

INFORMATION MANAGEMENT VS. EDUCATION AND TRAINING: CIRA, ITALIAN AEROSPACE RESEARCH CENTRE, EXPERTISE AND FUTURE DEVELOPMENTS

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OVERVIEW

In the mission of CIRA, the Italian Aerospace Research Centre

- education and training,
- information and dissemination of information

both oriented to the aerospace sector, are among the most important goals.

In particular, during these years, CIRA has developed remarkable capabilities in information management that are driven by the organizational unit Documentation Centre.

Based on information needs analysis of external/internal users and high qualified know how, the activities of the Documentation Centre have now the possibility to create a close link to education activities to improve their effectiveness.

This in accordance with the most advanced trends in the fields. [1], [2].

This paper introduces the CIRA approach to information management, the close link between information management and education activities and the most recent developments .

1. INFORMATION AND EDUCATION: THE NECESSARY SINERGY

Structured programmes of education, finalized to the enlargement of the competences of very qualified people operating in hi tech contexts, closely depend on information and on knowledge. [3].

In the Italian aerospace scenario, CIRA wants to give an innovative contribution to establish a

strong synergy between information management and education, starting from:

- needs in the field of education;
- capabilities in the field of information management;
- new organizational models.

Competencies needed by information managers to apply new technologies, a modern approach to information management in which documentation centres and libraries, are “not only an information resource, but also a site for training, technology access, and other non-traditional library services” [4] are the peculiarity of CIRA Documentation Centre.

This organizational unit is characterized by the capability to take into consideration the most recent trends in information management and to transfer and apply them in the Italian aerospace sector.

The following description of the CIRA Documentation Centre shows in detail the assets of this structure, emphasizing the most innovative aspects.

2. THE DOCUMENTATION CENTRE

Working in information management since about twenty years, CIRA Documentation Centre has become a focal point, not only for CIRA internal users but also for the Italian aerospace community.

Main goals of the unit are:

- to provide the management and all sectors of the Centre, with the widest access to heterogeneous information resources;

- to find, analyse and develop information by contributing to the selection of innovative contents and new opportunities;
- to ensure the management of internal technical documentation through specific processes and tools;
- to spread information within CIRA;
- to analyse and retrieve information for the Italian aerospace community.

The achievement of these goals is reached through the activities hereafter described.

2.1 Library and Reference Services

This service is oriented to retrieve all kind (technical, scientific, financial, regulatory) of information in the aerospace sector.

Policies regarding the sharing of bibliographic information and other documentation resources, led to the implementation of the following services:

- a technical-scientific library managed by a state-of-the-art tool like the SW Aleph 500;
- a worldwide access to electronic resources: full text e-journals, both commercial and “open access”, most important host computers (DIALOG, EINS) with their collection of databases; specialized databases (on Engineering, on Patents and so on), public and institutional sources. Information retrieval is conducted through the access to different sources also thanks to tools that allow simultaneous examination of great amounts of data;
- a MetaOpac of Aerospace Libraries: <http://www.cira.it/servgen/metaopac/aerospaziale.htm>. In 2002 the Documentation Centre, in co-operation with CILEA, Consorzio Interuniversitario Lombardo per l'Elaborazione Automatica, has created this tool as a first contribution to the sharing of the library resources in the aerospace sector. The most important Italian aerospace engineering universities departments' libraries have agreed. At the moment the MetaOpac

consists of the catalogues of seven libraries.

2.2 Archives and Documentation

CIRA's needs in documentation management have also required the development of competencies in the field of archiving and documentation management systems.

Particular attention has always been paid to the storage of information and documentation contents produced within the organisation for ensuring their successful preservation.

In CIRA's present growth phase, such competences allow the management of historical company archives even through appropriate transfers in digital format.

At this moment the Documentation Centre makes available several thousands of CIRA technical documents (texts and drawings) and their scientific and technical contents.

This is a strategic asset for:

- the research and testing activities;
- the capability to locate and to map CIRA technical competences in order to optimize the human resources management;
- to prepare a plan to conceive and realize, in the next future, an “enterprise museum”.

2.3 Information dissemination

This activity includes the selection and the organisation of information contents through different media, both within and without the Centre.

In the CIRA campus a plasma and LCD monitor network has been created to make available day by day information on activities and events.

Towards external users the Documentation Centre is going to make available a Press Release that carries out specific analyses of information also outside the aerospace sector in order to contribute in defining:

- positioning of CIRA and other organizations in the aerospace context;
- macroeconomic scenarios at the regional and national level;
- market trends.
- institutional developments;
- social-political trends.

2.4 Information on Intellectual Property and Patents

Due to the lack of patents information services “aerospace oriented” in the Italian scenario, in the early 2006, CIRA has planned the project and the realization of an information service on intellectual property (IP) and patents.

This service will be a valuable and affordably advantage for patentability.

