

Press release
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Teralab, Institut Mines-Télécom's AI and Big Data Platform, and Nexedi launch an alternative to big hyperscalers

The two groups are making concrete progress in the expansion of GAIA-X toward a sovereign and interoperable cloud

Institut Mines-Télécom (IMT), a founding member of GAIA-X through its Teralab AI and big data platform, and Nexedi are taking open-source computer tools to the industrial scale in the European arena. They are providing a comprehensive, reliable alternative to the prevailing solutions offered by hyperscalers. The plan to introduce a new programming language on the Teralab platform operated in cooperation with Nexedi based on the SlapOS open-source cloud software demonstrates the usefulness of the model in line with the GAIA-X project. It will provide businesses, industry players and computer science researchers with solutions to ensure their technological independence and allow them to create future strategic solutions based on AI and big data.

Creation of a European technological platform with a global reach

In accordance with European values, GAIA-X is seeking to take part in the cloud market, which is rapidly changing with new issues related to the emergence of industrial data in a wide range of sectors (health, agriculture, mobility, energy etc.). The aim is to create a protected cloud ecosystem and enable the development of a European online services market.

To this end, IMT has teamed up with a number of public and private stakeholders to develop an entirely free technological ecosystem to provide a sound alternative for companies looking for scalable secure solutions. It is meant to be a comprehensive ecosystem, offering everything from cloud infrastructure to tools for developers.

An open-source solution with multi-cloud portability

SlapOS makes it possible to deploy and automatically configure applications in a heterogeneous environment. This open-source solution with multi-cloud portability offers a robust alternative to the solutions available on the market with a guarantee of high performance on the various clouds offered by different providers. As such, the sovereign Teralab cloud platform is operated in cooperation with Nexedi using this European open-source software. It can be deployed not only in the Teralab cloud infrastructure, but in the various clouds offered by major Chinese and American hyperscalers with optimized performances for each cloud server. SlapOS will therefore allow for wider dissemination of

the new Cython+ programming language, which will help drive innovation and guarantee competitiveness in the race for AI. As a leading public player in research and innovation, IMT will be in a position to share the best AI and big data technology on a broad scale through an open-source approach.

Rapid developments with the creation of a new Cython+ language

The Cython+ project to create a new language brings together Nexedi, Teralab, Abilian and the INRIA team. It is co-funded by the Ile-de-France Region and BpiFrance and is supported by the Cap Digital competitiveness cluster.

Python is a popular language with application developers since it is easy to read and write. However, it is slow to execute. Cython+ provides a compromise. It aims to speed up the execution of certain Python programs by a factor of 100, while maintaining its user-friendly features, through compilation techniques and concurrent execution on several cores. This language will make it possible to use Python to develop applications based on AI reconciling performance and ease of coding. An initial version of the code was published in October 2020.

All companies will benefit from the innovative Cython+ language, which can be deployed in the various public cloud platforms using SlapOS.

Developing an open-source technological environment to support AI

The Teralab platform is strengthening its commitment and support for open-source IT solutions by providing a comprehensive environment and software tools. Teralab provides the technology, infrastructures, tools and supporting expertise in a sovereign, secure and neutral environment. Companies and researchers will have access to the data hub in order to share (real) data sets in a secure manner under an open license. Developers will be able to prototype products and services in an environment that closely reflects real-life situations.

To complete its open-source system, Teralab provides a Jupyter notebook environment (interactive programming interface) and Eclipse Theia development environments compatible with the Cython+ programming language. A set of artificial intelligence libraries created in Python based on scikit-learn is also provided for data scientists who can integrate them in solutions they are developing.

The notebook environment system is published under a free license in the form of a SlapOS profile. It can be deployed on European (Teralab, Rapid.Space, Scaleway, Hetzner, OVHCloud, etc.), American (AWS, Azure, GCP) or Chinese clouds (UCloud, Qingcloud, Alicloud, Huawei).

For Anne-Sophie Taillandier, Director of Teralab, *"Teralab shows that it's possible to operate a cloud in Europe based on European technologies such as SlapOS, which are competitive in the AI field and independent from the usual non-European hyperscalers."*

Jean-Paul Smets, the CEO of Nexedi, adds, *"SlapOS multi-cloud technology ensures perfect code portability. It facilitates the reliable deployment of innovations such as Cython+ on several clouds. It automatically optimizes the execution of AI libraries for each processor and for each version of Linux kernel or POSIX. It therefore helps reduce errors, the time it takes to run AI code, and the carbon footprint."*

About IMT www.imt.fr

Institut Mines-Télécom is a public higher education and research institution under the aegis of the French Ministry for the Economy, Industry and Digital Affairs, which groups together 8 graduate schools, 2 subsidiaries and a network of strategic and affiliated partners. Its activities in the fields of engineering sciences and digital technology support the education of engineers and managers, partnership-based research, innovation and economic development. Always attentive to the economic world, IMT combines strong academic and scientific legitimacy, close corporate relations and strategic positioning in the key transformations of the 21st century: digital technology, industry, energy and ecology, and education. IMT is a founding member of the Alliance for the Industry of the Future and co-founder of the Franco-German Academy for the Industry of the Future with Technische Universität München (TUM). It is recognized by 2 Carnot Institute accreditations for the quality of its partner-based research. Each year, IMT trains over 1,200 students, enters into nearly 70 million research contracts, and hosts some 100 start-ups in its incubators.

**About Nexedi** - www.nexedi.com

Nexedi is Europe's third-largest open-source software publisher in the ranking by the [AFS.one](https://www.afs-one.org/) Libre Endowment Fund. It publishes [SlapOS](https://www.slappos.com/), an automated operating system for cloud computing, edge computing and virtual radio access networks (vRAN). It is also the publisher of open-source ERP, "ERP5" and the open-source data hub engine "Wendelin". Nexedi provides support service 24 hours a day, 7 days a week to companies and governments that wish to deploy their own cloud or sovereign 5G network, without having to depend on proprietary technologies or technology over which they have no control.

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