Editorial to the Proceedings of the Workshop
Environmental Information Systems and Services –
Infrastructures and Platforms
(ENVIP'2010)

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Abstract. This paper describes the scope, structure and contents, and outcomes of the *Environmental Information Systems and Services – Infrastructures and Platforms (ENVIP'2010)* workshop, which was held during October 7-8, 2010, in conjunction with the ENVIROINFO 2010 conference in Bonn, Germany.

Keywords: Environmental infrastructures and platforms, environmental monitoring

1 Introduction

The Shared Environmental Information System (SEIS)[1] is one of three major initiatives along with the INSPIRE Directive[2] and the Global Monitoring for Environment and Security (GMES)[3] undertaken by Europe to collect and share environmental information for the benefit of the global society. Different efforts are now emerging towards the creation of infrastructures and platforms for Environmental Information Systems and Services – including Infrastructures for flexible discovery and chaining of distributed environmental services.

Information and Communication Technologies (ICT) have an essential role to play in the context of Environmental systems as they provide the necessary support in terms of tools, systems and protocols to establish a dynamic environmental space of collaboration in a more and more sophisticated digital world. Core challenges are not only related to providing seamless environmental data access to public authorities, businesses and the public at large, but also to allowing for interoperable environmental services based on Web technologies, and stimulating new market opportunities. ICT for environmental collaboration is widely recognised as a major step for addressing complex management issues including adaptation to climate change and sustainable management of urban environment. The European Commission recently funded several projects[4] in the area of ICT for Sustainable

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[1] http://ec.europa.eu/environment/seis/

[2] http://inspire.jrc.ec.europa.eu/

[3] http://www.gmes.info/

[4] http://cordis.europa.eu/fp7/ict/sustainable-growth/environment_en.html

Growth, with a core focus on ICT for Environmental Services and Climate Change aiming at providing the foundations for an infrastructure for monitoring, predicting and managing the environment and its natural resources.

2 The ENVIP Workshop

The ENVIP workshop aimed to tackle the research problems as well as practical experiences around frameworks, methods, concepts, models, languages and technologies that enable enhanced environmental service infrastructures and platforms. Environmental Information Systems are migrating towards being provided as Software as a Service (SaaS) and will benefit from the utilisation and specialisation of emerging Infrastructures as a Service (IaaS) and Platforms as a Service (PaaS) as this is emerging under the umbrellas of Cloud and Grid computing as well as the evolution of the Future Internet. Of particular interest were the architectural, technical, and developmental foundations of infrastructures supporting flexible discovery and chaining of distributed environmental services, and showing how they combine synergistically to enable better collaborations on the scale required by Future Internet connected environments.

The ENVIP 2010 workshop was held on October 7-8, 2010, in conjunction with the ENVIROINFO 2010 conference in Bonn, Germany. The Workshop was successful in identifying commonalities in requirements and advancements in solutions for environmental information system infrastructures and platforms. A Program Committee was assembled to help with the review process, which included experts in the topics of the workshop: Ioannis N. Athanasiadis, Nils Rune Bodsberg, Dan Cornford, Ali Dada, Lars Gidhagen, Miha Grcar, Jorge Marx Gomez, Klaus Greve, Avellino Giuseppe, Torill Hamre, Denis Havlik, Werner Kuhn, Joel Langlois, Paolo Mazzetti, Olaf Østensen, Edzer Pebesma, Zoheir Sabeur, Sven Schade, Bernard Stevenot, Gerald Schimak, Ioan Toma, Aphrodite Tsalgatidou, Leo Wanner, Kym Watson.

Papers were formally peer-reviewed by three referees, and 13 papers were finally accepted for presentation at the workshop and publication at the Proceedings.

The workshop was organized in five sessions and included discussions on topics such as Infrastructures with Semantic Annotation and Uncertainty, Infrastructures with Decision Support and Augmented Reality, Infrastructures with Ontologies and Environmental Indicators, Infrastructures with Discovery and Service Chaining.

More details on the workshop program are available at http://purl.org/ifgi/ENVIP10.