In fact, patent protection is an important step in the development of any new invention, idea, or concept. But, both for a large R&D oriented company and for research/academic centres, the patent process has become very difficult.

So, in the Italian aerospace sector, enterprises, technological units and researchers could be highly encouraged to ask help to a patent professional centre.

The aim of this service is to assist clients in obtaining patents, in preparing and prosecuting a patent application on an invention, to help them protect and confidentially present their invention to manufacturers.

The main features of the service are:

- specialization of its own experts in the aerospace field;
- acting as an information desk of the European network PATLIB, obtaining the status of PIP, Patent Information Point;
- to be oriented to CIRA internal users and to the Italian aerospace community (enterprises, academic, agencies and public bodies);
- to realize a continuous monitoring of CIRA activities in order to locate where CIRA research results can develop into patents.

Moreover, the service is featured by an elevated capacity of understanding and solving topics as information needs and users education.

The final asset of the service will be to assure:

- complete and reliable information;
- information validation;
- rush and well-defined terms of delivery;
- transparency in prices.

The activities of analysis and counselling, both towards CIRA technologies and products presented by external clients, will be based on

the three fundamental requirements for patentability: non-obviousness, novelty, utility. In this context the Documentation Centre can offer the following capabilities and expertise:

- scientific and technical information analysis;
- market analysis to verify if the idea/product is patentable and could become a success;
- overview of the real and potential competitors;
- patent search assistance on the similarity and claims of existing patented inventions;
- assistance in the legal process for a patent;
- promotion of the results through technology transfer activities.

In the second part of 2006 a complete recognition on CIRA R&D activities, has given significant results: on 5 disciplinary clusters and 2 research programmes analyzed, 6 showed many patentable proposals.

This in the following R&D sectors:

- Advanced Materials
- Guidance, Control and Navigation Systems
- Smart Structures
- Virtual Reality

and in the programmes:

- Space
- Aeronautics

On this basis CIRA will improve his own positioning in the aerospace Italian scenario and, among its competitors (other European research centres) identifying a set of ideas/products that could be patentable.

Besides, towards external users CIRA is going to open the patent information services with the start up of a PIP (Patent Information Point) in the context of the EPO, European Patent Office Network.

This improvement in the effectiveness of the patents-related activities is bringing CIRA to an innovative organizational structure.

In this structure the fundamental features of the service are:

- technical information research and analysis;

- evaluation of the non-obviousness, of the novelty and of the utility of the potential patents;
- capability to follow the administrative path of a patent.

This process is managed by three CIRA organizational units: Documentation Centre, Finance and Administration and Human Resources that play a synergic role in these activities.

2.5 Activities for CIRA shareholders and other bodies

Last but not least, as a provider of information services, CIRA develops activities of information brokering and counselling for external users, mainly belonging to the aerospace community.

Moreover, CIRA maintains relations with similar structures, universities and research centres, as well as specific professional associations for development and sharing of methodologies of information and documentation management.

One of the most interesting proposal now in preparation is concerning a programme of education in the field of information management.

Starting from information needs of many actors of the aerospace sector, the Documentation Centre, in co-operation with AIDA, Italian Association for Advanced Documentation, is preparing workshops and short courses finalized to make available to different kind of professionals (engineers, technicians, staff people, managers) methods and tools to retrieve and validate information.

On this side a possible co-operation with AIAD, the Associazione Industrie per l'Aerospazio, i Sistemi e la Difesa, is in progress. This co-operation is mainly finalized to involve in this initiatives, clients and users coming from the industrial sector.

The first events are foreseen for the last months of 2007/first months of 2008.

3 NEW PROGRAMMES

Also to assure the reaching of these goals CIRA Documentation Centre is now involved in two new activities.

3.1 Cooperation with ASI, the Italian Space Agency

From some years CIRA is co-operating with ASI, Italian Space Agency, in order to assure a complete and effective activity of information management for ASI, CIRA and all the Italian Aerospace Community.

Goal of the co-operation is the realization of an Italian capability in the context of the information management for aerospace.

After the first excellent cooperation results, as the realization of ASI Library and Documentation Centre, ASI and CIRA stated to sign a general agreement finalized to the development of a "National Pole for Aerospace Information and Scientific Documentation". Based on the latest innovative experiences in the field, the Pole will provide information tools and services available to different users such as universities, enterprises, research centres, students community.

Taking into account the institutional role of ASI and CIRA, the information and the knowledge managed by the system will include not only bibliographical information and technical documentation but also non traditional kind of objects like:

- "Scientific data collection. In addition to textual information, which have been the primary focus of Digital Libraries until now, raw scientific data collections should be emphasized as well, for more direct impact experimentation.
- Simulation models. Not only scientific data, but the scientific processes themselves should become part of Digital Libraries. In particular, simulation models should be stored in Digital Libraries and become available through them, either as a commodity or as a service. Scientists should be able to compose these in meaning scientific workflow, feed them with appropriate data, and run the corresponding experiments, all as part of interacting with a Digital Library: Thus, the entire spectrum of scientific discovery, from initial conception of ideas, to experimental exploration, to publication

of the final results will be served through Digital Libraries.

