Environmental information systems – a modern concept for measurement networks

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Environmental information system (EIS) is a design concept for implementation of meteorological, hydrological and air pollution automatic measurement networks developed by AMES company.

Basic concepts of the design will be presented.

Automatic environmental information systems have a long tradition in Slovenia. They were started over two decades ago by the group at Jožef Stefan Institute in Ljubljana. AMES company is a spinn-off of this group from the institute.

Slovene networks nowdays consist of several networks owned by Slovene Thermal Power Plants, Slovene Nuclear Power Plant, some local authorities and governmental agencies. Some networks were built also in the Croatia, Serbia, Bosnia and Herzegovina and FYROM and Algeria.

The network's basic elements are automatic measuring stations. They may consist of dedicated environmental logger and / or a personal computer based unit that collect the sensors and analyzers measurements, control the measuring conditions, perform complex data verification algorithms, form local data base, perform data presentation to users and regularly send the data to remote central units.

Several platforms design concepts will be described from Microsoft Windows series to Linux and dedicated embedded systems. Algorithms for automatic data verification will be presented. Communications to the central units can be implemented practically with arbitrary modern communication means (from PSTN, ISDN or leased lines to internet networks, mobile phones and radio communications).

Central unit is a personal computer based unit for data collection from remote automatic stations. Central unit also perform additional measurements verification, forms the data base and enables user – friendly presentations. Several central units can be joint together on a higher level where they form national and international measuring networks. The design concepts using advanced programming tools will be presented. Practical solutions for several problems from secure communication to data bases (SQL based) and several different platforms for presentation programs (multi –user programs based on TCP/IP connectivity, dedicated software for several types of users to internet browser based presentation programs) will be described. Standard technologies such as XML, XSLT transformations, XQuerry and XPaths will be pre-

sented from practical examples.

The presentation will end by short overview of several Slovene EIS build on the upper described principles.