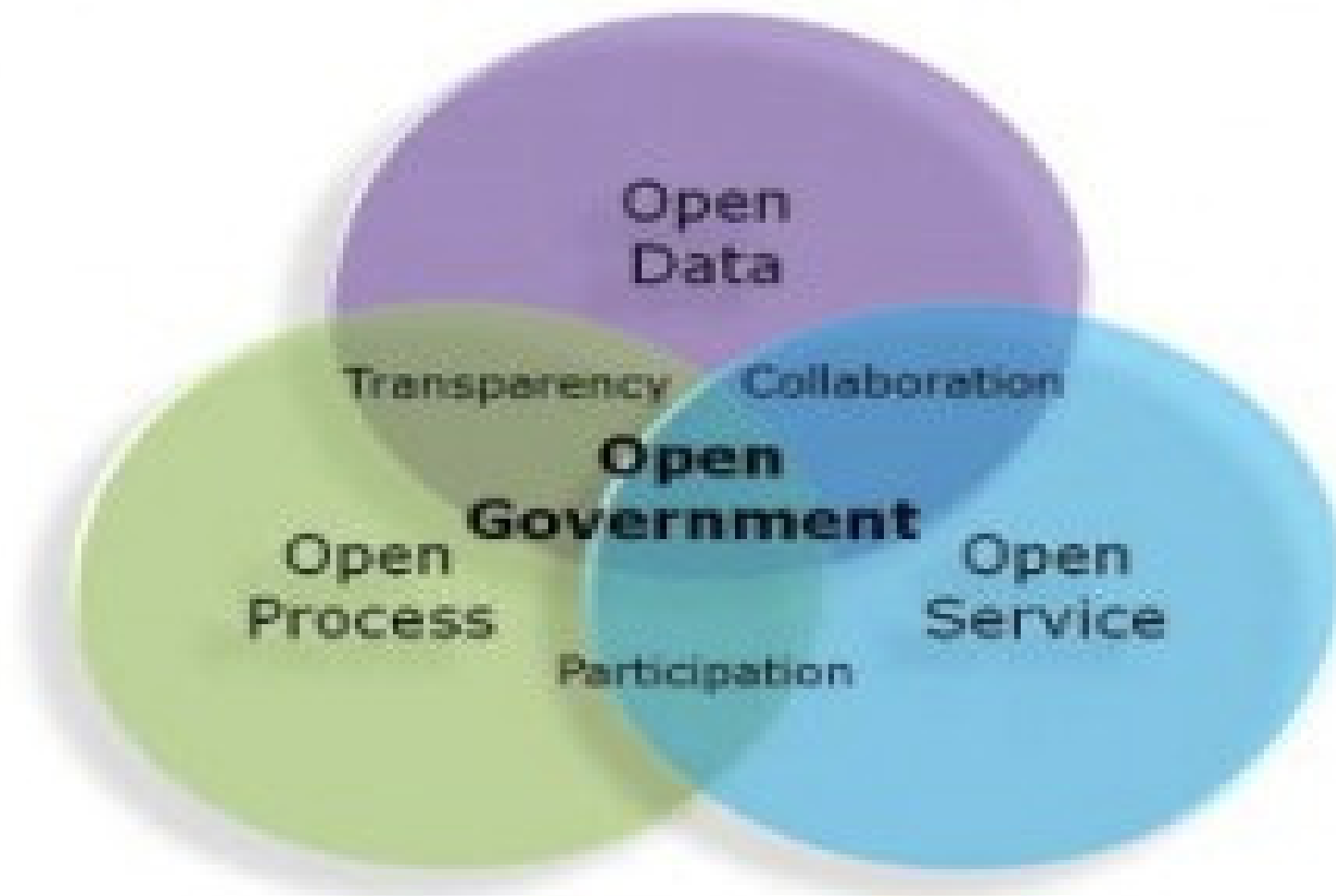
# planning cycles – operationalising intelligence