3 Workshop papers

The following 13 papers were presented in the workshop:

1. *Closing the discovery gap in environmental information resources using semantic annotations: the TaToo Approach* by Tomas Pariente Lobo, Mauricio Ciprian, Gerald Schimak, Giuseppe Avellino, and Sascha Schlobinski

2. *Validation Scenario for Anthropogenic Impact and Global Climate Change for Tatoo* by Jiri Hrebicek, Ladislav Dusek, Miroslav Kubasek, Jiri Jarkovsky, Karel Brabec, Ivan Holoubek, Lukas Kohut, and Jaroslav Urbanek

3. *Service-Based Infrastructure for User-Oriented Environmental Information Delivery* by Leo Wanner, Harald Bosch, Nadjet Bouayad-Agha, Ulrich Bügel, Gerard Casamayor, Thomas Ertl, Ari Karppinen, Ioannis Kompatsiaris, Tarja Koskentalo, Simon Mille, Jürgen Moßgraber, Anastasia Moumtzidou, Maria Myllynen, Emanuele Pianta, Marco Rospocher, Horacio Saggion, Luciano Serafini, Virpi Tarvainen, Sara Tonelli, Thomas Usländer, and Stefanos Vrochidis

4. *The uncertainty enabled model web (UncertWeb)* by Edzer Pebesma, Dan Cornford, Stefano Nativi, and Christoph Stasch

5. *Sustainable Urban Development Planner for Climate Change Adaptation (SUDPLAN)* by Lars Gidhagen, Ralf Denzer, Sascha Schlobinski, Frank Michel, Peter Kutschera, and Denis Havlik

6. *On-Site Monitoring of Environmental Processes using Mobile Augmented Reality (HYDROSYS)* by Ernst Kruijff, Erick Mendez, Eduardo Veas, and Thomas Gruenewald

7. *Ontologies and Ontology Extension for Marine Environmental Information Systems* by Adam Leadbetter, Torill Hamre, Roy Lowry, Yassine Lassoued, and Declan Dunne

8. *Bringing sustainability to the daily business: The OEPI Project* by Daniel Meyerholt, Jorge Marx Gomez, Ali Dada, Joerg Bremer, and Barbara Rapp

9. *GENESI-DEC: a federative e-infrastructure for Earth Science data discovery, access, and on-demand processing* by Roberto Cossu, Fabrizio Pacini, Fabrice Brito, Luigi Fusco, Eliana Li Santi, and Andrea Parrini

10. *Supporting Environmental Information Systems and Services Realization with the Geo-Spatial and Streaming Dimensions of the Semantic Web* by Emanuele Della Valle and Alessio Carenini

11. *Adaptable Environmental Service Chains: The Challenges of Distributed Execution and Information Collection* by George Athanasopoulos, Aphrodite Tsalgatidou, Pigi Kouki, Ioannis Pogkas, Michael Pantazoglou

12. *A new Approach to Collaborative Information Processing in Complex Environmental Management Problems* by Gregor Pavlin, Michiel Kamermans, and Kees Nieuwenhuis

13. *Supporting Content Provision in Environmental Information Infrastructures* by Sven Schade and Laura Díaz

5 Outcomes

The workshop succeeded in involving several EU funded projects that are currently building components of infrastructures and platforms for environmental monitoring in Europe (see http://cordis.europa.eu/fp7/ict/sustainable-growth/environment_en.html for a list of projects in this area). The paper presentations and discussions during the

workshop helped to identify common elements and differences between these projects in terms of generic components such as development of ontologies and conceptual models, service discovery and composition, sensor access and stream processing, visualization, multilingualism, interoperability, contributions to standards and security. The list of projects present at the workshop and the covered areas are presented in the below table.

	Ontologies / domain models	(Service) discovery	(Service) Composition	Sensors access / streams	(Web) visualization	Multilingualism	Transformation / mapping	Standards contributions	Security
TATOO	X	X			X				
PESCADO		X	X		X				
UncertWeb		X	X					X	
SUDPLAN			X		X				
HYDROSYS				X	X				
NETMAR	X	X	X		X	X	X		
OEPI	X	X	X						
GENESIS-DEC	X	X	X		X			X	X
LARKC				X				X	
ENVISION	X	X	X	X	X	X	X	X	
DIADEM	X		X		X		X		

Through this, we were able to document the current state of the art and identify the next steps in research towards a common infrastructure for discovery and chaining of distributed environmental services. The workshop clearly showed that further effort is needed to align and ensure a smooth integration of the various components developed in these projects. Nevertheless, the workshop fostered a greater understanding of how open environmental service infrastructures can enable enhanced collaboration between public authorities, businesses and the general public for a better management of the environment and its natural resources. As a result, it was decided to organize a new edition of the workshop in 2011, with various focused group meeting between the members of the various projects until the next edition of the workshop.

6 Acknowledgements