THEME: #4 – Implementation – e-portfolio models

Curriculum DeGóis – A Scientific e-Portfolio

Keywords: Scientific curricula, Scientific e-Portfolio, Information Services

Magalhães, Sérgio Tenreiro de
Department of Information Systems of the University of Minho

Santos, Leonel Duarte dos
Department of Information Systems of the University of Minho

Amaral, Luís
Department of Information Systems of the University of Minho

Abstract

The portuguese National Science and Technology Platform, DeGóis, was first designed to host researcher's *curricula* but it has grown, due to the needs for integration and interoperability, into a complex and mature platform that can, through standardization, generate multiple views compatible with other systems. DeGóis is able to generate academic *curricula* (interoperable with the platforms in Latin-America, Caribbe, European Union countries, Israel, Japan, United States of America and Canada), academic e-portfolios and academic work applications (through HR-XML). This work describes in brief the platform and the historical path of its integration with the surrounding technologies and environments.

Introduction

Scientific knowledge and technological innovation are the most important factors in the promotion of the nations development. With the objective of promoting the gathering, the availability and the analysis of the intellectual and Scientific production as well as other curricular information of the portuguese researchers, in an international context, the DeGóis platform emerges as a tool oriented to the individual management of the *curriculum* and of its visualization through searches based on criteria related with its contents. Being a platform for introducing and sharing the professional information, it allows the proper

organization, update and availability of that information, so that it can be easy to find by potentially interested parties.

The DeGóis platform is related to two international networks for science and technology: the International Network of Information and Knowledge Sources for Science, Technology and Information Management (www.ScienTI.net), a grid work methodology that induces the collaborations for the development, implementation and operation of methodologies and tools for the information supporting the management of Scientific activities and technological innovation, among national science and technology organizations, research and development in science and technology groups, science and technology international organizations and funding institutions; and euroCRIS (www.eurocris.org) an european non-for-profit organization promoting the access to information on current research information systems. These two networks are privileged international point of access to the Scientific curricula and to the consequent establishment of partnerships and synergies. Therefore, DeGóis is also an access platform to these networks and to the consequent interactions.

The objective of this paper is to present the DeGóis platform, it's architecture and philosophy. Simultaneously, it is showed that the Scientific activities curricula as it is implemented in this platform, including not only a historical list of the researcher's work but also links to the Scientific outcomes available in a cooperation network of knowledge sharing, is an e-portfolio, once it fits the corresponding definition of EifEL (the European Institute for E-Learning), once it represents an authentic and diverse digital collection of evidence of the knowledge and skills acquired by the researcher through time. Over those evidences there was a reflection made by the community (considering peer review) and it is intended to be used both by the researcher, but also by the community sharing the some Scientific interests and by the corporations.

The DeGóis platform

The DeGóis platform is owned by the Fundação para a Ciência e Tecnologia (the portuguese governmental agency for science and technology),

which guarantees the maintenance of the main principles of the platform, as well as the juridical and institutional form of future developments, through a protocol that also includes the Gávea laboratory of the Department of Information Systems of the University of Minho, the brazilian Miinistry of Science and Technology and the Institute Stela. From the user's perspective, it is constituted by a managing application, designed mainly for the owner of the *Curriculum Vitae* (CV), and a portal where the curricula can be searched and all the data can be visualized, designed mainly with the objective of inducing the dissemination of information. The next subsections will detail a little more those two modules.

The application DeGóis

When the user enters this module (Figure 1) he sees three frames that summarize his CV, one with personal data and one with a short text that works as an abstract of the CV. Browsing through the menus, the user can insert, manage, import, export and print the information relevant to his academic CV.

