
Article of the Month
 April 2009




SDI Developments in the World's Currently Existing Mega Cities
 Ms. Silke BOOS and Prof. Hartmut MÜLLER, Germany


SDI Developments in the World's Currently Existing Mega Cities

Silke Boos and Hartmut Müller

FIG Working Week 2009 – Surveyors Key Role in Accelerated
Development, Eilat, Israel, 3-8 May 2009

TS 1B – SDI in Support of Development (3341)


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Background and Objectives

- Foundation of FIG Working Group “WG3.2 Spatial Data Structures in Mega cities” in 2007, which pursues the following aim:
 - Identification of relevant spatial tools to support development and use of SDI by city authorities in the world largest cities
- Strategy to approach the aim
 - Cooperation with city administrators of the mega cities of the world
 - Development of a Questionnaire, which faces the current problems of the mega cities of the world
 - **Gathering further information about use of SDI in mega cities by means of a literature and internet investigation**
 - Development of a toolkit of SDI best practices as guideline for city management








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Methodology of the Internet Investigation

- **General approach**
 - Collection of relevant information about SDI use in the home countries of mega cities
 - Collection of relevant information for all existing mega cities of the world (mega city in this context is defined as urban agglomeration with more than 10 Mio inhabitants)
=> Investigation of 20 countries and 26 mega cities
- **Search Strategy**
 - Browsing of conference proceedings and scientific articles
 - Search by using relevant key words like SDI, NSDI, city administration, etc. in combination with the countries/cities
 - Browsing the internet websites of the respective mega cities







  

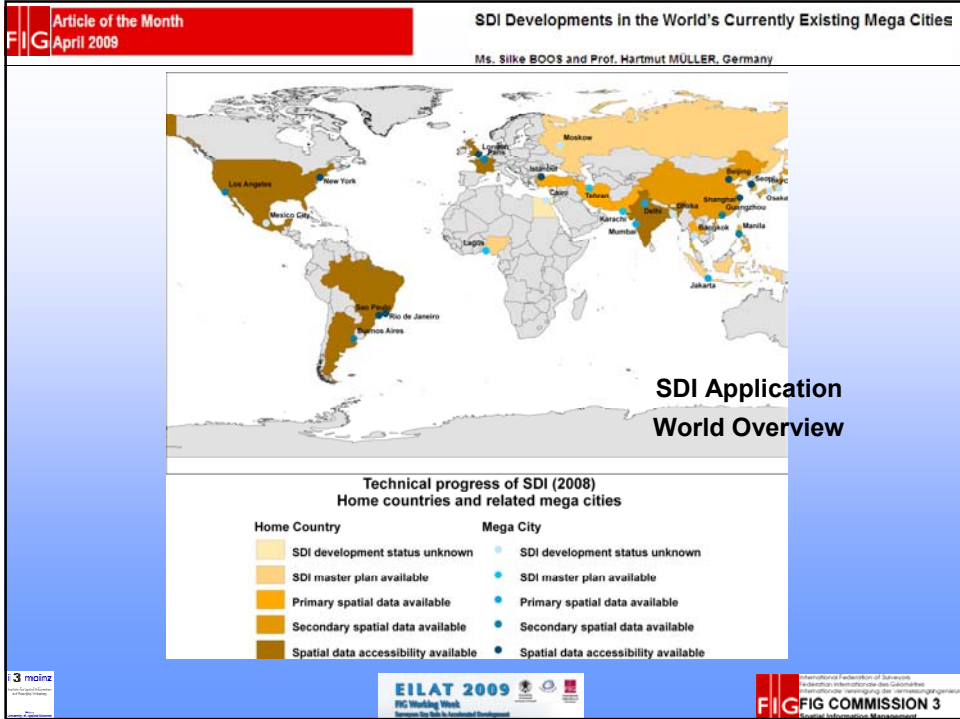
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Results and Evaluation

