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The Virtual Information Manager: an advanced architecture for information interoperability

M. Messerotti (1,2)

(1) INAF-Astronomical Observatory of Trieste, Italy, (2) Department of Physics, University of Trieste, Italy (messerotti@oats.inaf.it)

The architectural technology available today allows the setting up of efficient systems for data management at various levels of complexity.

Data Grids (DG) and Computing Grids (CG) provide a way to manage geographically distributed, non-homogeneous data sets by unified access, search and retrieval capabilities.

Virtual Observatories (VO), in turn, provide efficient means for complex searches and visualization of data and data features from different data sets, typically generated by observing sets.

Finally, various tools exist for Knowledge Discovery in Data bases (KDD) as well as for Knowledge Embedding in Data Bases (KED).

In principle, all such technologies are already mature and robust to allow the development of an advanced Virtual Information Manager (VIM), capable of exploiting all the data information content and their interrelationships in any specific discipline and operational framework.

As a use case, in this work we outline a possible architecture of a VIM aimed at the management of information relevant to the Space Weather (SpW) field, based on three main functional components, such as a knowledge meta-engine, a VO and an communication manager. This VIM must be able to provide the users (according to their specific typology e.g. public, student, customer, specialist, researcher) with data, data features, knowledge, data analysis, modelling, forecasting, alert and warning issueing, and electronic, voice and video communication/broadcasting capability. A similar architecture must be robust and flexible to guarantee the maximum and reliable

information interoperability for SpW effects mitigation.

Finally, we consider the pros and cons of a similar architecture. In fact, the feasibility of such a VIM is subject to a set of limitations mainly determined by the available interconnectivity level, which, anyway, are expected to be overcome in the near future.

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