- Combinations of text, video, audio, images, structured data, and other forms. Digital Libraries should become able to manage all available forms of information in an integrated fashion to support the needs of their users. So far, much effort has been put into building mono-media Digital Libraries (text, video and audio). In the near future significant effort should be devoted to building truly multi-media Digital Libraries as very few of the on-going projects deal with this issue.” [5]

ASI and CIRA, in order to develop services that make available heterogeneous information, are going to establish a close co-operation with some technical partners. In particular, the first cooperation is starting with Atlantis, the Italian firm that distributes Ex Libris software and tools.

The first result expected will be an experimental prototype of a system that will make available, from a unique point of access, a lot of electronic information resources to several users.

The prototype will be presented in the first part of 2008 to the National Aerospace Community with a workshop.

Further developments will include:

- the co-operation between ASI-CIRA and other partners in order to assure a rational digital collections development;
- the constitution of a national point in information management to represent the Italian aerospace community in the international scenario;
- the design and the realization of e-learning activities for several users. These activities will be based on information resources and scientific and technological results of ASI and CIRA.

3.2 The SIA, Aerospace Information System

At the same time CIRA is involved in the development of an integrated information system for the moment called SIA, Aerospace Information System.

This system is oriented to support the strong

development of the Campania Regional Aerospace Network, created by enterprises, universities, research establishments.

After a period of negative conjuncture, the principal goal of the network is to support the re-start of the sector in the Regione Campania.

In particular, the two following actions will be ready to be developed by the SIA:

- fill the lack of systems oriented to information management;
- improve educational activities and vocational training in the sector.

These actions will be conducted according to the principal characteristics of the “Knowledge Society”. The SIA will give a specific contribute for the aerospace sector, building some innovative tools, based on approaches and methods of semantic ontologies. [6], [7].

The SIA will complete the profile of the activities developed in the National Aerospace Information Pole and will integrate information and education systems, in co-operation with an another, important regional project, the so-called RDBC, “Network of the Digital Libraries in the Campania Region”, starting in this period.

4. METHODOLOGIES

In order to reach these goals, the CIRA Documentation Centre is going to propose, both in the current activities, both in the new programmes, a set of advanced methodologies.

These methodologies derive from the Documentation Centre long time experience in the Italian aerospace scenario and from the acquired and well known expertise.

In particular we refer to:

- the monitoring of potential users;
- the tracking of expertise and capabilities in several disciplinary clusters;
- the capability to match information contents managed by CIRA and other partners with different user needs;
- the packaging of information contents to carry on masters, seminars, workshops and other related activities;
- the availability of these contents through innovative tools;
- the necessary competences to evaluate the performances of these systems and the related customer satisfaction.

Consequently, thanks to such methodologies, CIRA can make best practices available to the aerospace community.

5. CONCLUSIONS

With this paper how a research centre considers information critical to the achievement of its organisational goals, and how the management of information can support and enable it to achieve these goals, have been investigated.

Within both a line and a staff organisational structure, the information management helps decision-making and problem-solving to maintain a competitive advantage in the marketplace.

At the same time, workers at every level of the organisation need to receive the necessary education and training to educate both multi-skilled generalists and specialists in a particular discipline.

This model, so innovative in the Italian context could also be transferred in other sectors (hi tech enterprises, public bodies and so on).

Also from this point of view, CIRA will demonstrate his own capabilities to support the innovation process in the aerospace sector and in the Italian socio-economic scenario.

Biblioteche&Formazione: dall'information literacy alle nuove sfide della società dell'apprendimento, Milano, 15-16 marzo 2007, CIRA-TR-07-0062.

[3] F. Diozzi, *E Learning: Formazione ed Informazione*, "AIDA Informazioni" 22(2004)3, CIRA-TR-04-0486

[4] M.D. Boone, *Looking at four UK "hybrid" libraries*, "Library Hi Tech", 19(2001)1.

[5] Delos Network of Excellence on Digital Libraries, *Digital Libraries: Future Directions for a European Research Programme*, Brainstorming Report, ERCIM-02-W02, 2001.

[6] T. Berners-Lee, *L'architettura del nuovo Web*, Feltrinelli, Milano, 2002.

[7] M. Daconta, *The Semantic Web*, Wiley Pub., Indianapolis, 2003.

6. REFERENCES

[1] *Teaching and assessing information skills in the twenty-first century: a global prospective*, "Library Trends", 51(2002)2, ed. by H. B. Rader.

[2] F. Diozzi, *L'attività di education come nuova centralità nella fisionomia professionale degli specialisti dell'informazione* Convegno