



# URBAN SMS Soil Management Strategy



## SWOT of existing soil evaluation tools currently used by URBAN SMS partners

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**Urban SMS WP4:**

Action 4.1.2 SWOT of existing tools: (Strengths, Weaknesses, Opportunities, and Threats)  
Conducted in May 2009 by AIS

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## WP4 Tools common SWOT Analysis Report

This analysis was done based on submitted SWOT reports from 7 partners: Stuttgart, Vienna, Bratislava, Milano, Torino, Wroclaw, Celje.

It represents a synthesis of current practices and well as weaknesses, suggestions and visions as seen by each partner.

### General description of the tools used:

1. Majority of tools in use is based on ESRI software. The main reason is accessibility of already prepared layers (relief, municipality borders...); knowledge in data analysis and visualization is needed (data management, ESRI specialist);
2. Data used is often of various sources: agricultural sector (often a comprehensive data base available), geographical and various mapping layers...
3. Celje and Wroclaw do not have such tool in place. They have instead presented their views for the steps forward, according to their current/planned resources and needs

### Main reasons for the use:

- Accessibility (the only or most suitable tool available),
- Best choice according to availability and efficiency (previous experience)
- Location specific (self developed tool, tuned to specific needs of the user),
- Politically as well as expertly already well accepted. Political acceptance plays an important role especially in the final stages of planning development. Decision makers give more relevance to results of such assessments. Skepticism about the new and no established methods.

### Strengths:

- ESRI based
  - Easy to manipulate data (database and spreadsheet export)
  - Modification and additional data analysis possible
  - Widely accepted standard
  - Existing data (layers) from other sectors can be used (accessibility of different spatial data)
- BOKS
  - Possible to evaluate the past, predict the future and assess the present soil parameters based on plans, development type and need.
  - Soil protection without creating preservation areas

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- Possible to control and to balance the impacts
- Vector data based spatial information
- ILSE
  - Evaluation of all soil functions (habitat and gene pool; storing, filtering and transformation; food and other biomass production; physical and cultural environment for mankind) at available sites of an area is possible within one run,
  - Excel compatibility (data manipulation eg. Import and Export of data...)
  - Data management and changes possible within the tool itself
  - Previous experience (been involved in the development during TUSEC-IP Interreg project)
  - Currently adopted to German KA4 soil parameter classification, but flexible (could be applicable to others)

## Weaknesses:

- Current tools are often find as too rigid :
  - generally do no support sealing and contamination evaluations (data missing or no evaluation methods at all)
  - Data management is often difficult and time consuming (using web servers (WebGIS...) proves to be difficult and slow)
  - Problem of too detailed scale. Impossible to use for an overview purposes.
  - Often run on a completely different systems from databases (automated updates not possible, a lot of manual maintenance, time consuming)
  - Can easily be corrupted (structure of databases, location on HD).
- Current systems usually don't recognize properties of urban area or contamination
  - Current contamination thresholds should be re-adjusted (different for urban environment)
  - In terms of soil quality systems support only agricultural evaluation set (no urban components)
  - More detailed soil properties needed (parameters by horizons)
  - Urban specific soil types/properties should also be added (Anthrosols and Technisols)
- Outputs often not directly usable (maps, visualizations must be done additionally using standard graphical software)
- Manual "fine tuning" or interpretation of the results often needed
- Substantial GIS and sustainability knowledge is required

## Opportunities and recommendations

- Many municipalities see this method as an opportunity to establish and use a common (national as well as European) method/approach for urban soil quality evaluation
- Being a widespread format, ArcGis and ArcView would permit municipalities to develop national-wide "macros" or VBA applications that would preferably be exchangeable.

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- Some partners don't have an appropriate tool at all or want to improve the existing one with wider evaluation capabilities. This should include all types of soil, land uses and soil/land characteristics
- It is almost a common opinion that current systems should be used as a starting point, taken into account and improved.
- Solutions should be universal and widely applicable.

## Fears and possible threats

- The tool performance among different disciplines or public departments (especially in cases where they don't collaborate and exchange data amongst each other)
- Lack of important data such as general development plans (transportation infrastructure, traffic loads...), detailed soil data...
- Use of detailed cadastral and spatial planning data is usually restricted and could be used only internally within certain municipalities (no public access. Web data base issue).
- Loss of political acceptance due to ignorance, lack of knowledge and misjudgment (acceptance, issue of presentation and integration support)

## Summary and Conclusions

- Submitted documents showed that all the partners are facing very similar challenges which they are currently trying to solve using very different solutions/tools.
- It is a common belief that there is a growing need for a common, EU based evaluation tool that would help plan and predict the consequences of political, economical and local decisions (spatial planning).
- Currently all partners are facing problems with data availability (many soil as well as planning data not available. Instead they are using data of various sources (agricultural, geography and geophysics' layers) trying to interpret results (often manually).
- In general partners feel their current solutions only partly cover the needs of end-users/planners. They are largely aware of the weaknesses of such approach. As such, tools in use often produce weak and technically not very accurate assessments. Ideally every evaluation should be based on all environmental aspects of the development/planning (complete data often not available).
- Importance of political as well as public acceptance
- The Urban SMS tool should also consider:
  - a. Exchangeability of data (supporting wide data sources)
  - b. Additional adjustability (fine tuning possible for each end user)
  - c. Produce final outputs in form of maps, graphs...
  - d. Partly support (or improve) their current systems of evaluation



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This paper belongs to the following section of URBAN SMS work plan:  
WP4 Soil manager suite/4.1 Evaluation of existing tools/4.1.2 SWOT of existing tools

[www.urban-sms.eu](http://www.urban-sms.eu)



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