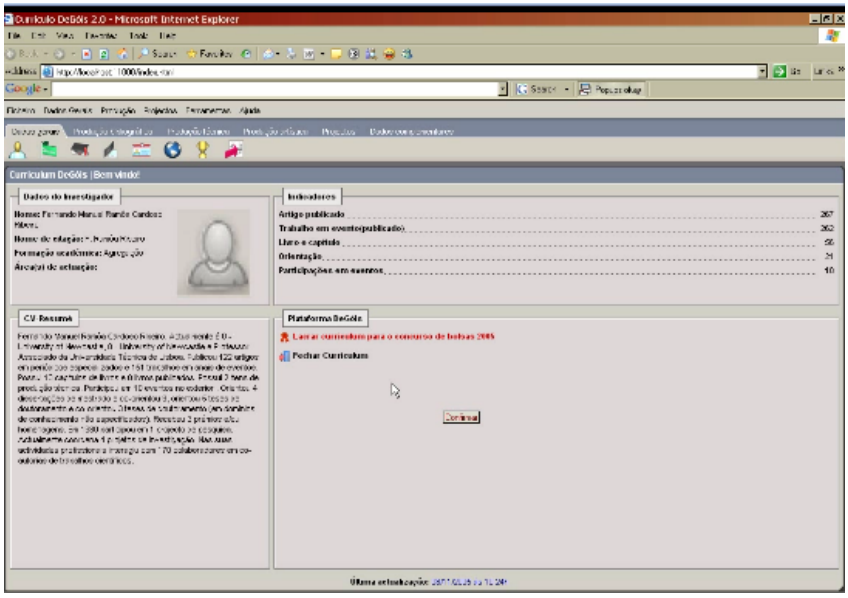

Figure 1 – The interface for the DeGóis application

The data model behind DeGóis is extremely complex, and is the result of several years of development, both technological and social. As a consequence user's can insert academic information related to all the fields of knowledge,

included that information usually forgotten in curricula platforms, like musical scores or maquettes (Figure 2 shows the DeGóis CV model), according to each CV profile, a consequence of the owners field of knowledge. All of those fields are presented to the user in a easy to use interface, that reflects the object oriented philosophy of the platform, so similar types of objects, for instance different kinds of publications, inherit many common characteristics and, therefore, the corresponding interfaces are very similar.

The application also includes managing tools that allow the user to visualize useful information, like the personal tables of co-authors (ordered by name, number of occurrences, number of occurrences in productions or number of occurrences in projects), of events (ordered by name or by number of occurrences), of institutions, of keywords and of journals. The user can also search the database for publications previously entered by other colleagues in order to import them to his CV, avoiding the work of introducing the data relative to one same paper as many times as the number of co-authors. This search can be made by type of production, by year of production or by the title of production and then the system will look for corresponding entries that include citation names equal or similar to that of the user.

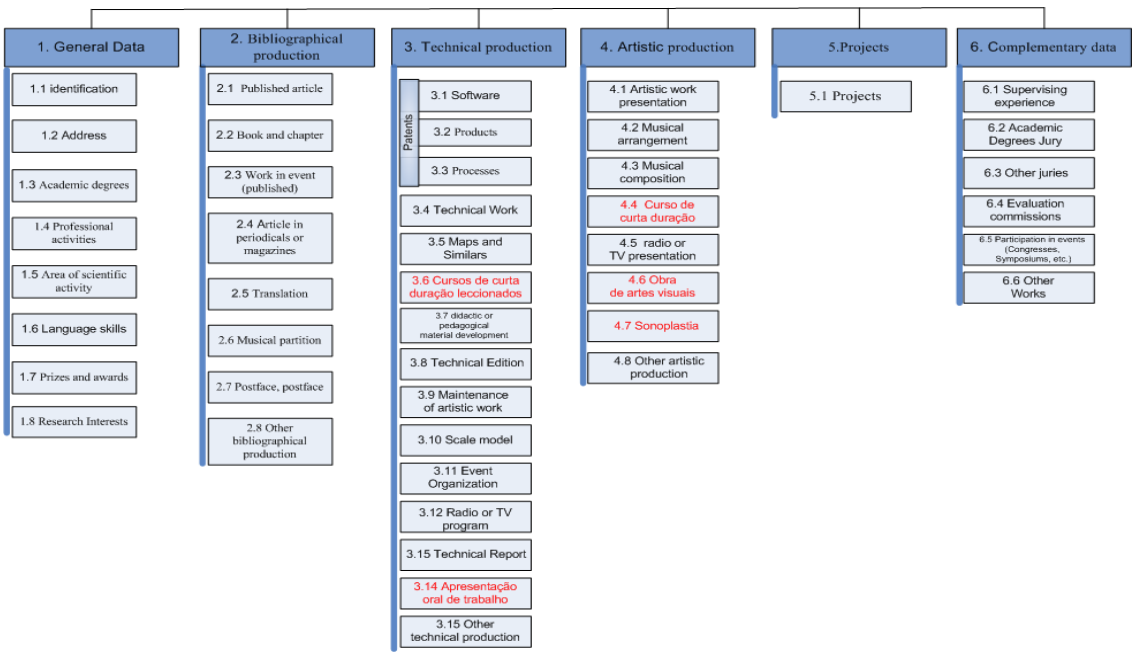

Figure 2 – The DeGóis *Curriculum Vitae* model

The user can also export all the data included in the CV in an XML (eXtensible Markup Language) file and, since September 2006, he can also export the relevant data in a Human Resources XML (HR-XML) compliant file. The CV can also be exported in a printable view, both in Rich Text Format (RTF) and Portable Data Format (PDF), for that the user can choose the fields he wants to have printed, the citation standard he wants to use (at the moment we offer three possibilities: ABNT standard, Chicago standard and user defined citation name), the period of relevance both for the professional activity and for the productions, to use or not to use the *et al* abbreviation, to present data in chronological or reverse sequence and to show or not to show the "additional information", the keywords, the fields of knowledge and the social-economic objectives.

