Low-Cost SDI. The Portuguese example of building a SDI for small countries

Rui Pedro JULIÃO, Portugal

SUMMARY

Portugal was one of the SDI pioneers in the beginning of the 90's, but after a quick start the project slowed down. Sometimes, small countries do not have the same strength, resources and opportunities of larger nations.

Now SNIG project (NSDI of Portugal) is regaining its position and in the paper it is presented how a small country can develop a SDI project, INSPIRE oriented and truly useful for public administration and citizens.

The paper will focus on describing the SNIG project, referring to key issues like strategy, resources, results and future expectations.

The SNIG project is now fully compatible with INSPIRE orientations and the new Portal, the fourth since the beginning of SNIG, was just launched last November. All its functionalities are going to be shortly presented and described, referring to the effort placed for their development.

Moreover this paper will show that building a SDI core is an affordable investment, even in the context of budget restrain. This can of great value for small or accessing countries that do not have the same resource availability as bigger ones.

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Rui Pedro Julião
Low-Cost SDI. The Portuguese example of building a SDI for small countries

FIG Congress 2010
Facing the Challenges – Building the Capacity
Sydney, Australia, 11-16 April 2010

1/10

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1. INTRODUCTION

Portugal was one of the Spatial Data Infrastructures (SDI) pioneers in the beginning of the 90's, but after a quick start the project slowed down. Sometimes, small countries do not have the same strength, resources and opportunities of larger nations.

Now SNIG project (NSDI of Portugal) is regaining its position and in the paper it is presented how a small country can develop a SDI project, INSPIRE oriented and truly useful for public administration and citizens. This effort was recently recognized by the attribution of European eSDI-NET+ Best-Practice Award 2009.

The paper focus on describing the SNIG project, referring to key issues like strategy, resources, results and future expectations.

The SNIG project is now fully compatible with INSPIRE orientations and the new Portal, the fourth since the beginning of SNIG, was just launched November 2009. All its functionalities are going to be shortly presented and described, referring to the effort placed for their development.

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2. SNIG BACKGROUND

INSPIRE Directive, approved May 2007, has stressed the importance and settled a new framework for the development of SDI in Europe, as tools for good and modern governance, through the establishment of a coordinated network of National SDI (NSDI).

Portugal was and still is a pioneer, always facing new challenges and improving the Sistema Nacional de Informação Geográfica (SNIG), our NSDI. SNIG (http://snig.igeo.pt/), was established 18 years ago through the Decree-Law 53/1990, 13th of February, being the first NSDI in Europe and also the first one opened to the Internet in 1995. The early existence of a clear legal support was a very important building-block for SNIG success.

Today, SNIG has a new legal framework, provided by Decree-Law 180/2009, 7th of August, much more adjusted to the actual and forecoming needs of a NDSI. Within these needs, absent in the old law, there is the creation of a Coordination Council (CO-SNIG) for strategic decision regarding SNIG evolution and enabling a more effective stakeholders involvement.

During these last twenty years SNIG history is marked by some main facts as you can see in the following figure.
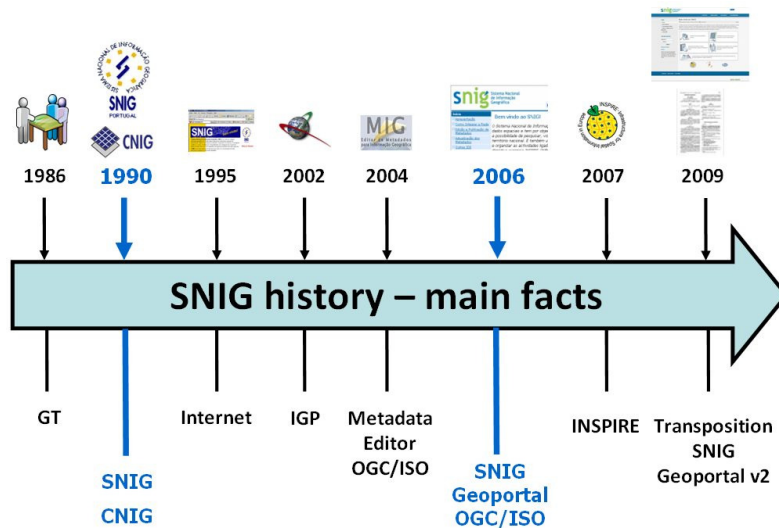
Figure 1. SNIG history: main facts

Since SDI's early days, and especially during the last years, there was a significant growing of interest about them, acknowledging their important role in what concerns the formulation, implementation and monitoring of spatial public policies and private activities that spread over the territory.

