A star is born: the science and technology electronic library

by *

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Abstract

The academic and STM information units of Argentina, characterized by a great geographic scatter, conformed a mosaic of isolated thematic networks sharing few resources. Moreover, the use of printed documents compelled the community to acquire duplicate titles. Several external circumstances dramatically impacted on the Argentine academic community: Internet, exponential increase of published information, costs associated to computer infrastructure and new IT, together with the successful model of Library Consortia in developed countries for the shared access to electronic resources.

The library community and the STM users understood the need and advantages of implementing a consortial model for information access. The economic turmoil that affected Argentina as from December 2001 triggered the highest political levels to adopt and support a similar initiative. This political commitment with a Federal Project in the framework of a regional level (MERCOSUR) was the functional platform needed to launch the Electronic Library.

SECTIP was the governmental body responsible for this initiative, and applied a top-down model, also creating an ad hoc Commission of libraries for advisory on different technical aspects: core collection evaluation, preservation policies, users authentication, standards application, best practices and fair use of shared resources.

At present, users access by institutional IP authentication. In some cases proxy servers were implemented for limited research groups with restricted user's IDs and passwords. Future trends target different aspects: functional, technical and of sustainability: the increase in the number of resources (at present, access to more than 3600 titles and 6 bibliographic databases); the inclusion of new academic units (at present 50 institutions and 1 node); the implementation during 2004 of a unified curriculum vitae system, which will allow a different model of user's authentication.

Owing to a myriad of political and economic problems suffered by Argentina since 2002, this project has not had the merited repercussion in the media and society. It is an historical milestone in the stage of consolidation, and will become a "Knowledge Portal to the XXI century" permeating the STM community.

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Introduction

The Argentine Republic is a country with a long and distinguished academic and scientific tradition. Up to December 2002 human resources devoted to Science and Technology activities amounted 52.686 people [1] distributed as following:

24.683 full time investigators and scholarship holders
16.673 part time investigators and trainees
11.330 technical and support personnel

Argentina historically allocates a 0,45 % of its Gross Domestic Product (GDP) to Research and Development (R&D), rate that has not been raised up to date. A 72 % is originated on National Treasure funds, a 23 % from private sector businesses and the rest from provinces, private universities, and non governmental organisations (ngos).

The given percentage continues to be lesser than 0.50 % of IGP and also smaller than the one of GDP accounted in neighbouring countries affected by comparable development conditions: Brazil, with a 0,87 % and Chile with a 0,54 %.

Argentina has now 36 national universities, 50 private universities and numerous institutions specifically dedicated to R&D activities, in which there are libraries and information or documentation centres hereinafter referred to generally as Information Units (IU).

Scientific and technological Argentine sector faces a critic situation as a result of consecutive years in which there were lack of investment, out-of-renewal human resources in charge of research and development work (fifty years average age) and "brain drain" mainly affecting young postdoctoral scientists communities.

In order to modify this situation, national authorities have increased S&T budget allocation since the end of last year, and launched a leveraging program to improve recognition to R&D activities, thus giving hope of larger and sustainable investment on research, technology and innovation projects as well as remuneration improvements for some sectors of the R&D community. These initiatives together with the RAICES project consisting on reinsertion of Argentine researchers working overseas [2], would allow a renewing impulse to national scientific community as well as effective backing to their developing activities.

In spite of the poorly favourable scenario characterising the last decades, the level of achievement of Argentine scientists has been considered quite satisfactory as well as internationally recognised. Proving that it is so, Argentine scientists have deserved diverse international honours, including three Nobel Prizes in S&T areas: Dr. Bernardo A. Houssay (Medicine and Physiology, 1947), Dr. Luis Federico Leloir (Chemistry,1970) and Dr. César Milstein (Medicine and Pharmacology, 1984).

As another Argentine´s paradox, the common citizen at main urban centres has the possibility to get a good Internet access at a minimal cost, amounting half a dollar at a good velocity. Otherwise, generally speaking, and particularly true in some zones of the country, there are obsolete information infrastructures with low bandwidths for scientists to access the Internet, as well as "connectivity deserts" as mentioned by ALADI [3] and also a lack of support personnel. This fact creates a domestic digital divide adding to the previously mentioned difficulties.

