

THE EUROPEAN SPACE INFORMATION SYSTEM - ESIS

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ABSTRACT. The general users requirements for the ESIS project are presented.

Early this year, the European Space Agency approved and funded a pilot project for a European Space Information System (ESIS). What is an information system? This term has a large variety of interpretations, most dependent on the professional spheres in which it is used. ESIS will essentially possess the characteristics of an environment within which users can obtain, exchange and deposit information related to space physics. In particular, this means the possibility to:

- obtain observation data or information about instruments, other users or applications available for specific tasks,
- exchange scientific data, papers, software or simply mail with co-investigators,
- put results of research projects into the system, to make them available to other colleagues.

The query for information will be done in discipline specific, not computer specific terms. The system shall be able to analyse and process the user vocabulary, including keywords, objects identifications, query parameters and shall also interpret properly synonyms and acronyms. This functionality will be built into a discipline oriented query language which will include notions of parameters and object classes.

Another fundamental feature of the ESIS environment shall be the possibility to combine measurements from different databases and archives, not via a general purpose correlation processor, but with an ensemble of tools to study and establish dataset correlations.

Several facilities will provide interconnection and information services such as electronic mail, bulletin boards, directories of users, applications and services, and file transfer. Furthermore, full function gateways to major research networks such as SPAN, EARN/BITNET, JANET will be implemented.

Particular attention will be devoted to the user interface, which shall provide a uniform access to these functions and shall support a

large number of input devices as well as a selection of dialogue modes, e.g. menus, forms and prompting.

In order to build a system with these capabilities, it is necessary to integrate many different components, such as network elements and database systems, but it is also necessary to develop new concepts. The most appropriate environment for this kind of requirements is, in our opinion, the development of prototypes in a pilot project. Experience has shown that when standard software development methodologies are applied to research tasks, this may have disastrous results. In a research task, both the design and functionality may often change, and only an evolutionary prototype approach can follow these changes.

However, a large part of the system will consist of standard components such as network applications, operating system interfaces and database interfaces, where standard development methodologies apply.

Given the topic of this colloquium, it is of interest to look at the ESIS approach to bibliographic databases.

Commercial services of this kind are better known and more often used in managerial circles than within the scientific community, but ESIS will probably change this status. Bibliographical databases permit full-text searches on references by formulating queries in a keyword sensitive manner, possibly providing additional parameters like author or journal names. The intrinsic power of these facilities lies in the fact that users apply their own vocabulary - keywords, object names or even composed terms - to their search, allowing them to concentrate on concepts and ideas rather than in query language constructs. In the ESIS framework, bibliographic databases will play a major role for they provide the basis for making space data archives available to the large scientific community. Their integration in the correlation environment will permit the users to access information in their language and will provide the general reference space in which other information is embedded. At least the following databases should be considered within the pilot phase:

- Astronomy and Astrophysics Abstract, compiled and produced by the Astronomisches Recheninstitut (ARI) in Heidelberg
- the NASA bibliographic database
- the INSPEC database, produced by the Institution of Electrical Engineers, England
- the PASCAL database, produced by the Centre National de Recherche Scientifique in Paris, France.

Access to the last three is already available at ESA-IRS, Frascati, Italy.