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# Earth Observation Data Pilot in the ENTICE environment

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## Abstract

The treatment of massive and large-sized data obtained from Earth Observation satellite recordings still presents a critical challenge. Remote sensing industries implement on-site conventional infrastructures to acquire, store, process and distribute the geo-information generated. However these solutions are not flexible neither easily scalable. The presented research focuses in the development of future internet technologies in order to improve Earth Observation (EO) services and to highly reduce the costs associated with on premises deployment.

On the one hand, the EOD pilot case consists of the deployment in cloud of the gs4EO software, commercialized by Deimos. EOD pilot proposes several scenarios, all of them built with 4EO products: archive4EO collects data from different sources and triggers the processing of the raw data using process4EO; monitor4EO monitors all the process, and the resulting data is accessible using user4EO services (http://www.entice-project.eu/eodusecase).

On the other hand, the ENTICE environment consists of a ubiquitous repository-based technology which provides optimised Virtual Machine image creation, assembly, migration and storage. The Earth Observation data processing and distribution pilot case (EOD) will be implemented in the ENTICE environment to test, validate and demonstrate that ENTICE can support and improve the performance of commercial Earth Observation platforms computed in cloud.

Within the ENTICE project, the EOD pilot is implemented in a cloud computing infrastructure to provide satellite imagery to end users and carry out a pilot demonstration. The ENTICE environment, which is being developed to be an open source software (http://www.entice-project.eu/try-entice/), will be used

to optimize the implementation and performance of the EOD pilot. It is expected that the optimization of the VMs highly contribute to provide autoscaling and flexibility to the ingestion of satellite imagery, its processing and distribution to end users with variable demands.

The impact that ENTICE will have in the EOD pilot is the costs reduction (reduced storage of optimized VMIs, reduced reservation and deployment time and reduced runtime of the overall system), performance increase (reduced reservation and deployment time and reduced runtime of the overall system) and independence from a specific infrastructure provider (facilitation of the distribution of VMs in distributed infrastructures).

Through the EOD pilot, ENTICE will be tested under a big data environment in which high size images and large amounts of data have to be processed in a market that is increasing: modernization of Earth Observation and space system by using future internet technologies.

Not only the ENTICE partners will benefit, but also many European companies can strengthen their competitive position in the worldwide market due to the benefits expected by the ENTICE environment and its optimisation technology for VM images.

## Keywords

Earth Observation, Distributed Systems, Cloud Computing, ENTICE project, gs4EO.

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