

Environmental Software Systems

IFIP – The International Federation for Information Processing

IFIP was founded in 1960 under the auspices of UNESCO, following the First World Computer Congress held in Paris the previous year. An umbrella organization for societies working in information processing, IFIP's aim is two-fold: to support information processing within its member countries and to encourage technology transfer to developing nations. As its mission statement clearly states,

IFIP's mission is to be the leading, truly international, apolitical organization which encourages and assists in the development, exploitation and application of information technology for the benefit of all people.

IFIP is a non-profitmaking organization, run almost solely by 2500 volunteers. It operates through a number of technical committees, which organize events and publications. IFIP's events range from an international congress to local seminars, but the most important are:

- the IFIP World Computer Congress, held every second year;
- open conferences;
- working conferences.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is small and by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is less rigorous and papers are subjected to extensive group discussion.

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Preface

Due to increasing practical needs, software support of environmental protection and research tasks is growing in importance and scope. Software systems help to monitor basic data, to maintain and process relevant environmental information, to analyze gathered information and to carry out decision processes, which often have to take into account complex alternatives with various side effects. Therefore software is an important tool for the environmental domain.

When the first software systems in the environmental domain grew - 10 to 15 years ago - users and developers were not really aware of the complexity these systems are carrying with themselves: complexity with respect to entities, tasks and procedures. I guess nobody may have figured out at that time that the environmental domain would ask for solutions which information science would not be able to provide and - in several cases - can not provide until today. Therefore environmental informatics - as we call it today - is also an important domain of computer science itself, because practical solutions need to deal with very complex, interdisciplinary, distributed, integrated, sometimes badly defined, user-centered decision processes. I doubt somebody will state that we are already capable of building such integrated systems for end users for reasonable cost on a broad range.

The development of the first scientific community for environmental informatics started around 1985 in Germany, becoming a technical committee and working group of the German Computer Society in 1987. This community grew rapidly and the yearly national conferences are amongst the largest scientific informatics conferences in Germany. In 1992, working group WG 5.11 of the International Federation of Information Processing was founded (see overview article by Bernd Page).

The International Symposium on Environmental Software Systems 1995 goes back on an invitation by my colleague and friend David Russell, Penn State Great Valley, to come to Penn State and organize a symposium as a starting point to gather the international scientific community. Our goal was to bring together experts from all over the world dealing with environmental software - from the practitioners point of view as well as from the computer scientists point of view. Not knowing how the international reaction would be, we were happy when ISESS 1995 proved to be a great success. The days we spent together at the Penn State Campus at Great Valley, Malvern, PA were dominated by high quality presentations and a good spirit.

There was much discussion about whether environmental informatics should be considered as a discipline or just as an application area. If we look at business informatics, nobody will doubt the notion of a discipline. If we also think of an application area in terms of *objects*, *methods* and *procedures*, then it is clear, that business informatics today is able to

handle its objects and methods and is very advanced in handling of procedures within companies. Nobody will doubt that business informatics has changed the way people work.

In my opinion, the reason why we can not yet see this in environmental informatics is very simple: our objects are much more complex, our methods are far more complex and we are far away from thinking in terms of procedures. To make it short: we are still at the very beginning. Therefore, the discussion whether environmental informatics is a discipline, is not of great importance. This question will disappear as in comparable disciplines.

I wish to thank several persons and institutions for their support during the whole process. First of all, my thanks go to David Russell and Penn State Great Valley for inviting us, for providing the facilities and the conference office, for the marvelous equipment and social facilities. Thanks also go to my friend Gerald Schimak and the Austrian Research Center Seibersdorf for their support. Finally, I wish to thank Jim Alpigini, Lockheed Martin, for acting as local chair and keeping things together, as well as Lockheed Martin for sponsoring the symposium.

Gaiberg, August 1995

Prof. Dr. Ralf Denzer, Editor