Today, more that the simple land representation through cartography, it is important to collect, organize, store, retrieve and explore spatial data finding the necessary knowledge for action. More than data repositories it is important to have dynamic information flowing through the Information Society channels.

In fact the actual paradigm is shifting from an isolated approach to GIS implementation to a more collaborative production and dissemination of Geographic Information, namely through the Internet, Users groups and mobile technologies.
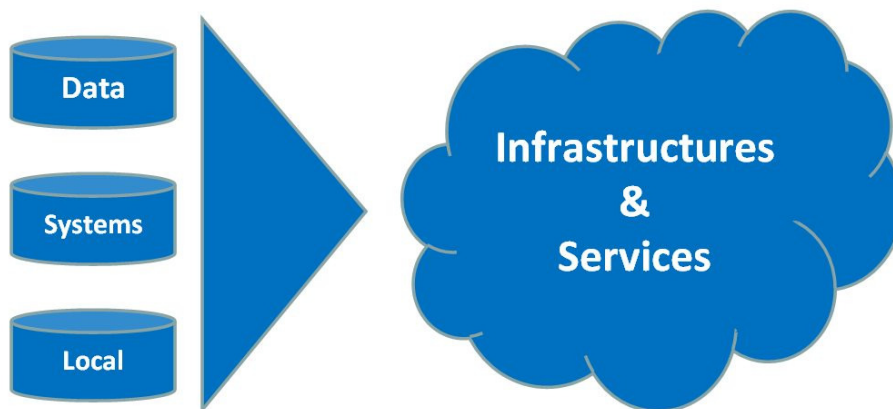

Figure 2. Paradigm change

TS 2B – Low-Cost SDI and Best Practice Applications   3/10
Rui Pedro Julião
Low-Cost SDI. The Portuguese example of building a SDI for small countries

FIG Congress 2010
Facing the Challenges – Building the Capacity
Sydney, Australia, 11-16 April 2010

Also the common citizen is much more exposed and aware of Geographic Information. First, through the boost of GPS usage, and afterwards, more recently, with Google Earth.

This is the context where SNIG is being though and developed. The first actions were related with the design of the interface and contents reorganization.

1995   2003

2006   2009

Figure 3. SNIG interface evolution

The general idea was to consolidate SNIG as an infrastructure that enables users to identify, visualise and explore Geographic Information, as well as to access databases through three main related components (Metadata, Products & Services and Market) supported by an harmonized data structure directly provided by their producers and accessible at the geoPORTAL.
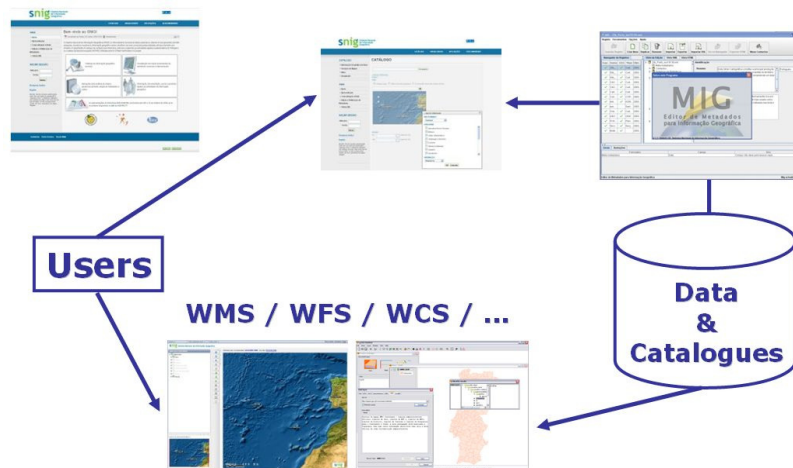

Figure 4. – SNIG structure

SNIG is the result of a national effort (pioneer at European and global level) and can only survive as a national system if there is a committed participation of all stakeholders, producers and users of Geographic Information. IGP (Instituto Geográfico Português) has the mandate to act as coordinator and promoter of SNIG, which is different of having data rights over the information provided.

