

CEFCA researchers within the “Library of Alexandria” of software

The Software Heritage project was launched in 2016 with the support of UNESCO to preserve all free and open source software, safeguarding not only the code itself but also the history of its development.

Two CEFCA staff have been invited to the annual meeting of this initiative at the UNESCO headquarters in Paris, due to their work on two tools—Gnuastro and Maneage—that continue to be developed at CEFCA and are key to its day-to-day work.

2th February 2026.—Free and open source software (FOSS) are a core component of the operations and scientific analysis of data obtained at CEFCA’s Astrophysical Observatory of Javalambre. Some of this software is written and maintained by CEFCA staff, made available as FOSS and used by other researchers and observatories. This is the case of Gnuastro and Maneage, which are core components of the research carried out at CEFCA.

The authors of both projects—CEFCA researcher Mohammad Akhlaghi and research software engineer Giacomo Lorenzetti—were invited to the annual Software Heritage meeting at UNESCO headquarters on 28 January.

Software Heritage is an initiative by the French National Institute for Research in Digital Science and Technology (INRIA) and is supported by UNESCO, IBM, Microsoft, Huawei, the French National Centre for Scientific Research (CNRS), among many other governmental and private institutions. Its aim is to preserve the source code of all available free and open source software, in a role comparable to that of the Library of Alexandria for written knowledge.

Software is extremely fragile—it can become inaccessible simply because a website goes offline or inaccessible—so the goal of treating software as a form of human heritage, like architecture or literature, is particularly important. At CEFCA, Software Heritage is used as part of our commitment to research reproducibility: the analysis carried out in this team’s—which includes Sepideh Eskandarlu and Raul Infante-Sainz—scientific papers is archived there and linked directly in the publications. Allowing other researchers to easily access the low-level source code behind the analysis of their published research results.

At this year’s meeting, it was also announced that the Instituto Madrileño de Estudios Avanzados en Tecnologías de Desarrollo de Software (IMDEA) will act as a “mirror” (a live copy) of Software Heritage for the Spanish community.

CEFCA’s work on free and open source software and its presence at UNESCO were partly covered by two grants from the Spanish State Research Agency (AEI) to CEFCA: ARRAKIHS (PID2022-138896NA-C54, led by Helena Domínguez-Sánchez)

and STREAMDECODE (PID2024-162229NB-I00, led by Mohammad Akhlaghi), as well as by support from INRIA.

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Notas para editores

Sobre CEFCA y OAJ

El Centro de Estudios de Física del Cosmos de Aragón (CEFCA) es un instituto de investigación del Gobierno de Aragón fundado en 2008 y situado en Teruel. Las actividades del CEFCA incluyen el desarrollo, operación y explotación científica de la Infraestructura Científica y Técnica Singular (ICTS) española Observatorio Astrofísico de Javalambre (OAJ), que está equipado con dos telescopios especialmente diseñados para llevar a cabo grandes cartografiados del cielo únicos en el mundo. El CEFCA está participado principalmente por el Gobierno de Aragón y por el Ministerio de Ciencia, Innovación y Universidades, y constituye una Unidad Asociada al CSIC con el Instituto de Astrofísica de Andalucía.

[Página web del CEFCA](#)

CEFCA's free and open source software

Gnuastro (or GNU Astronomy Utilities) is a software package, that is, a set of free and open source programs and libraries. Its aim is to optimise the processing, correction, calibration and analysis of astronomical data. Gnuastro is used not only at the Astrophysical Observatory of Javalambre, but also at other astronomical observatories and in specific research projects. In particular, it is used in other European Space Agency projects in which CEFCA is involved, such as Euclid and the ARRAKIHS mission, as well as in projects using the James Webb and Hubble space telescopes.

Maneage (Managing data lineage) is used by researchers to ensure the reproducibility of their scientific results. Maneage will preserve the full software environment and operations that lead to each result in a scientific paper. It therefore ensures that upon publication, other researchers can understand every step of the analysis easily. Maneage was the recipient of a Research Data Alliance Europe adoption grant and is the core infrastructure used on several data reduction pipelines (including the ARRAKIHS data reduction pipeline that is developed at CEFCA).

[Página web de Gnuastro: <https://www.gnu.org/software/gnuastro>](#)

[Página web de Maneage: <https://maneage.org>](#)

Imagen

Morane Grunpeter (left), Head of Open Science Operations at Software Heritage, with Mohammad Akhlaghi (centre) and Giacomo Lorenzetti (right), during the annual Software Heritage meeting at the UNESCO headquarters in Paris.

