

Una manera de hacer Europa



BUENAS PRÁCTICAS

Actuaciones Cofinanciadas

HÉRCULES Project "semantics of university research data"

University of Murcia (UM)

**Programa Operativo
de la Región de Murcia**

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Fondo Europeo de Desarrollo Regional

HÉRCULES Project "semantics of university research data"

The University of Murcia (UM) is a Spanish public university located in the Region of Murcia, Spain. It is distributed across five different campuses. The university has among its functions serving the general interests of society and higher education, in accordance with the principles of freedom, pluralism, participation, and equality, seeking to adapt its services to social demands and the best performance of the functions entrusted to it. UM is a public law body according to the definition provided in Article 2.1.4 of European Parliament and Council Directive 2014/24/UE of February 26, 2014.

The "Hercules - University Research Data Semantics" project is an initiative of the Conference of Rectors of Spanish Universities (CRUE) led by the University of Murcia, with the objective of creating an opendata-based semantic Research Management System (RMS) that offers a global view of the research data of the Spanish University System (SUS), to improve management, analysis and possible synergies between universities and the general public.

The total budget for the project is 5,462,600.00 euros, co-financed 80% by the European Regional Development Fund (ERDF), 4,370,080 €, through the financing path assigned to the General Secretariat of Innovation of the Ministry of Science and Innovation in the 2014-2020 Pluriregional Program of Spain (POPE) within the Line of Fostering Innovation from Demand and Public Procurement of Innovation (Line FID-CPI) for development and/or acquisition of innovative products or services by public purchasers through CPI. This financing has been structured through a collaboration agreement between the then Ministry of Economy, Industry, and Competitiveness (currently the Ministry of Science and Innovation, MICINN) and the University of Murcia to implement the co-financed "Hercules: University Research Data Semantics" project, signed on November 29, 2017, by which the MICINN provides 4,370,080.00 euros through a repayable advance from the ERDF assigned in the then Program of Intelligent Growth POCint (currently POPE).

We present in this best practice the "Hercules - University Research Data Semantics" project, which is an example of cooperation and strengthening of innovative development capacities with ERDF support. It is considered a best practice because it meets the criteria designed for this purpose:

1. The role of the FEDER in the actions has been properly disseminated among stakeholders, potential stakeholders and the general public.

All initiatives launched under the "Hercules - University Research Data Semantics" project comply with the information and communication obligations as ERDF beneficiaries:

On the institutional website of the University of Murcia, there is a single, easily identifiable and accessible section, dedicated to the actions co-financed with Structural Funds, which refers the visitor through a link to the specific information about the project, its co-financing by the FEDER, and its framework in the programming of the Structural Fund



Ilustración 1. Página de inicio a la web de Universidad de Murcia (Universidad de Murcia (um.es)) y página específica del Programa Operativo Plurirregional (Programa Operativo Plurirregional - Fondos FEDER (um.es)) marcando los respectivos logos y referencias



Ilustración 2. Página de inicio a la web de HERCULES (https://www.um.es/web/hercules/)

A permanent informational plate has been installed in the University Hall to inform about the ERDF co-financing received.

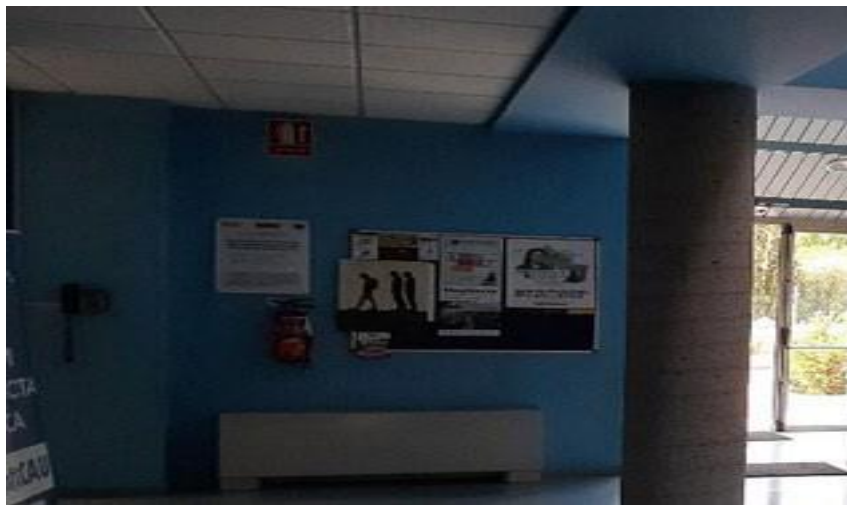


Ilustración 3. Cartel informativo ubicado en las instalaciones de la UM

During the project, messages were published on the different social networks of the University (Facebook and Twitter) highlighting the financing line and the support received from the ERDF funds through tags (#FEDER) and mentions (@CienciaGob), with a wide dissemination among the general public.



Ilustración 8. Mensaje de twitter del 20/11/2019 sobre la Asistencia Hércules en EuroCris:

<https://twitter.com/cascalessaseta/status/1197138272759296000>

2. The action incorporates innovative elements.

The Hercules project has made very relevant innovative contributions in its development and the results achieved.

Most notably, it has introduced new semantic web techniques that allow new information to be obtained from the integration of information from multiple nodes with heterogeneous ontologies and vocabularies, enabling greater inductive knowledge from apparently disconnected data.