- **Resulting Findings**
 - 30 papers about SDI use at national and local level
 - 51 websites with relevant content
- **Framework for the evaluation of the results**
 - Restriction on technical aspects of SDI use
 - Very different social, political and economic conditions in the countries and cities and heterogeneity of the results enable only for a very coarse classification
- **Five grades of SDI development**
 - SDI development status unknown
 - SDI master plan available
 - Primary spatial data available
 - Secondary spatial data available
 - Spatial data accessible



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Results SDI application, Overview

NSDI home countries

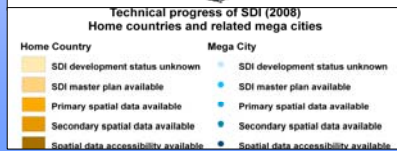
Country	SDI development status unknown	SDI master plan available	Primary spatial data available	Secondary spatial data available	Spatial data accessibility available
Argentina					•
Bangladesh		•			
Brazil					•
China				•	
Egypt	•				
France					•
Indonesia		•			
India			•		•
Iran			•		
Japan				•	
South Korea		•			
Mexico					•
Nigeria		•			
Pakistan			•		
Philippines			•		
Russia		•			
Thailand			•		
Turkey			•		
United Kingdom					•
United States					•

LSDI mega cities

City	SDI development status unknown	SDI master plan available	Primary spatial data available	Secondary spatial data available	Spatial data accessibility available
Bangkok	•				
Beijing					•
Buenos Aires				•	
Cairo	•				
Delhi			•		
Dhaka	•				
Guangzhou				•	
Istanbul					•
Jakarta			•		
Karachi		•			
Lagos		•			
London					•
Los Angeles				•	
Manila				•	
Mexico City			•		
Moscow	•				
Mumbai			•		
New York					•
Osaka	•				
Paris				•	
Rio de Janeiro					•
Sao Paulo					•
Seoul					•
Shanghai					•
Tehran		•			
Tokyo	•				

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SDI application in the Pan American region



Results

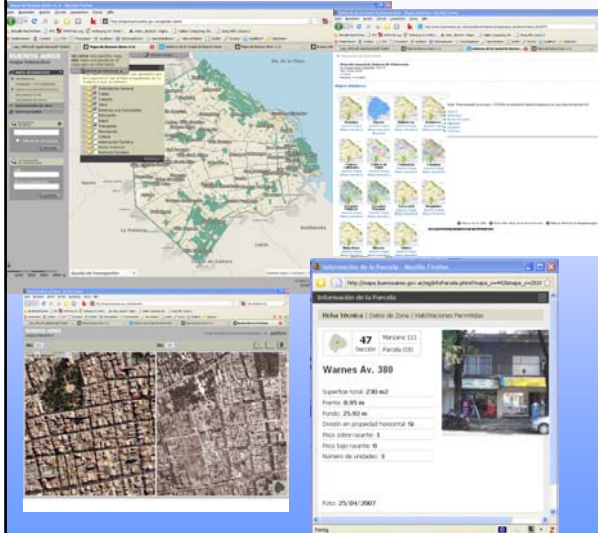
NSDI

- In the whole Pan American region spatial data are available via distributed applications

Mega City SDI

- In **Mexico City** the SDI development status is unknown
- Los Angeles** and **Buenos Aires** provide for primary and secondary spatial data
- Sao Paulo**, **Rio de Janeiro** and **New York City** data access via widespread WebGIS applications is available

Example: SDI application in Buenos Aires



Mapa Buenos Aires

- Open Source WebGIS development, which covers a range of applications like health, education, tourism, sports, culture, social services etc.
- Access to information down to parcel units
- Access on thematic maps in digital and analogue format
- Access on historical maps (a viewer enables comparison of historical orthofotos with current orthofotos)

<http://mapa.buenosaires.gov.ar/sig/index.phtml>

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SDI application in the European region