That is why the new Decree-Law created CO-SNIG and also why there is a specific space in the geoportal for the geo-commnity.

3. GeoPORTAL

Today SNIG is one of the first SDI to have a fully operational portal. In fact SNIG geoPORTAL has the following implemented components:
- Catalogue
- Viewer
- Applications
- Geo-community

In most of the SDI portals their visible face corresponds to the Viewer. It is important to stress that, according to our concept of a SDI, this is only one of the components and not the most important one.
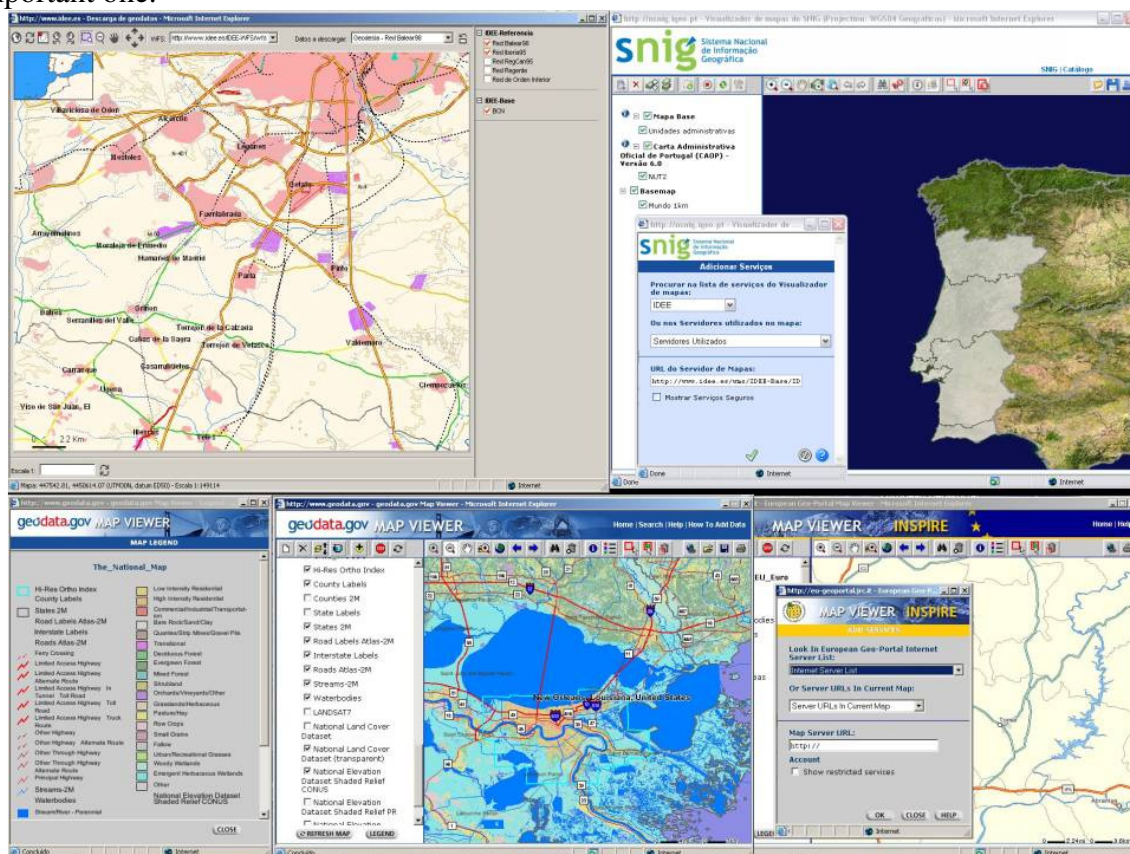

Figure 5. SDI viewers

TS 2B – Low-Cost SDI and Best Practice Applications
Rui Pedro Julião
Low-Cost SDI. The Portuguese example of building a SDI for small countries

5/10

FIG Congress 2010
Facing the Challenges – Building the Capacity
Sydney, Australia, 11-16 April 2010

Through the four main components of SNIG, the user has public and free access to data, applications and services about Portuguese spatial data.

