

BRAZILIAN DIGITAL LIBRARY OF THESIS AND DISSERTATION

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INTRODUCTION

The communication and information technologies allow the documentation centers, libraries and other information units providers the recording and dissemination of its information. These initiatives were employed in an autonomous manner. As a result, the final users found difficulties in the full access to these information sources.

If on the one hand, these technologies facilitate to information providers the record and dissemination in digital format and on the World Wide Web, on the other hand, they also facilitate the development of patterns and protocols which allows the integration of databases.

In this context, the *Open Archives Initiative* was implemented to establish patterns and ideals, which allow the integration of information databases. This initiative came to be initially with the purpose of presenting a new alternative in scientific communication. However, the established patterns may also be used as a tool for the integration of remote databases, reason by which the *Brazilian Institute of Information in Science and Technology (IBICT)* has been continuously researching and adapting them to the country needs concerning the integrated dissemination of Scientific and Technological Information.

The first initiative of IBICT using these patterns was the development and implementation, in the country, of the *Digital Library of Thesis and Dissertations (BDTD)*. This experience demonstrated the potential of these patterns and ideals created by the Open Archives Initiative, because, besides the established patterns having allowed the integration of different initiatives by the *Digital Library of Thesis and Dissertations* already developed in the country, even the BDTD may be integrated to two similar international initiatives the Networked Digital Library of Thesis and Dissertation (NDLTD) and the *Universidad de Chile*. This one implements another model of Digital Library, as Cyberthesis, developed by the *Université Lumière*, which also uses the Harvesting Protocol from the Open Archives Initiative.

THE BDTD

The *Digital Library of Thesis and Dissertations* is one of the initiatives conceived in the project of the Brazilian Digital Library. The development and implementation of this project will allow IBICT to regain its position in the control of the Brazilian Scientific production.

The Brazilian experience includes many different initiatives related to thesis and dissertations, as follow: 1) IBICT leads a consortium of 17 higher learning institutions (IES), which maintain a referential database of thesis and dissertations, containing about 150,000 thesis and dissertation bibliographic references; 2) some higher learning institutions have OPACs, where the respective library store books references as well as thesis and dissertations, with links to their specific contents;

3) Some have digital libraries of thesis and dissertations, using local technologies; 4) Others did not develop any initiative concerning thesis and dissertations.

The diversity of situations presented stimulated a search of specific solution to allow the systematization, articulation and integration of all initiatives concerning Digital Libraries of Thesis and Dissertations in Brazil.

In order to accomplish this scenario, knowing the situation of the Brazilian universities (IES), many of them lacking the resources and the technological infrastructure, IBICT has established the following conditions:

1. Develop, adequate and establish international patterns;
2. Use and develop open source software;
3. Estimulate the decentralization and integration of information resources;
4. Adopt technologies which seek the long term storing of digital objects aiming for their preservation;
5. Promote the creation of an author and an user of electronic publications community;
6. Promote open access to information.

The model defined by the Open Archives Initiative fulfills all the conditions defined by the Institute.

This model supposes the participation of two actors: the data providers and the service providers. In that context, the IES have played the role of data provider, while IBICT acts as a service provider. The data providers are responsible for hosting the databases, in this case, the local *thesis* and *dissertations* libraries (at the IES). IBICT, as a service provider, is in charge of collecting the *metadata* from the IES or data providers, intending to gather them in a single database, from which the user shall be allowed an integrated access to all the *thesis* and *dissertations* published at the IES participating in the consortium.

In that manner, IBICT takes on the role of gatherer. In fact, IBICT plays two roles, that of service provider for the IES, and that of data provider for other service providers, such as NDLTD and the Universidad de Chile.

To ensure the success of this model, IBICT has established the use of two patterns: the group of *metadata* for the description of *thesis* and *dissertations*, named MTD-Br, based on the Dublin Core and the ETD-MS (Electronic Thesis and Dissertation Metadata Set); the harvesting protocol, known as Open Archives Initiative - Protocol of Metadata Harvesting (OAI-PMH). The definition of these two patterns allows the interoperability and integration of the current systems, as well as the ones under construction. It should be noted that is also part of this pattern group the XML, a markup language.

The establishment of the above mentioned patterns facilitated the integration of other initiatives for digital libraries of stored *thesis* and *dissertations* to the BDTD. In that manner, for the integration of the OPACs that contained stored *thesis* and *dissertations*, IBICT has developed MARC-21 to MTD-Br converters. The use of these converters, allied to the implementation of the OAI-PMH protocol, has made possible the integration of the OPACs.

For those IES that had initiatives of self-development of digital libraries of *thesis* and *dissertations*, the OAI-PMH layer is being developed and implemented. Some examples of these initiatives are the ones carried upon at: USP, PUC-Rio, INPE, UFSC.

For those IES that have no initiative nor technological infrastructure, IBICT has developed and implemented a software package for the electronic publishing of *thesis* and *dissertations*. This package already includes the OAI-PMH layer. It is very important to point out that this software is *open source*.

Those IES that receive this software package also receive an implementation plan, which supposes the participation of three actors in the building and maintenance of the digital library of *thesis* and *dissertations* at the IES. These three actors are: the author or student, the pos-graduation program offices and the library. The procedures of publications of the *thesis* begin when the author or student notifies the pos-graduation offices of the defense of his thesis or dissertation. In that manner, part of the reference information is filled out or made available by the pos-graduation offices, being up to the author or student the complementation of these *data* as well as the electronic publishing of his *thesis*. When the procedure is concluded, the library complements the *data*, evaluating them, and releasing them for public access.

CONCLUSION

The success of the implementation of the BDTD is due, in great measure, to the establishment of patterns, to the use of *open source software* packages and to the use of the *open archives initiative*. The success of this endeavor led IBICT to define the model of *open archives initiative* as a default for all its products and services. In that sense, the “Diálogo Científico” (Scientific Dialogue) was implemented, by the adequation of the E-prints software package to brazilian needs. The first repository created using this package was in the field of Information Science.

IBICT customized, as well, the *Open Journal Systems* software package, to build and maintain electronic periodical publications. IBICT has implemented its magazine “Ciência da Informação” (Information Science), as well as, rendering this software available for *downloading* in its site. Te Institute intents, by that, to create a National catalogue of electronic scientific serials publications, gathering and integrating them in one single database for its dissemination and generation of products and services. Some sub-products of this initiative can be developed in the future, such as bibliometrics studies, statistical data and studies aiming to suport science and thecnology planning in Brazil.