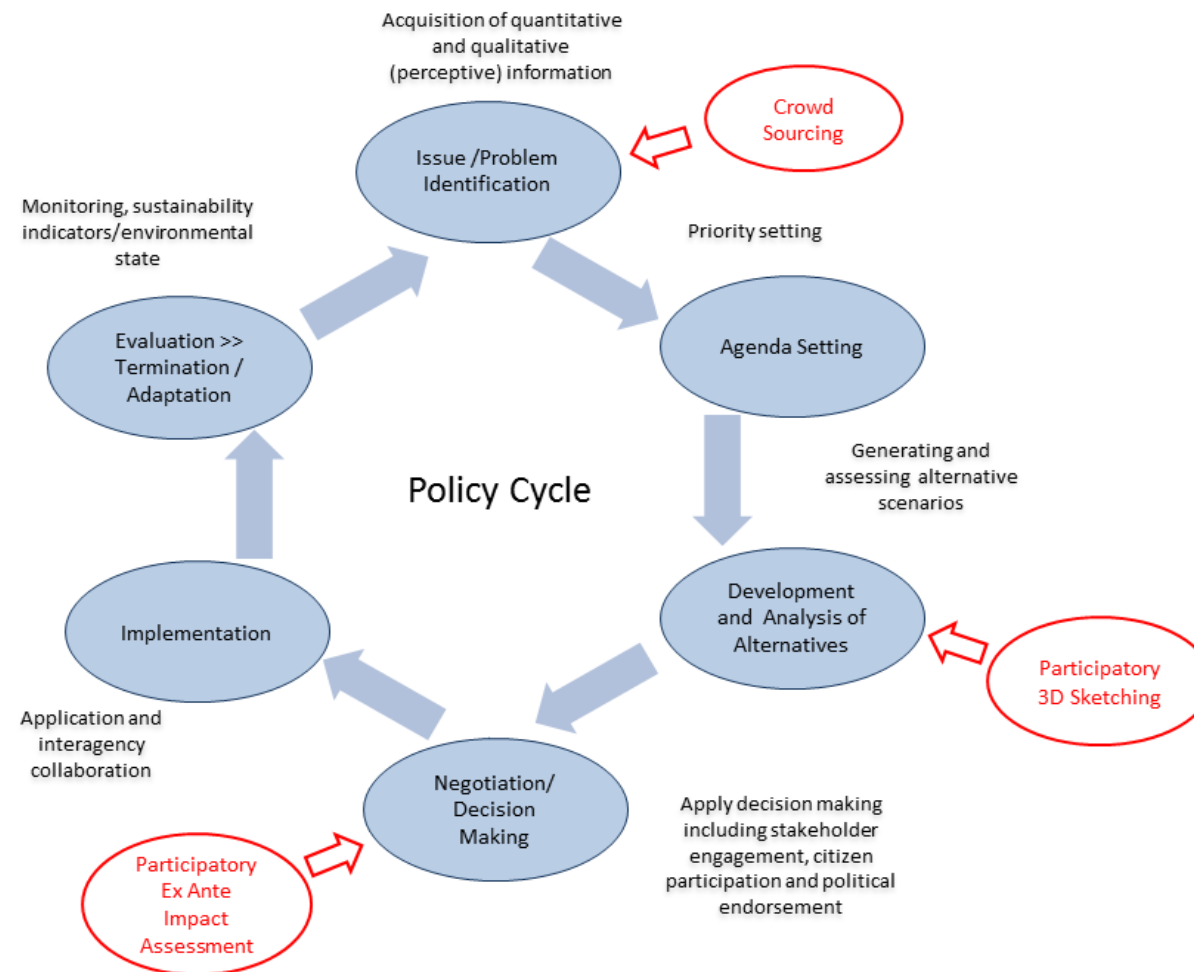
# Smart Open Governance - principles

- \* **Introducing smart solutions.....**
- \* **Open government** paradigm driven by opening public data and services and facilitating collaboration for the design, production and delivery of public services
- \* Making government processes and decisions open to foster citizen engagement improving the **quality** of decision-making and promoting greater **trust** in public institutions
- \* **Open processes**, activities and decisions enhance **transparency**, **accountability** and trust in government. ICT facilitates bottom-up, participative and collaborative initiatives that tackle specific societal problems
- \* **Open government** improving the **efficiency, effectiveness and quality** of public services by introducing new processes, products, services and methods of delivery enabled by ICT