IGP, as coordinator and promoter of SNIG, recognizes that a good metadata catalogue is a critical point of a SDI. That is why our first option was to create MIG (ISO 19115, ISO 19119 and ISO 19139 compliant) and provide free training to users.

Our metadata catalogue has more that 9.000 records about data, data services and applications. These records are increasing every day, mainly due to the creation of a specific tool (ISO and OGC compliant) to support metadata production: MIG.

MIG, now in version 2.2 (a new version, V.3, is under preparation), is an open source application and is available for free download from SNIG website. Moreover, MIG is compatible with all other metadata applications that are OGC and ISO compliant. Its interface can either be in Portuguese or English.

One of our objectives was to provide a tool that enables users to document spatial data in a structured way, through an easy learning and friendly user's environment.

The Catalogue interface enables users to create a set of multi-options queries. It is possible to select based on free text, keywords, temporal and spatial frames, and also geographic names using a detailed gazetteer.
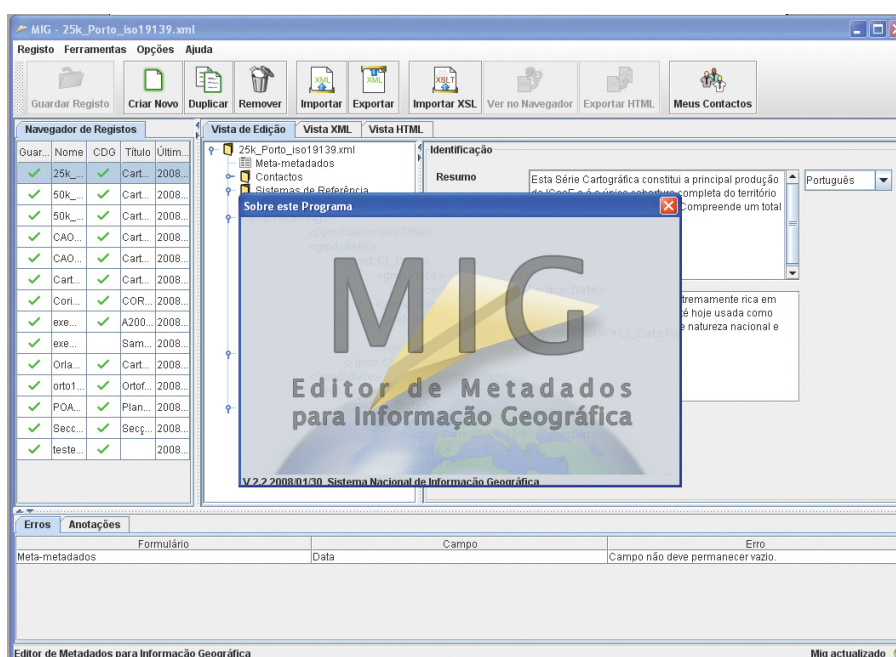

Figure 6. MIG interface

This vast set of possibilities and its combination provides a powerful tool for data identification and description. It is easy to find, compare and evaluate the existing data according to users' needs.

Rui Pedro Julião
Low-Cost SDI. The Portuguese example of building a SDI for small countries

FIG Congress 2010
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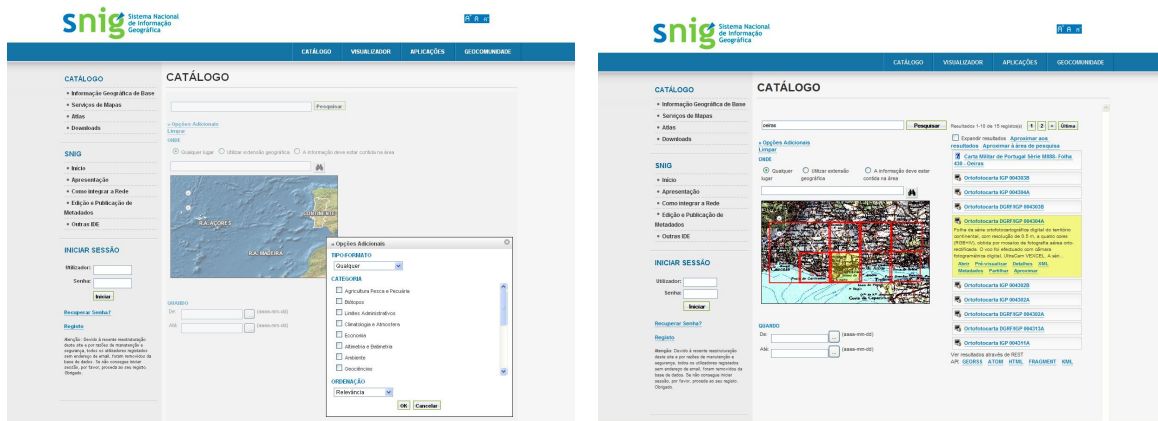Sydney, Australia, 11-16 April 2010

