

### Leading the Big Data Revolution

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### GIVING BACK TO THE COMMUNITY!

**EVOLVE aims to ease access to HPC, even to complex systems with heterogeneous accelerations, and to propose a cloud-like easy, high productivity and DevOps-like environment.**

**EVOLVE's heterogeneous platform is taking shape with its tiered storage, FPGA and other accelerators. All these resources are usable with the traditional toolbox, ssh, salloc et al. but also, from Jupyter-like notebook (we favour the zeppelin flavour).**

At the time of this newsletter the project has reached half of its journey. Our technological stack is now mature enough to deliver a significant boost to the use cases on many axes.

For instance, EVOLVE can orchestrate a complex application, like satellite images processing, with a deep processing chain from image curation to machine learning: sending the different components of the pipeline to the relevant processing units of the system. Fully containerized, fully controlled with our workflow language.

With this maturing platform, the use cases originally on-boarded in the project, made significant progress. We've registered up to a x120 acceleration factor.

Nevertheless, speed is not everything! EVOLVE offers a built-in visualization module, MPI + machine learning in container, Spark acceleration... The offer is quite large and has been successfully harnessed by many application developers.

At this stage, the project has enlisted more than a dozen of PoCs, i.e. applications which were not part of the original co-design proposal and which are now running on EVOLVE for the sake of getting acceleration.

An important part of our project is to foster innovation and to give back a bit of what we receive from our community: technical partners, sibling projects, open-source developers, and funding agencies. We strive to develop the community and to take part to the ecosystem. The effort is not limited to the release and contribution of open-source code.

### We are also opening the platform and its acceleration technologies.

Do not hesitate to get in touch if you need technical information, or if you want to apply as an EVOLVE Ecosystem Member: [info@evolve-h2020.eu](mailto:info@evolve-h2020.eu)

Read our newsletter and get to know more about our use cases and technology:



### USE CASES

#### The Maritime Surveillance Use Case

[Read article](#)

Maritime Surveillance has been identified as of top priority at EU level. State-of-the-art maritime surveillance systems combine multi-sensor data, including satellite Synthetic Aperture Radar (SAR) images, Automatic Identification System (AIS) transmissions and feeds from radars/coastal sensors, and process/fuse them in near-real-time in order to produce a maritime situational picture as integrated as possible. Especially in large-scale deployments, compute, memory and storage resources become critical in order to improve the accuracy of the integrated picture and reduce the processing time. In this context, the aim of the maritime surveillance pilot in EVOLVE is to assess the value which the EVOLVE technologies can bring to the sector.

Author - Georgios Gardikis (Space Hellas)



This video shows how an integrated software application for maritime surveillance has been ported and deployed in the EVOLVE platform. This step-by-step walkthrough shows how the application is organized in a workflow with multiple stages, how the application components and storage area are easily accessible using the EVOLVE dashboard and how the Zeppelin notebook can be used to load data, process them in a distributed fashion and visualize the results.

#### The Sentinel-2 Satellite Images Use Case

[Read article](#)

TAS proposes to develop an application of change detection on Earth Observation satellite images time series. Examining changes of a designated area over a period of time, enables applications in many sectors, such as security, emergency, maritime and land surveillance. An important challenge in multi-temporal change detection is fast access and storage of a big amount of data and the computationally-intensive processing which is necessary. In this context, the use of the EVOLVE testbed, which contains HPC features, will be extremely useful. The objective of this pilot is to detect the changes over the entire Europe during one year with a revisit period of ten days.

Author - Michelle Aubrun (Thales Alenia Space)



In this video, you will learn how to run TAS change detection tool from the EVOLVE frontend and understand what is exactly happening in the backend, in other words, how the different modules have been implemented, how pods are generated and how modules communicate between each other with Kafka.

### Be a member of the EVOLVE Ecosystem and access the platform

The EVOLVE platform was designed by Atos/Bull with the participation of DDN to support the execution of the many project use cases. Access to the platform is granted to all project partners (currently 50 users) with possibilities to access to container registry repositories on internet.

If you are interested in having access to the platform:

[Learn more about the Platform](#)

Huy-Nam Nguyen (Atos/Bull)

[Read article](#)

[Contact us to become a member of the EVOLVE Ecosystem](#)



### TECHNOLOGY

#### The EVOLVE single-pass data analytics microservice

[Read article](#)

Author - Antonis Papaioannou, Margianna Bofili-Arvaniti and Kostas Magoutis (FORTH-ICS)

#### Running MPI as a micro-service in EVOLVE

[Read article](#)

Author - George Zervas, Antony Chazapis and Angelos Bilas (FORTH-ICS)



This example video is meant to serve as a starting point for porting MPI applications to the EVOLVE platform. Moreover, it shows how to use the services API to start a new dashboard-based service from a notebook paragraph, and how to use automatically attached data namespaces (like "/remote") for interfacing with applications executing in containers.

### More about EVOLVE testbed

[Visit page](#)



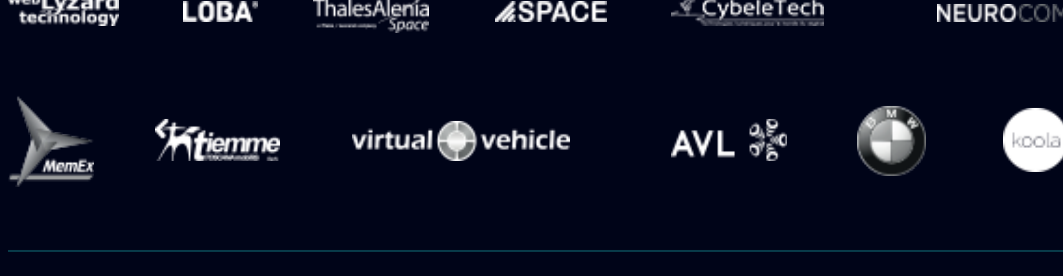
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The Consortium



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