AIM-Eu: a study of aerospace information management in Europe

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Un team *di specialisti dell'informazione che lavorano all'Information and Library Service dell'Università di Cranfield sta conducendo uno studio sull'*information management *nel settore aerospaziale su incarico dell'Agenzia Spaziale Europea (ESA) e della British Library. Quest'intervento riporta una sintesi dello studio, dei suoi scopi ed obiettivi e descrive le metodologie impiegate. Il sito* <http://www.cranfield.ac.uk/aim-eu>*, aggiornato regolarmente, riporta ulteriori informazioni.*

Parole chiave: AIM-EU study – Information management – Aerospazio

Context of AIM-Eu [Aerospace Information Management Europe]

This study is intended to assist ESA in formulating its future information management policy. In order to understand why this was deemed necessary, it is necessary to briefly review the history of ESA's involvement in information exchange since the early 60s. In 1964, at the request of its Member States, ELDO, (the European Launcher Development Organisation), the forerunner of (ESA), signed an Exchange of Information agreement with NASA which permitted ELDO to make the NASA database available online. ELDO set up the Space Documentation System, (SDS), one of the first European online services, specifically to ensure that aerospace scientific and technical literature (STI) was available to the aerospace industries within the Member States. As ELDO became ESA, the SDS service was renamed ESA IRS (Information Retrieval Service).

In 1972 the NASA database was made available online to customers in Europe. Access was limited to those organisations willing to input their material to NASA for inclusion in the database. NASA was not interested in getting royalties or making a commercial profit from the NASA database. Rather, NASA wanted to ensure that it built the world's most comprehensive database in space and aeronautical science. The database was underpinned by a series of bi- and tri-partite agreements which allowed aerospace organisations to deal directly with NASA or through ESA, who processed the material for NASA. Only material which was normally less than two years old and fell within NASA's subject scope was included. This process ensured that the NASA database became the definitive source for unlimited distribution aerospace STI literature.

The database continued in this form until the mid 80s when financial constraints forced NASA to review its Scientific and Technical Information Program. Consequently the NASA database was redefined to reflect and match more closely the needs and interests of NASA's current programmes. This led to an effective narrowing of the scope of the database. Consequently much of the material being supplied by Europe was no longer included in the database.

Over the next few years the scope and content of the database continued to shift according to NASA's priorities. This caused concern within Europe and a consequent request for ESA to establish a European Aerospace Database (EAD) which would more effectively reflect the needs of the European aerospace industry. This was hosted on the ESA-IRS service which also provided access to a wide range of related science, technology and business database.

However, in 1992 cutbacks in the ESA budget led to a decision to close down ESA-IRS. Access to many of the databases which had been available from ESA-IRS was preserved by the creation of the European Information Network Service (EINS), led by the British Library, Cobidoc and CINECA. Although EINS was successfully established by 1996, ESA, as part of the process of closing down IRS, inadvertently cancelled the exchange of information agreement with NASA which had guaranteed Europe continued access to the NASA database.

The version of the NASA database presently available through EINS has not in fact been updated since 1999. Moreover, 180,000 records which largely describe European-produced reports had to be removed from the database at the request of NASA. This affected reports produced by third party organisations which since the cancellation of the exchange agreement NASA no longer felt that it had the right to provide access to. This has effectively denied the European aerospace industry an important "shop window" for its expertise and competencies and ironically, European organisations can no longer access their own research through this database.

A fresh look at information sharing and exchange

At first sight it might have appeared to be a relatively straightforward task for ESA to address these concerns by reinstating the cancelled agreement with NASA. However, the Agency is unable to make policy decisions of this nature without being requested to by its Member States.

It could also be argued that the method of exchange enshrined by the agreement was long overdue for a thorough review for a number of reasons:

- Some organisations may have continued to exchange documents without a clear understanding of the rationale or context for this activity.
- The physical exchange of documents had become expensive and inefficient, involving distribution costs for the information provider, and processing and storage costs which the Agency could not easily justify.
- The emergence of new Web technologies has transformed information access and retrieval to such an extent that it is imperative that new models for sharing and exchange should be investigated.

It was against this background that in March 2000 the Agency produced a request for quotation for a study that would provide a comprehensive review of the way that aerospace STI is managed, used and disseminated in the European aerospace industry. The AIM-Eu study was developed in response.

Aims and objectives of AIM-Eu

The specific objectives of AIM-Eu are:

- To consider and properly understand the information needs and information seeking behaviour of aerospace STI users in Europe.
- To assess ways of promoting and facilitating information sharing and exchange amongst STI producers and consumers.
- To investigate strategies for increasing the visibility and user awareness of aerospace STI resources.
- To consider ways of enhancing access to aerospace STI resources through a distributed system (which does not require the provision of financial support from ESA).
- To investigate and make recommendations concerning the appropriate management and regulation of a distributed system for shared access to aerospace STI.
- To examine the future role and contribution of organisations and other bodies currently involved in the provision of access to aerospace STI and, in particular, to assess the potential for using ESA's existing National Aerospace Centres (NACs) as the focal point of a distributed system for aerospace STI exchange.
- To examine the importance of the NASA STI database to the European

aerospace community, both as an information retrieval source and as a mechanism for the dissemination and promotion of European aerospace community technical competencies and expertise.