Technical progress of SDI (2008)
Home countries and related mega cities

Home Country	Mega City
SDI development status unknown	SDI development status unknown
SDI master plan available	SDI master plan available
Primary spatial data available	Primary spatial data available
Secondary spatial data available	Secondary spatial data available
Spatial data accessibility available	Spatial data accessibility available

Results

NSDI

- Development of a SDI master plan for **Russia**
- Turkey** has produced a variety of primary spatial data
- In **France** and the **UK** spatial data are accessible via a Geoportal

Mega City SDI

- In **Moscow** the SDI development status is unknown
- In **Paris** a WebGIS application enables the visualization of different primary and secondary data
- London** and **Istanbul** provides for different systems with spatial data access

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Example: SDI applications in London

COMPASS

- Government of London provides for online system COMPASS, access to information about the city via different layers and generation of interactive Maps
- Spatial queries like "where is our nearest service"
- Information about planning policies <http://www.cityoflondon.gov.uk/~Corporation/maps/~Interactive+City+maps.htm>

Newham Neighborhood Information System (NIMS)

Access to data on economic, social and environmental conditions of the borough

- NIMS holds approximately 260 data-sets, equating to over 5,000 individual pieces of information
- Maps, charts, data download, comparison with other boroughs of London
- <http://www.newham.info/iads/>

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SDI application in the African Region

Results

- No findings for **Egypt** and **Cairo**
- Nigeria** has developed a countrywide SDI Master plan and one for **Lagos state**

Technical progress of SDI (2008)	
Home Country	Mega City
SDI development status unknown	SDI development status unknown
SDI master plan available	SDI master plan available
Primary spatial data available	Primary spatial data available
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Example: SDI application in Lagos state

In 2007 constitution of a committee of experts for Lagos State for the provision of a fully digital mapping and enterprise GIS

- Generation and sharing of information with organized private sector, developing skilled and knowledgeable workers
- Resulting mapping products for Lagos state on scale 1:500 for metropolitan Lagos and 1:1.000 for rural areas
- Other products: orthofotos in scale 1:2000, contour lines 1:500 urban/1:1000 rural and DEM

<http://www.tundefashola.com/archives/news/2008/07/15/20080715N01.html>

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SDI application in the Asian-Pacific region

Results

- NSDI**
 - Indonesia and Bangladesh are in status of availability of a master plan
 - In Iran, Pakistan, South Korea, Philippines and Thailand primary spatial data are available
 - China and Japan also provide for secondary spatial data
 - In India a Geoportal provides for a variety of spatial data
- Mega City SDI**
 - Status unknown for Bangkok, Osaka, Tokyo and Dhaka
 - In Tehran, Karachi, Delhi, Mumbai and Jakarta are primary spatial data available
 - Secondary spatial data are available in Manila and Guangzhou
 - For Shanghai, Seoul and Beijing spatial data are accessible

Technical progress of SDI (2008)
Home countries and related mega cities

Home Country	Mega City
SDI development status unknown	SDI development status unknown
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Example: SDI applications in Shanghai/Seoul

Zhu, Y., Yang, C., Wong, D.W., Kafatos, M. (2005): A Distributed GIS for Managing Shanghai Landscape Resources. Geographic Information Sciences, Vol 11, No. 1.

•Development of "Digital City Shanghai" as a distributed WebGIS application for managing landscape resources

•Connection of all landscape bureaus of the city via data exchange functions

•High-end GIS analyses like distance-based spatial queries, select and buffering functions

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Conclusions and Further Work

- **Conclusions**
 - large diversity in terms of progress for the home countries and their related mega cities in different parts of the world
 - often parallelism between development at country level and local level
- **Further Work**
 - refinement of the classification schema by additional parameters defining the level of completeness within the respective classes
 - fusion of the results of the internet investigation and results of the city administration questionnaire, to be done till FIG Congress 2010
 - extension of the internet investigation to organisational and legislative issues of SDI implementation including their interaction with planning and other management activities in mega cities




  

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Thank you
for your attention!