These techniques are applicable to geographical and knowledge environments of all kinds, allowing market players to include them in new products and services, taking into account it is licensed as open software.

3. The results obtained have been aligned with the established goals.

The main objective of the Hercules project was to carry out research and development based on semantic web (SW) to homogenize the management of data, information, and knowledge of the Spanish University System (SUS). The project applied the SW approach to represent, share, and exploit the research information of the SUE.

The results obtained verify the expected improvements of the Hercules project, which is a high quality research management software. This software also significantly reduces the cost for universities for licenses and maintenance compared to proprietary alternatives. Through the centralized system proposed by Hercules, potential duplications of public investment in R&D&I projects are avoided, and the shared use of research resources in the university system is improved.

Furthermore, the scientific dissemination of research results is improved by bringing them closer to society in a transparent manner, as well as the transfer of R&D results to companies.

Through the execution of the project, 100% of the initially proposed goals were met thanks to the active collaboration of all members of the University of Murcia and the other involved universities and awarded companies.

Initially, an ontological infrastructure and a semantic architecture, a "common language," was developed to facilitate the description of information and management of data in the Spanish University System.

Subsequently, mechanisms were established to enrich the available research data with reliable sources from the internet, so that the information is richer and through its analysis, synergies can be discovered, knowledge transfer to companies can be facilitated, etc.

All of the above was integrated with the research management software, so that universities that want to use Hercules will have an innovative, robust, and comprehensive system.

4. Contribution to the resolution of a problem or weakness detected in the territorial scope of execution.

The project results have a clear impact on the Spanish University System as a whole:

- Joint exploitation of research information.
- Unification of criteria for obtaining information.
- Establishment of synergies and collaborations between universities, both public and private, and research groups based on data semantics.
- Facilitation of technological transfer and business collaboration.
- Facilitation of knowledge of scientific production for other researchers and for society in general.

- Facilitation of integration of the standardized curriculum vitae. Greater ease of mobility for PDI between universities.
- More easily provide the user, the taxpayer, and society with statistical data that may be relevant from the point of transparency in the exercise of public service.
- And, ultimately, allow the joint exploitation of research information, thereby allowing complete transparency in university management.

With the results of this project, these needs have been covered for all Spanish universities, both public and private, contributing to the resolution of an interregional problem.

5. High degree of coverage over the target population.

The development of the HERCULES project has represented important achievements for the Spanish university system, the main target population for the project, which now includes not only universities, but also administrative support workers and researchers dependent on them.

In addition to the above, other institutions affected by the project have been taken into account: the Ministry of Education and Education Councils of the Autonomous Communities, the European Commission, software development companies, and citizens in general (because it improves higher education and makes its management more transparent).

It is notable that inter-university groups have been created for the development of the project, so that the results are extrapolable to any university. Furthermore, the results of the project have been made available under free and public software licenses for use, modification, and adaptation by all Spanish universities that wish to do so.

Finally, it is worth noting that HERCULES also allowed the contracted companies to increase their competitiveness in the market by accessing knowledge of the university system within the framework of the contracts, to develop new products and services.

6. Consideration of horizontal criteria of equal opportunities and non-discrimination, as well as social responsibility and environmental sustainability.

The UM has ensured that the entities that have developed the project have taken into account the qualification and training of people regardless of any other prejudice or distinction, focusing on the wealth, value, and dignity of people. To do this, recruitment processes have been carried out taking into account social criteria within the special execution conditions, among which the following stand out: acceptance of UM student trainees, availability of an equality plan, and promotion of job stability. All of this was controlled by the personnel in charge of project management during its execution.

The University of Murcia has an equality plan between women and men with a series of measures aimed at ensuring that the university community is aware of the situations caused by gender inequality in our field and the different possibilities for its correction. This plan was applied during the execution of the present project, highlighting the following:

Firstly, the use of non-sexist language was generalized in all documentation generated within the framework of the project, including in the computer applications developed. Along with this, the applications developed as a result of the project took into account the gender perspective when presenting statistics.

Gender equality legislation compliance clauses were included in the procurement contracts linked to the project.

In the UM hiring process, it was taken into account that the norms and processes applied in the selection and evaluation of applicants did not entail any direct or indirect discrimination. In the development of the project, highly qualified UM personnel have been used, and together a participation of women has been obtained that as a whole has reached more than 60% of the

personnel dedicated to the project.

7. Synergies with other public intervention policies or instruments.

The project and its results align with the OPEN SCIENCE policies promoted by the European Commission, being one of the priorities of the Horizon Europe Program. It also aligns with the Spanish R&D Program. Effectively, it is noteworthy that, as a result of the results obtained in the project by one of the research groups participating in the ASIO contract, the WESO group, belonging to the University of Oviedo, has received funds from the State Program for the Generation of Knowledge and Strengthening of Scientific and Technological System of R&D and the State R&D Program Oriented to the Challenges of Society, within the framework of the 2017-2020 State Plan for Scientific and Technological Research and Innovation for the implementation of a Coordinated Project, called "ANGLIRU: Applying Knowledge Graphs to research data interoperability and Reusability".

The project aligns with the FEDER Operational Program of the Murcia Region in its objective of Consolidating the regional R&D+I system, promoting public and private investment and fostering collaboration among the agents constituting the aforementioned system.

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