

Interactive comment on “Web services for distributed and interoperable hydro-information systems” by J. Horak et al.

Anonymous Referee #1

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General comments

In this paper, the authors describe a hydro-information system based on Web services and open distributed architecture. After a short review of available architectures, the authors select a Web services system for developing a hydro-information system prototype, T-DSS. Web services are used for communication between servers (ArteGIS), DBMS (PostgreSQL), GIS (GRASS), hydrological models (HEC-HMS and ModFlow) and data pre or post processing utilities. Final results can be visualized through a MapServer and analysed for decision making by the T-DSS Web Client.

The paper presents an interesting methodology for developing Decision Support Systems, as the selected technology integrates distributed architecture, heterogeneous

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environments, Open Sources application and flexibility in terms of multilingualism. Moreover, this paper is in the scope of the Special Issue “Data-driven approaches, optimization and model integration: hydrological applications”. However, as described hereafter, some points need to be developed in more details before the paper can be finally accepted: as this topic is a multidisciplinary one, between the fields of computer architecture, application development and hydrological modelling, basic concepts and/or corresponding references need to be more clearly stated for the reader. In addition, even if T-DSS is a prototype, presentation of a hydrological case-study is required as it would help the reader to have a better overview of the system capability.

Specific comments

- a key-point of the work is the choice of Web Services concept for building T-DSS. Part 2 “Architecture of distributed information system” and Part 3 “T-DSS” are dedicated to this point, but overall overview of the topic “local system versus global system” is not provided. More detailed references would give us a state-of-the-art in this domain. Moreover, whereas local system structures are well described with examples, global system concepts are not defined, but only presented in terms of T-DSS module description.

- according to the authors, one of the main benefits of the Web-services technology is its ability to integrate transnational constraints. We assume that this functionality has been implemented, but we would like to know if it has been really tested by end-users from another country.

- integration of hydrological and hydrogeological models is clearly described as well as system services. Nevertheless, it would be interesting to know more about selecting such models. End users indicated they prefer free softwares, but why these two? For some technical reason (easy to implement in the overall system)? For their reliability? For their ability to assess various hydrological case studies?

- with regards to the last part of the paper, it would be clearer for the reader to make a

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distinction between what has been fully implemented in T-DSS and what is in prospect for the future. In §4.3 “interface to additional utilities”, for example, we understand that GIS GRASS wrapper has been developed and integrated in T-DSS, but we suppose it is not the case for mDSS interpolation services. Moreover, the relationship between T-DSS and mDSS interpolation services is not clear: have these services been imported from mDSS or have they been designed to be implemented in mDSS?

- Figure 3 and 4 show examples of web client outputs. However, we do not know whether these results come from a real case-study (even if the study has been performed previously in another context) or if they are fictitious. It would also be interesting to know if the system has been tested in a real transnational context as it was a key-factor in selecting web-services technology. More generally, it is important to know if T-DSS system (even if it is a prototype) has been tested according to the different steps of a real hydrological project. Related additional information would be welcome for the reader as it allows to get a more precise idea of the system confidence level: it is very important in terms of decision making environment.

- finally, we would like to get more information on the overall project. As T-DSS is supposed to evolve towards an operational system, it is important to know more about the development framework, specially concerning end-users (researchers, engineers or decision makers), future implementation and maintenance facilities.

Technical corrections

- Line 1880-9: meteorological in place of eteorological;
- Figure 2 is difficult to read;
- Line 1882-14: we suppose Fig.1 should be in place of Fig. 3;
- Acronyms: some of them are very well known (like GIS), some others are defined (for example, WS-API for Web Services Application Interface), but some of them which are undefined (SW, WMS, JAMS) need to be specified.

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