Figure 7. Catalogue interface

Data visualization is also provided for all SNIG data services and also other providers, as long as they support OGC standards like WCS, WFS e WMS. The original interface was barely modified because it is not yet the occasion. Other priorities are much more important, like metadata and data services.
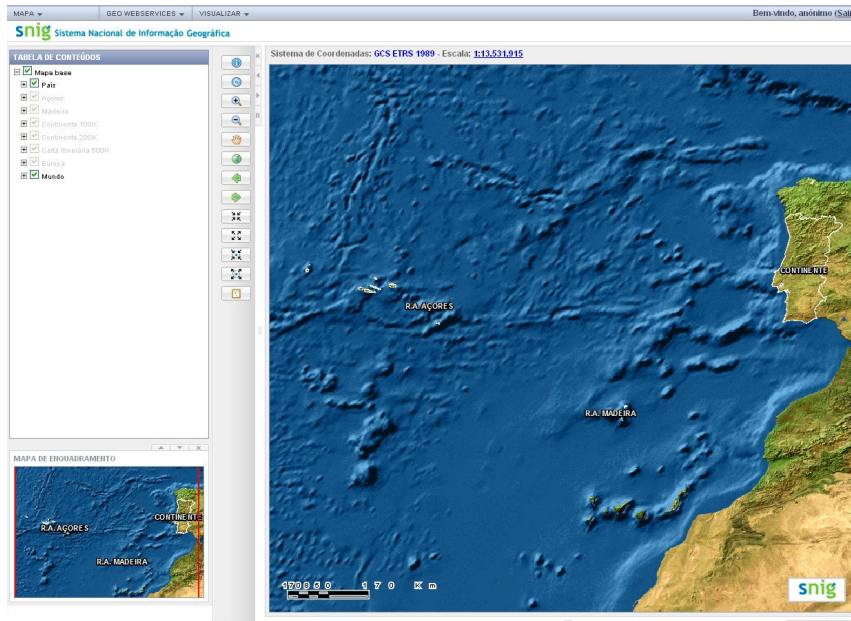

Figure 8. Viewer interface

SNIG is currently delivering several data webservices, most of them provided by IGP, like CAOP (Official Administrative Boundaries Map), CRIF (Fire Risk Assessment Map) and Atlas (a set of maps produced for the Atlas of Portugal).

There is a strong cooperation with Instituto Geográfico Nacional (IGN) from Spain in order to strengthen the links between the two NSDI: SNIG and IDEE. The results rising from this cooperation are the data integration in both viewers and also the translation of contents.

TS 2B – Low-Cost SDI and Best Practice Applications   7/10
Rui Pedro Julião
Low-Cost SDI. The Portuguese example of building a SDI for small countries

FIG Congress 2010
Facing the Challenges – Building the Capacity
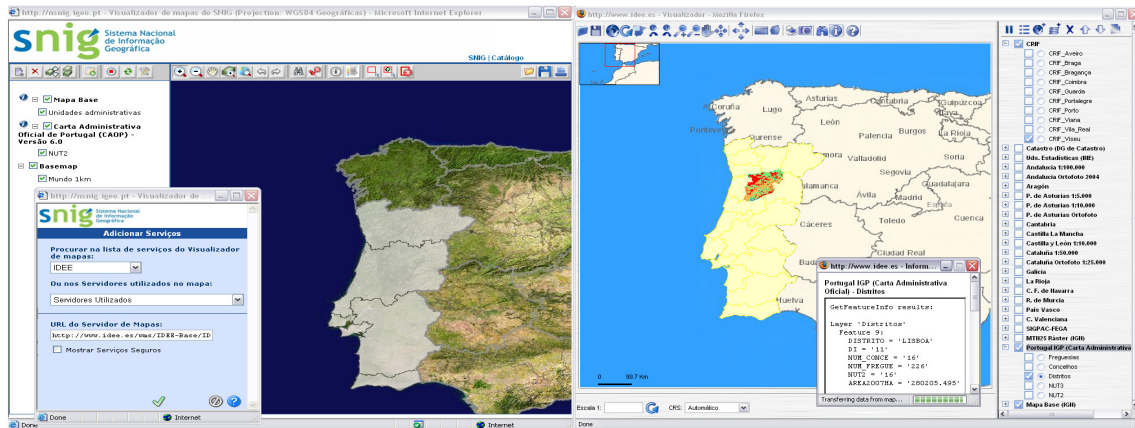Sydney, Australia, 11-16 April 2010