The DeGóis portal

This portal was created with the intention of maximizing the potential of the data that is collected and systematized in order to maintain the portuguese national platform of science and technology, DeGóis. In this portal, created with a sober but attractive look (Figure 3), users can find CV based on the researcher name, institution, region, Scientific domain (Organization for Economic Co-operation and Development – OECD designations), Scientific field (OECD designations), keywords, or just by free text. Once found, the CV can be visualized and printed.

The existence of this portal, besides the obvious advantages for information sharing and partner location, also provides a certain level of trust to the information contained in the researchers' CVs, once there is a cross validation performed by the peers resultant of the fact that they can easily visit each others CV and, therefore, false information would have serious consequences on someone's reputation.

For the owner of the CV this portal presents another advantage: he now has an URL (Uniform Resource Locator) to his official *Curriculum Vitae*.

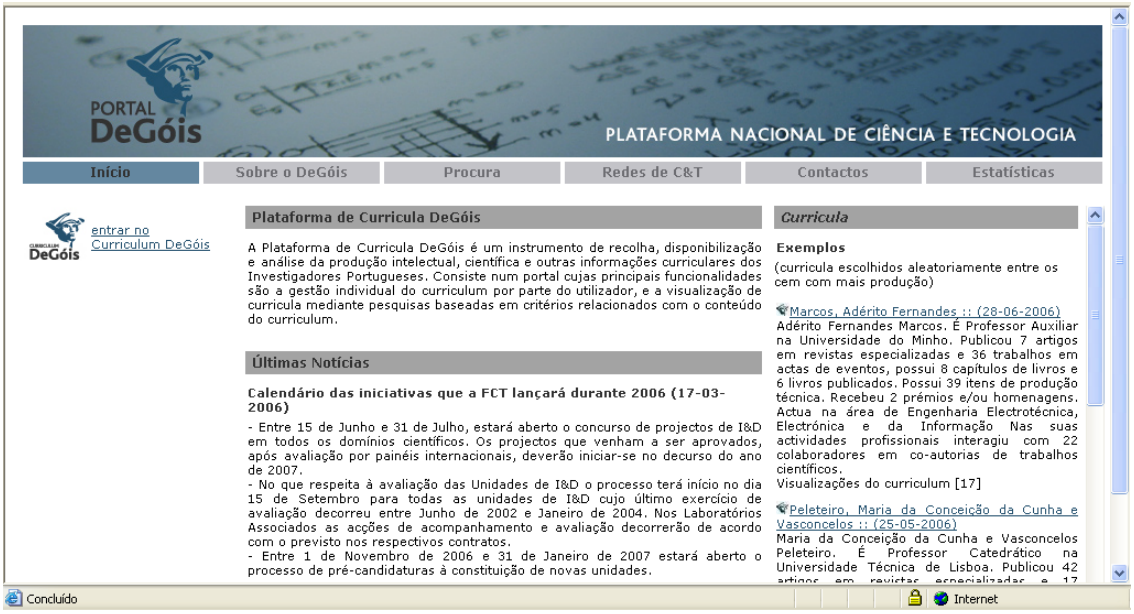

Figure 3 – The DeGóis portal

Interoperability and integration: from academic CV to academic e-portfolio

Being a member of the ScienTI network and of euroCRIS, the first interoperability concerns for the DeGóis Platform were to comply with their standards, ScienTI's and CERIF (Common European Research Information Format). Later, the development of digital repositories and with the Budapest Open Access Initiative generated the need for a connection with those platforms, and this was the first time that we ceased to have a CV to start having a personal portal to a detailed description of one's work and from there to the work itself. This was the moment when the academic CVs metamorphosed to academic e-portfolios. Once that was perceived, it started the efforts to make DeGóis HR-XML compliant in order to maximize the interoperability of the platform and, therefore, increase the usability of the available information, once the compliance with international standards makes the information relevant in more contexts and for a wither possibility of uses.

