European Standardization Organizations

Standardization
in research and innovation projects

Success story: **environment**

iSOIL

Interaction Between Soil-Related Sciences (iSOIL) was a 3-year FP7 (7th European Research Framework Programme) research project. It focused on providing techniques and recommendations to enable fast and reliable high-resolution mapping of soil properties, functions and threats, as part of a wider European strategy to better protect and restore Europe's degraded soil. The project ended in November 2011, having developed a European pre-standard focusing on best practice approaches to electromagnetic measurement. This new standard provides a best practice approach for each stage of the process and enables better comparison and joint interpretation of measurements done at different times and with different instruments.

www.isoil.info

THE PROJECT

Soil degradation is a serious problem in the EU, with negative impacts on water, air, biodiversity, climate and quality of life. This is recognized by the European Commission, which has published a strategy for soil protection and is targeting knowledge gaps through research. An essential pre-requisite for soil protection and restoration is high-resolution soil property maps. However, current techniques have deficiencies in reliability, precision and scalability, and suffer from the lack of a consistent approach. There is therefore a need for new strategies, innovative methods and improved technologies to generate high-resolution and accurate soil analysis.

The iSOIL project responded to this problem by developing techniques and recommendations that would provide fast and reliable high-resolution mapping of soil properties, functions and threats. It developed, implemented and validated new field observation technologies for acquiring data, with improved resolution, precision and feasibility. The project's dissemination activities focused on the development of guidelines for soil mapping at different scales and environments.

STANDARDS: A SOLUTION FOR MARKET UPTAKE

A good approach to the development of high-resolution soil maps is to apply geophysical methods such as Electromagnetic Induction (EMI), which measures electrical conductivity in the subsurface corresponding to different soil properties, combined with digital mapping.

The iSOIL project found that different EMI devices based on the same physical principles provide different results, and that even different measurements with one device are not always reproducible or stable over time.

The reproducibility and reliability of data for single geophysical measurement methods enables common interpretation of results obtained/derived from using different methods taken place at different points in time.

Through standardization of optimized measuring procedures, iSOIL sought to help minimize the problems associated with geophysical methods, and therefore to improve the comparability of data measured. It focused on EMI, and used the CEN Workshop process to establish a widely accepted standard for a best practice approach to using EMI measurement.

> Having a larger number and range of organizations involved in developing the CWA was important to learn what was going on in the wider iSOIL project, and to improve this work and the resulting standard.
>
> **Dr Ulrike Werban, iSOIL Project Coordinator**

HOW WAS THE STANDARD DEVELOPED?

The CEN Workshop Agreement (CWA 16373:2011 'Best practice approach for electromagnetic induction (EMI) measurements of the near surface') was developed over the course of just 18 months. During this period, the emerging results of the iSOIL validation experiments were brought into workshop discussions and the text of the standard.

The standardization process helped the project bring together these different stakeholders, which enabled a widely endorsed standard to be developed and published. It provided an important additional means of project dissemination and the final pre-standard was published in 2011.

IMMEDIATE BENEFIT

The European standard has played a major role in helping to formalize and disseminate one of the main aspects of this approach. It sets out a methodology for target-oriented soil mapping and represents a first step in making geophysical data comparable. This will optimize measuring procedures and minimise potential problems of reproducibility and comparability. This is an important prerequisite for common interpretation of different methods, and provides the opportunity for better comparison and interpretation of measurements done at different times and with different instruments.

The standard development process allowed the project to engage with other stakeholders at a global level. Over 50 participants were involved in the CEN Workshop, with representatives from various institutes, organizations, universities and SMEs in Europe as well as Canada, Japan and the USA. Importantly, workshop members included almost every manufacturer of EMI devices.

LONG-TERM IMPACT

The CEN Workshop Agreement (CWA 16373:2011) is an excellent way to ensure the wider use of iSOIL results. It is already being used by scientists and companies in fieldwork and marketing, and it is anticipated that likely future users would include manufacturers and resellers of EM-devices, universities and SMEs, in addition to the members of the consortium themselves, and other EU-funded research projects.

The project and standard will also be of benefit to the on-going implementation of the EU Thematic Strategy for Soil Protection*, which requires mapping of soil properties, functions and threats. Much of the added value of the project and the standard for the longer term resides amongst activities that are in progress for the provision of soil maps for promoting the protection and sustainable use of soil to prevent further soil degradation and to preserve soil functions.

*http://ec.europa.eu/environment/soil/three_en.htm

> When organizations promote their use of the standard, they will get positive feedback from their customers… If you want to bring research into practice, the CWA is a nice way of doing this.

Dr Ulrike Werban, iSOIL Project Coordinator

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Every project is different. The CEN-CENELEC Research Helpdesk can provide you with advice on how to include standardization in your project.
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