General Outlook of the Science and Technology Information Units

Argentine academic and S&T Information Units, characterised by a great geographic scatter, constitutes a large mosaic of isolated groups distributing themselves over several thematic networks sharing only a few resources. These IU belong to a frame referred to as a national S&T cluster but they are not just "part of an articulated system", as mentioned in the preliminary Report of the National Plan for Science, Technology and Productive Innovation 2004 [4].

In this scenario, several external circumstances dramatically impacted on the information access and availability: the irruption of Internet, an exponential increase of information publishing, information infrastructure and new IT costs together with the substantial increase in the price of subscriptions to most leading international journals.

On the other hand, during last years owing to budget cut-downs, there was a progressive decrease on international publications acquisition consisting mainly of printed material that had forced to title duplication over the mentioned geographic scatter. This cut-down was increasing up to reach a critic level in 2002 when it became impossible to have the publications up-dated as the change rate of currency related to dollar suffered a high and abrupt increase.

The UI had known successful models of consortia of the most advanced countries for the shared access to electronic formatted resources. In this way, librarian, academic, scientific and technologic community understood the need to implement an information access system to take the implied advantages. Notwithstanding, this need was not fully understood by political actors. There were the economic crisis happened on December 2001 that urged policy makers to back a model on those features. Thus, political vision, compromised in a federal project at a national level and involved in a Mercosur frame, was the functional platform to establish the Science and Technology Electronic Library Portal.

Birth of Science and Technology Electronic Library Portal of the Argentine Republic

The Secretariat of Science, Technology and Productive Innovation (SECTIP) was aware of the hard financial and economic situation of the country directly affecting the budgets of scientific and technological institutions. So, since February of 2002, it have been going ahead with the Science and Technology Electronic Library Portal project [4] with the purpose to allow researchers to consult the content of journals and data bases.

Know-how transfer was accomplished through the relationship of SECTIP with CAPES (Co-ordination for Improvement of Superior Level Personnel of the Ministry of Education and Sports of the Federative Republic of Brazil) [5]. It included the knowledge and skills to negotiate with information resources providers as well as the technology needed to emulate design and development of Brazilian portal "Periodicos" [6].

The first stage of this initiative was tied to a budget limited only for years 2002-2003 supplied through Inter American Development Bank (IADB) following a top-down scheme. Initial participants were the thirty six National Universities and four Research and

Development National agencies: the National Centre of Scientific and Technological Research (CONICET), the National Atomic Energy Commission (CNEA), the National Institute for Agricultural Technology (INTA) and the National Institute for Industrial Technology (INTI).

As long as the project advances it becomes necessary to constitute a professional group broadly expert in the Information Sciences area in order to give technical advise in tasks as selecting and prioritising titles to acquire, providers evaluation and terms reviewing over different licences. So the SECTIP called the representing librarians of CONICET, CNEA and Buenos Aires University (UBA), taking into account that those three institutions were a representative set of foreign journals purchasing, concentrating about 90 % of years 2000 and 2001 total subscribed titles. At first stage it was decided to subscribe Elsevier-Academic Press owing to its multidisciplinary thematic coverage.

On December 19th 2002 it was formally inaugurated the "Science and Technology Electronic Library of the Argentine Republic. The Argentine Portal of Scientific Knowledge" ("Biblioteca Electrónica de Ciencia y Tecnología de la República Argentina. El Portal argentino del conocimiento científico", BE) with the purpose to offer an easy search of the scientific and academic bibliography for S&T human resources education and training that is considered essential to formulation, planning and execution of research and development projects. Afterwards, other collections were added to the BE: H. W. Wilson, IEEE/IEE, American Chemical Society, American Institute of Physics, American Physical Society, Nature, Institute of Physics and the following data bases: Biological Abstracts, CAB Abstracts, FSTA (Food Science and Technology Abstracts), MathSci, PsycINFO, EconLit (under OVID/SilverPlatter platform).