- To investigate and make recommendations regarding the future regulation of information exchange between ESA member states and other organisations within Europe, the United States and elsewhere.

Key elements of the study

Study of information usage

The purpose of this part of the study will be to investigate the information needs and information seeking behaviour of aerospace STI users. A parallel activity will be to identify barriers to information flow and to examine current information policy and practices operated by organisations within the European aerospace community.

A series of extensive literature searches has been undertaken, as has initial work on the identification of contacts willing to offer help with the study. The design of the questionnaires and interview schedule, which will be primary means of data collection for this part of the study have been finalised.

Three variations of the basic questionnaire have been produced in order to study the responses of three different user groups - engineers in academia and industry/ government, as well as information intermediaries. These have been sent to a wide range of European aerospace organisations.

The interview schedule will be used to collect the views of key individuals who are managers and/or budget holders employed within aerospace companies. This is intended to provide a comparison with the views expressed in the user survey. It will provide a snapshot of information management practices and systems operated by a number of major players. It is hoped that this will provide evidence of developments, as well as possible barriers to information access and information flow.

Technical feasibility

The focus of this part of the study will be to assess the technical options and feasibility of developing a distributed approach to the provision of access to aerospace STI.

The literature review has identified a number of recent studies of STI usage which seem to suggest that despite changes in the information landscape, particularly with the emergence of the Internet, engineers are reluctant to change their traditional

information seeking habits. One very preliminary suggestion is that this might be an indication that current and previous generations of electronic information services have failed to fully reflect the needs of engineers. This part of the study will provide an opportunity to assess the potential of newly emerging technologies for enhancing information awareness, access, and utilisation.

The work conducted so far has been concerned with scoping the topic in order to identify current thinking and practice. The conclusions from the initial scoping exercise suggest that the project team will need to consider what options exist for searching and retrieving information from distributed information sources. One area that has been identified for further investigation is the Open Archives Initiative (OAI). We will therefore present an assessment of the options for cross searching and interoperability, including OAI and other protocols.

Our initial analysis suggests that metadata harvesting is the most promising solution. Using this approach, engineers search records that are held on a local server which is updated off-line. There is no requirement for a physical exchange of documents, which stay with the originator who decides who can access their data. All the originator needs to do is make another layer of metadata available which describes the document or other electronic information content that they wish to disclose. Assuming that documents are now created electronically, and that metadata is created as part of that process, the originators have to make little or no changes to their existing work flows and procedures. OAI therefore provides a relatively simple and low cost means of building "virtual collections" through information sharing and exchange of metadata. Full text access can be provided if the originator wishes through the means of a hyperlink.

Future sustainability

A third part of the study is to investigate and make recommendations as to how relationships with the new distributed exchange/access system could be administered and regulated. Such a system would have to be mutually beneficial for all participating organisations within ESA member states and potentially between those states and other external organisations.

This part of the study will need to address possibly the most challenging issues including:

- Can collaboration co-exist with competition?
- What are the business arguments that would encourage greater disclosure of information?

- How would membership of such a scheme be defined and regulated?
- How would it be financed?
- How can such a scheme be sustained?
- How would a European partnership interact with US and overseas players?

In order to address some of these issues, four seminars were held in March and April 2002 to invite discussion and comment about aerospace STI management in Europe from those working in the industry, academia and government. They were held at INTA in Spain, NLR in the Netherlands, CIRA in Italy and CNES in France.

The seminars provided an opportunity for a two-way exchange of information. Members of the AIM-Eu team gave a series of brief presentations on the background to the study, including the history of the ESA/NASA information exchange agreement, the aims, objectives, activities and methodologies employed in the research, and an overview of possible technical solutions. These were followed by open discussions covering a number of topics including the information needs/seeking behaviours of aerospace engineers and scientists, attitudes to information sharing, and the management of information sharing and exchange in Europe.

A number of common themes emerged from these discussions including the importance of the Internet as an information resource, the need to provide direct access to the full text of documents, the challenge of defining what constitutes aerospace information (or information of relevance and interest to aerospace engineers/scientists), and a whole range of issues relating to whether collaboration can co-exist with competition within the aerospace community.

Find out more

A project web site which provides a mechanism for disseminating information about the study has been established at <http://www.cranfield.ac.uk/aim-eu>. It includes information about the project, news, contact information, and links to related Internet sources. It also facilitates communication with the project partners, as well as interaction with the aerospace community. A membership area has been established for the publication of work in progress. It is also being used as another way of disseminating the questionnaire.

The final report is due to be delivered to ESA by the end of July 2002. It is hoped to mark the end of the study with a final seminar which will be used to disseminate the results of the study and to highlight any recommendations for further work.