# Smart Open Governance – driving ICT investments



# Planning cycle transformed by co-production



# Green infrastructure - requirements

- \* green infrastructure planning objectives set in the strategic planning framework that extends across the administrative boundaries from city centre to hinterland at the local level
- \* focus here is on the *connectivity* of the network of green (and blue) infrastructures, and the definition of green routeways linking city centre to countryside
- \* gaps in the network must be filled to ensure connectivity that is essential to meet the requirements of the policy. Gaps in the network only filled at the local level – where neighbourhood planning is essential to the realisation of city-wide planning objectives



# Green infrastructure - levels

- \* Solutions to support and develop both planning and implementation of the green infrastructure policy at **all levels of governance** in an integrated perspective
- \* At the local level integration of green open space with street tree information, as well as socio-economic (young families) and proximity (to green open space) indicators to define priorities for green infrastructure neighbourhood planning
- \* At the citywide scale of integration of green open space with green tree assessments combined with connectivity/accessibility indicators to define city wide green corridors supporting the recreational and mobility needs of the population
- \* And at the EU level harmonised assessments (EU urban atlas) offer pan-European comparability of green cities strategies across Europe – defining potentials for EU level interventions to support local actions including targeted cohesion fund urban development investments leveraging national and EU funds for local benefit

# Smart City Solutions – URBIS +DECUMANUS

**decu**manus

**URBIS commonalities and complementarities**

**Complementarity URBIS/DECUMANUS for Land Monitoring Service**

URBIS Services and Products		DECUMANUS
<b>Green layers</b>	Urban green sites	Tree Map (P)
		Green Roof Map (P)
	Potential Development Areas (PDA)	Green Roof Potential (P)
<b>Grey layer</b>	Brownfield characterisation	
<b>Urban Land Use typology and dynamics</b>		Urban growth (B)
	Urban sprawl	Impervious Surface (B)
<b>Specific information services</b>	Potential development areas	Land Planning
	Green infrastructure	Renewable energies: current and potential
	Urban sprawl and densification	Land Planning
	Cohesion policy	Cohesion policy
		Smart cities

# URBIS GI Solutions

- URBIS green layer services support the identification of the amounts and spatial distribution of urban green in the city - building blocks of GI.
- \* At the same time potential development areas are identified (see Figure below), including vacant or underused land that may provide opportunity for the implementation of GI solutions or alternatively for densification of the city

## URBIS Green Layer Services

Amount and spatial distribution of gaps, open spaces, pervious areas and urban green in the city.

- **Urban green sites - to be protected as part of GI**
- **Potential development areas - space for city densification**
  - Vacant or underused land
  - Gaps in built-up areas
  - Greenfields with development perspectives



- GS-Urban
- GS-Non-urban
- POA-Vacant or underused land
- POA-Gap in built-up area
- POA-Greenfield

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

# DECUMANUS GI Solutions

- DECUMANUS green infrastructure solutions map current and potential green roofs (Figure below) as well as tree locations and their canopy coverage.
- \* Products address climate change mitigation and adaptation, planning strategies aimed at reducing stormwater runoff, lowering air pollution, mitigating the urban heat island effect, reducing energy consumption, improving health, as well as enhancing the quality of life of urban residents