In this path to interoperability DeGóis has four critical moments. Those were the moments when there was an effort to communicate with platforms related in some way with the ScienTI's XML standard, CERIF, Budapest Open Access Initiative or with HR-XML. We will now go a little more deeply into the involved standards.

The ScienTI's standard

The ScienTI network started in June 2000 with a collaboration agreement between the Brazilian Research National Council (CNPq) and the Pan-American Health Organization (PAHO) to combine the Virtual Health Library from PAHO with the Lattes Platform from CNPq (CNPq, 2002; Pacheco, 2005). This lead to the ScienTI Information Architecture that is the technological basis for the collaboration between the National Research Councils from Portugal and eleven Latin-American and Caribbean, seven international organizations related to Science, Technology and Innovation (ST&I) and four research development groups on information and knowledge systems, from Brazil, Portugal, Peru and Colombia (Pacheco, 2006).

The ScienTI model is based on standardized information units with the relational data model, the multidimensional data model and the XML formats data model. Data transfers are made, according to the needs, through lookup tables or through XML files (Pacheco, 2006).

CERIF

The CERIF initiative started in the late 80s of the XX century, originating CERIF91, the first standard concerning current research information systems (CRIS), and later it evolved to CERIF2000, solving the single entity focus problem inherent from the late XX century CRIS systems, proposing three data models (Asserson, 2002):

- "Full CRIS" data model, defining entities, attributes and relationships;
- Export CRIS data model, defining a set of proposed subsets of the "full CRIS", for platforms capable of importing/exporting CERIF;
- CRIS metadata data model, providing a minimum set that will be understandable by any export CRIS compliant system.

CERIF is now a recommendation from the European Commission and the work to integrate CERIF compliant systems with the ScienTI network has

started. Portugal will play a major role in this process once DeGóis is already compliant with both systems.

HR-XML

The HR-XML data interchange standard was created by the HR-XML consortium, with the intention to enable e-business and the automation of human resources related data exchanges (www.hr-xml.org). This specification includes several components designed mainly for staffing and recruiting, compensation and benefits, training and workforce management. DeGóis has now an export tool that allows the user to creat a HR-XML compliant files with his data.

This creates another opportunity for the user, being able to generate a file with academic professional history and achievements that will be automatically understandable by many potential employers and, therefore, raising the mobility of scientific workers.

Work in progress and future trends

In the near future DeGóis will include several fields that were not relevant from the CV perspective but that are now fundamental for a complete academic e-portfolio. When that is completed an import tool will be added and DeGóis will be HR-XML, in the relevant component, of course.

Another work in progress is the creation of semi-automatic tools that will allow a deeper integration with full text digital repositories. This agent based technology will allow the gathering and certification of data, making the process of creating an e-portfolio easier.

Conclusions

In conclusion, DeGóis is a complex and mature tool that supports a structure for the academic information of the researchers. From the potential that is created, several views can be created in a transparent way, in what

concerns the user. Examples of those views are the CVs and the e-portfolios, only possible due to the evolution of the digital repositories and to the integration of DeGóis with them. The important is to create standards like CERIF and HR-XML that allow the platforms to export/import function oriented information in order to interact with other systems.

References

Asserson, A. Et al: *CERIF : Past, Present and Future : an Overview*, Gaining Insight From Research Information – 6th International Conference on Current Research Information Systems, Kassel University Press, Germany, 2002.

CNPq – Brazilian National Research Council: *The Lattes platform*, Brasilia: CNPq. 2002. Available at http://www.cnpw.br/english/aboutcnpq/pub-material/beyond_lattes.htm.

Pacheco, R. C. S.: *Lattes Platform: the methodological steps*, Presentation at the euroCRIS members meeting. Lisbon, November 2005. Available at http://www.eurocris.org/en(meetings/lisbon_november_2005_portugal/presentations/lattes_platform_the_brazilian_system_of_researchers_cvs/M%3A%5CHARRIE&5CDOCUMENT%5LattesPlatformInBrazil.ppt.

Pacheco, R. C. S. et al : *Toward CERIF-ScienTI cooperation and interoperability*, Enabling Interaction and Quality: Beyond the Hanseatic League – 8th International Conference on Current Research Information Systems, pp 179-188, Leuven University Press, 2006

Contact information:

Sérgio Tenreiro de Magalhães, Leonel Duarte dos Santos, Luís Amaral
Departamento de Sistemas de Informação
Universidade do Minho
4800-058 Guimarães
Portugal
e-mail: {psmagalhaes, leonel, amaral@dsi.uminho.pt}