Figure 9. Interaction between SNIG and IDEE

According to the founding principles of SNIG, this is the right tool to discover, know and explore our geographic wealth. But SNIG goes further than just providing a viewers, catalogue tools, metadata editors, webservices, etc. There is an open space for users contacts and knowledge exchange regarding Geographic Information – Geo-Community.

Figure 10. Geo-Community space in SNIG

SNIG Geo-Community is the meeting point for users and knowledge exchange, namely at Forum SNIG, as well as the entrance for some specific thematic networks, like RISE (Risk network) and SNIG Education.

TS 2B – Low-Cost SDI and Best Practice Applications   8/10
Rui Pedro Julião
Low-Cost SDI. The Portuguese example of building a SDI for small countries

FIG Congress 2010
Facing the Challenges – Building the Capacity
Sydney, Australia, 11-16 April 2010

Figure 11. Forum SNIG homepage

4. NEXT STEPS AND CONCLUSIONS

IGP, as SNIG coordinator and promoter, will carry on its job of following INSPIRE implementation closely, interfacing with Portuguese national, regional and local authorities. The idea is to have all national GI stakeholders well informed about INSPIRE developments and provide in time advice and support to them.

Following the success of MIG training where, since 2004, several people attended, IGP is now starting webservices training to support all public organisations that wish to implement OGC data webservices.

IGP is also engaged in a strategy to promote GI awareness and dissemination to general public. This is being pursued by several public acts and also agreements with major GI providers like Google Earth (Google), Virtual Earth (Microsoft) and ESRI, assuring that all Portuguese space is covered with high quality information.

If we can say anything, after twenty years of experience building and keeping a SDI project updated and close to its users, some keywords are important:

– Vision, ambition, and leadership. No SDI or other project will come alive (and survive) without a clear idea and an organization embracing the challenges recognized by others;

– Legal background. Most SDI projects are made of contribution from public administration bodies. For that and to consolidate the overall structure and operation it is vital to start with a solid background, and most conveniently provided by legal status.

TS 2B – Low-Cost SDI and Best Practice Applications   9/10
Rui Pedro Julião
Low-Cost SDI. The Portuguese example of building a SDI for small countries

FIG Congress 2010
Facing the Challenges – Building the Capacity
Sydney, Australia, 11-16 April 2010

– Stakeholders. It is a very common word, but a SDI project is by its nature a stakeholders' project.

– Catalogue. It is the keystone of any SDI. If you are not able to aggregate the knowledge about geographic data, you can not access it and use it.

– Awareness raising and training. These are to very important actions to create enough critical mass to promote the project.

– Compliance, affordable and Sustainable. Any SDI project should be compliant with international (namely OGC and ISO) standards, and it should be dimensioned according to the budget capabilities either to its initial implementation, either for its maintenance.

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BIOGRAPHICAL NOTES

Rui Pedro Julião, PhD in Geography and Regional Planning – New Technologies in Geography, is actually Deputy Director-General of Portuguese Geographic Institute (in charge of research, cadastre, IT and National Spatial Data Infrastructure), Assistant Professor of New University of Lisbon and researcher at e-GEO – Centre for research in Geography and Regional Planning.

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Member of the Management Board of Eurogeographics (treasurer), since 2007.

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TS 2B – Low-Cost SDI and Best Practice Applications   10/10
Rui Pedro Julião
Low-Cost SDI. The Portuguese example of building a SDI for small countries

FIG Congress 2010
Facing the Challenges – Building the Capacity
Sydney, Australia, 11-16 April 2010