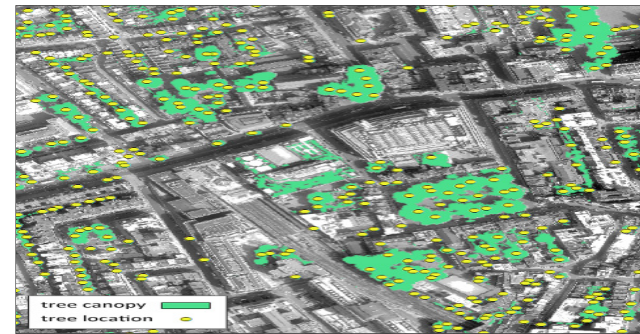
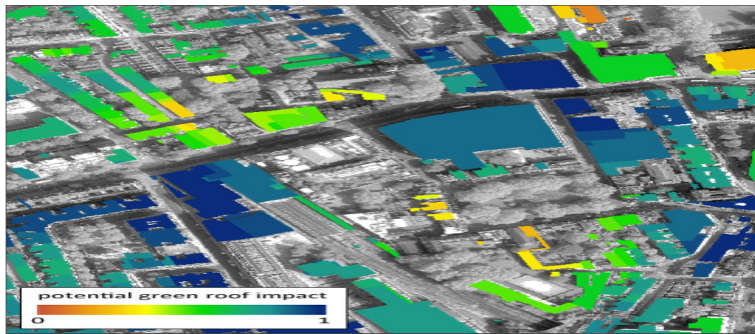


Figure: London – estimated potential green roof impact (left), tree canopy coverage and tree locations (right) derived for part of the Royal Borough of Kensington and Chelsea



# URBIS + DECUMANUS

- \* Green Layer Services developed from satellite images driven by EU Copernicus programme (European Space Agency) support planning of green infrastructure at all levels of governance in an integrated perspective:
- \* **local level** the green layer is integrated with the urban atlas street tree information, as well as socio-economic and proximity (to green open space) indicators to define priorities for green infrastructure neighbourhood planning;
- \* **citywide** green layer/green tree assessments are combined with connectivity/accessibility indicators to define city wide green corridors supporting the recreational and mobility needs of the population;
- \* **EU level** solutions based on the urban atlas offer pan-European comparability of green cities strategies across Europe.

# impact – strategic partners

- \* Antwerp
- \* Amiens
- \* Bologna
- \* Bristol
- \* Brunswick
- \* Genova
- \* Helsinki
- \* Leipzig
- \* London
- \* Madrid
- \* Manchester
- \* Milan
- \* Moravia
- \* Osnabruck
- \* Prague
- \* Rome
- \* Sienna
- \* Sofia/Ruse
- \* Varna
- \* Vitoria- Gasteiz
- \* Alcatel
- \* Arsenale Novissimo (France)
- \* Astrium SAS (France)
- \* Aristotle University of Thessaloniki (Greece)
- \* CEH (UK)
- \* CISCO
- \* Direction de la Defense et de la Securite Civiles (France)
- \* DLR
- \* Danish Meteorological Institute (Denmark)
- \* Dipartimento della Protezione Civile (Italy)
- \* TU Delft
- \* Eurimage
- \* European Union Satellite Centre (EU)
- \* GAF AG (Germany)
- \* Fraunhofer IGD
- \* GeoVille (Germany)
- \* Indra Espacio S.A. (Spain)
- \* Infoterra GmbH (Germany)
- \* Intergraph (Czech Republic)
- \* Joint Research Centre (EU)
- \* Luiss Business School (Italy)
- \* Mercator Océan (France)
- \* Météo-France (France)
- \* Met Office (UK)
- \* Nokia
- \* PRO DV Software AG (Germany)
- \* Université Louis Pasteur Strasbourg (France)
- \* Sveriges Meteorologiska och Hydrologiska Institut (Sweden)
- \* Spacebel S.A./N.V. SPOT Image (France)
- \* Squaris Consultants (Belgium)
- \* Telespazio SPA (Italy)
- \* TU Munchen
- \* Flemish Institute for Technological Research (Belgium)

# Conclusions

- \* strong consensus in both European and global contexts surrounds the opportunity for spatial planning to assist in efforts to develop more healthy cities and citizens
- \* “win-win” potentials define broad socio-economic and environmental policy co-benefits – including and extending beyond healthy cities
- \* delivery of “win-win” potential is a major urban governance challenge in view of the integrated complexity of the issues
- \* smart city solutions driven by EU funded projects working directly with cities are creating new intelligence, new communication channels, and new assessment methodologies essential to the delivery of integrated urban management
- \* smart city solutions developed in the context of open governance and stakeholder engagement are furthermore developing new ground in the co-production of healthy city plans, and defining the new political pathways to implementation



Thank you!