INSPIRE’d Land Use Planning Dynamic Indicators to Improve Planning Achievements

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Summary

- Relevance of information management within INSPIRE

- INSPIRE directive and European Spatial Data Infrastructure
  - eENVplus - eEnvironmental services for advanced applications within INSPIRE

- Indicators to improve planning achievements
  - Landuse Planning: INSPIRE’d land use Indicators to monitor good urban planning practices

- Conclusion
INSPIRE directive and European Spatial Data Infrastructure building

- Enable sharing environmental spatial information among organisations and promote public access to spatial information across Europe.

INSPIRE directive common principles:

- Data should be collected only once and kept where it can be maintained most effectively.
- It should be possible to combine seamless spatial information from different sources across Europe and share it with many users and applications.
- It should be possible for information collected at one level/scale to be shared with all levels/scales;
- Geographic information needed for good governance at all levels should be readily and transparently available.
DGT pilot within eENVplus

- Integrate a large amount of environmental data provided by the National/Regional Environmental Agencies and other public and private environmental stakeholders involved.

- This will be achieved through the harmonisation and integration, within an operational framework, of existing services resulting from previous European initiatives (funded projects, good practices, EU/national/local experiences) and it will allow overcoming of cross-border/languages barriers.

- eENVplus provides not only the ICT infrastructure but also the documentation and support to ensure delivery of an operational infrastructure oriented to create value - to be profitable, promote good governance, based on a well-defined organizational model and a tutored training framework.

The eENVplus includes the DGT pilot:
1. Implementation of web services related to environmental and territorial management indicators
2. Monitoring and understand the growth of urban areas, urban sprawl
3. Evaluate balanced economic grow.
4. At Different levels - Scale
5. Different data inputs - data fitness

Both presented examples focus urban growth evaluation among a territory and explores adequacy of available geographic information produced by public entities, in this case DGT and the Statistics of Portugal (INE) to assess urban growth and its impact in different contexts.
Target groups

- Providers
  - Data Providers
  - ENV Services
- Administration and Public Bodies
- IT Services
- Research Groups
- SW Developers
- Users
  - Citizens
  - NGOs
Road Map

1. Analyse existing operational processes
2. Collect existing technologies (from EU projects)
3. Collect data (from EU agencies)
4. Harmonise data
5. Make existing technology interoperable
6. Release of the open source toolkit
7. Deploy pilots and assess them
8. Train staff
9. Define recommendations
10. Implement long-term sustainability mechanisms
Road Map

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<table>
<thead>
<tr>
<th>INSPIRE Data Theme</th>
<th>Content</th>
<th>Metadata</th>
<th>IPR/ Open data</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. 4. AU: Administrative units</td>
<td>Administrative units of the country: CAOP dataset</td>
<td>ISO 19115</td>
<td>Open data</td>
</tr>
<tr>
<td>II. 3. OI: Orthoimagery</td>
<td>Ortho imagery</td>
<td>ISO 19115</td>
<td>IPR, data available for eENVplus use</td>
</tr>
<tr>
<td>III. 1. SU: Statistical units</td>
<td>official statistics related to housing and demography</td>
<td>ISO 19115</td>
<td>IPR, data available for eENVplus use</td>
</tr>
<tr>
<td>III. 4. LU: Land use/II. 2. LC: Land cover</td>
<td>COS90</td>
<td>ISO 19115</td>
<td>Open data</td>
</tr>
<tr>
<td>III. 4. LU: Land use/II. 2. LC: Land cover</td>
<td>COS2007</td>
<td>ISO 19115</td>
<td>IPR, data available for eENVplus use</td>
</tr>
</tbody>
</table>

The spatial data correspond to several **INSPIRE data themes** and are organized by administrative units for the study areas. It covers land use, land cover, orthoimagery and statistical units, environmental and socioeconomic data, all harmonized according to the INSPIRE implementing rules.
Data Harmonization

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Artificial surfaces - CORINE Land Cover (CLC)

<table>
<thead>
<tr>
<th>Area</th>
<th>Area (ha)</th>
<th>Area (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area PT</td>
<td>8908892</td>
<td>100,0</td>
</tr>
<tr>
<td>Artific. 1990</td>
<td>169845</td>
<td>1,9</td>
</tr>
<tr>
<td>Artific. 2006</td>
<td>310039</td>
<td>3,5</td>
</tr>
</tbody>
</table>

Δ1,6% (1990/2005)
Portuguese pilot

Evaluating Urban Growth distribution among Portuguese municipalities in 2007 (Climate Change - Emissions Report)

An example to be applied during the pilot...