The Portal embodied at a difficult point of national economic scenario. Bibliography purchasing had just been discontinued or cut down at majority of Science and Technology institutions of the country. The centralised contracting model allowed SECTIP to make national scale acquisitions at a lower price than paid before by the institutions at an individual basis. Centralised purchasing increased cost-benefit rate, that is to provide information to a greater number of people to a smaller cost, and additionally, it served to enlarge subscribed publications quantity as it allowed to negotiate with providers over conditions and terms according to the national economic situation.

Electronic Library Management

The Interinstitutional Council of Science and Technology (CICYT), an advisory body of SECTIP, approved the Portal Regulation establishing its functional and organisational structure:

1.- Co ordination: composed by SECTIP personnel with an ad hoc assistant Commission.

2.- Administration Commission: formed by 7 participant institutions and regions of country representing members.

3.- Participant Institutions: the BE accessing institutions, two co-ordinator each, one for information technology and the other of information.

Ad hoc Commission of initially three librarian professionals increases its number by December 2003 to 9 members so granting an enriched federal representation in order to attend local issues of institutions. New representatives come from the following institutions: Faculty of Exact and Natural Sciences (UBA), Faculty of Economic Sciences (UBA), Belgrano University, Cuyo National University, La Plata National University, South National University, It also works on the following topics:

Evaluation of the *National core collection*

SECTIP, with ad hoc Commission backing and administration Commission approval, started December 2003 a data collection on the top interesting international and national journals to BE accessing institutions with the purpose of content balancing and satisfying scientific institutions real needs concerning publications. The national core collection of journals, identified by means of the result of that data collection and its later evaluation and analysis, will allow BE content adjustment and serve as platform to develop another projects.

Conservation and archive management policies

Archive policies and those applied to content access in the case of contract interruption are considered.

Standards Application

One of the contributions of the ad hoc Commission was to translate and adapt some pages of Liblicense [7] site, more specifically the *License Vocabulary* and the *Licensing Terms & Descriptions,* in order to incorporate a convenient terminological model adapted to national language usage.

Best practices and shared resources usage promotion

- Development of handbooks of best practices for analysis and interpretation of usage statistics, for example, statistical data produced by editors and institutional web servers log archives analysis, etc
- BE content dissemination programs
- Users training for improving the BE use, as well as the different tools offered by editor sites such as alert services, profile definition, work space and search personalization.
- Training of institutional coordinators by means of workshops with information providers and other specialists who explain specific issues as usage statistical data management and interpretation, elaboration of indicators, etc.
- Consortium purchasing articulation of electronic and print publications for the participant libraries related to titles not included in the Portal, thus avoiding titles duplications in our country.

- Complementing this purchasing mechanism with an electronic document delivering system, for example, by the use of ARIEL software or similar.

Users authentication

At present, different users access is carried out by range and/or fixed IP authentication, which is required by information providers to produce usage statistics and to guarantee access control. Dynamic IPs are not allowed for autentication.
In case there are institutions whose users do not work in their sites, access to the Electronic Library was implemented by password and user name under stricted control of the institutional proxy server.

Challenges and trends

Perspectives are connected with technical, operating and sustainability aspects
- The increase of available resources (at present there are more than 3600 full text titles and 6 bibliographic data bases) including these research significant titles according to the national core collection previously mentioned

- The increase of participant institutions quantity (at present there are 50 institutions and 1 node)

- The implementation of an integrated search system with a unique and friendly user interface.

- The unification of Argentine scientific records under the Argentine Science and Technology Information System (SICyTAR) [8] to allow the implementation of other authentication systems in the future, for example temporary out-of-country users remote access

Owing to the countless change processes our country experienced since 2002, this initiative has not had enough media and society spread yet. Nevertheless, the BE birth meant an historic landmark and it is now at a stage of achievements consolidation. In order to assure its sustainability it is necessary to permanently install, in the political decision making, the importance of this "XXI Century portal to knowledge" model.

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