Urban area per capita – COS 07 (ha/inhabitant)

- 85 - 350
- 350 - 555
- 555 - 770
- 770 - 1070
- 1070 - 2130
Portuguese pilot

Indicators to achieve territorial cohesion
Measure trends in a territorial area

Case study: Loures

Atlantic Ocean
Proportion of urban areas in Loures (%)
Portuguese pilot

Land Use/Land Cover 1990 - COS95
Proportion of urban areas (%)
Source - COS

Land Use/Land Cover 2007 - COS2010
Proportion of urban areas (%)
Source - COS
Buildings (number) over Loures municipality

**Building**: Independent structure, covered, limited by external or interior walls that extend from the foundations to the roof, destined to serve housing or other purposes. (metadata - INE)

Source: BGRE 1991, BGRI 2011, INE
Portuguese pilot

Buildings distribution over Loures Municipality - 1991

Buildings distribution over Loures Municipality - 2011

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Inhabitants over Loures municipality (thousands)

Resident population
People who, regardless the time of observation, are present or absent in a given housing unit where they live most of the year (metadata - INE)

Source: BGRE 1991, BGRI 2011, INE
Inhabitants distribution over Loures Municipality (thousands) - 1991
Source: BGRE 1991, INE

Inhabitants distribution over Loures Municipality (thousands) - 2011
Source: BGRI 2011, INE
Urban area per capita in Loures (ha/inhabitant)

Source: COS; BGRE and BGRI (1991;2011) - INE
Portuguese pilot

Land use/land cover 1990 - COS95
Urban area per capita (ha/inhabitant)
Source: COS, BGRE 1991 (INE)

Land use/land cover 2010 - COS2010
Urban area per capita (ha/inhabitant)
Source: COS, BGRI 2011 (INE)
Portuguese Pilot

The following services are foreseen:

Data Access Services
Web Map Service (WMS)
Web Feature Service (WFS)

To be tested into a geoportal
• 32 temas em 3 anexos.

• Anexo I:
  1. Sistemas de referência
  2. Sistemas de quadrículas geográficas
  3. Toponímia
  4. Unidades administrativas
  5. Endereços
  6. Parcelas cadastrais (Prédios)
  7. Redes de transporte
  8. Hidrografia
  9. Sítios protegidos

• Anexo II:
  1. Altitude
  2. Ocupação do solo
  3. Ortoimagens
  4. Geologia

• Anexo III:
  1. Unidades estatísticas
  2. Edifícios
  3. Solo
  4. Uso do solo
  5. Saúde humana e segurança
  6. Serviços de utilidade pública e do Estado
  7. Instalações de monitorização do ambiente
  8. Instalações industriais e de produção
  9. Instalações agrícolas e aquícolas
  10. Distribuição da população-demografia
  11. Zonas de gestão/restrição/regulamentação e unidades de referência
  12. Zonas de risco natural
  13. Condições atmosféricas
  14. Características geomeeteorológicas
  15. Características oceanográficas
  16. Regiões marinhas
  17. Regiões biogeográficas
  18. Habitats e biótopos
  19. Distribuição das espécies
  20. Recursos energéticos
  21. Recursos minerais
Next tasks

Harmonisation and Validation
• Datasets and metadata harmonisation
• Datasets and metadata validation

Pilot Applications
• Definition of Scenario demonstrator applications
• Scenario Application deployment

Building capacity and Training
• The eENVplus Training Framework
• Training Actions
Conclusion

- The present work will be relevant to implement public authorities attributions. In the project the governance attributions explored are namely those related to:
  - Data production and data quality
  - Land use planning: efficiency in producing, implementing monitoring and evaluating Territorial Land Use Plans
  - Urban sprawl- city management and land use efficient planning.
  - Taxation: sustainable- affordable
  - Implementation of the INSPIRE Directive:
    - Annex I, II and III: Landuse oriented for good governance and cost effective data sharing policy –towards effective development

**Working together towards the main goal ... GOOD GOVERNANCE**
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http://www.eenvplus.eu

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eENVplus - Environmental services for advanced applications within INSPIRE

Objectives:
- Creation of an interoperable infrastructure able to integrate existing infrastructures in accordance with the requirements of INSPIRE and international standards.
- DGT is developing a platform with the objective to evaluate and select different cartographic datasets available for use in the INSPIRE project, including the evaluation of the suitability of urban areas and their socio-economic and environmental impacts.

Expected results:
- Development of a pilot project in Portugal, including three municipalities, that facilitates the access to the infrastructure and provides information on the socio-economic and environmental impacts.

Execution period:
January 2013 - December 2015

Last update: 7th March 2014

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www.dgterritorio.pt
Questions

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Thank you!