CloudFerro Participates in ESAâ€™s Digital Twin Earth Precursor Phase

CloudFerro, a provider of innovative cloud services, is delivering technology expertise to the Precursor phase of the ESA's Digital Twin Earth project. The project aims to create a digital twin to replicate the Earth's past and present behaviour, enabling the performance of complex simulations of the world's ecosystems.

Past and current Earth observation data, combined with artificial intelligence solutions and numerical modelling, will allow for generating highly accurate long-term predictions in the area of climate.

Currently, the European Space Agency (ESA) is conducting several parallel projects to develop a Precursor for Digital Twin Earth for different domains such as marine, agricultural and climate change. One of the Digital Twin Earth Precursor models will refer to forests, where CloudFerro is providing technology expertise and will ensure resources for continuation of the project through the Network of Resources initiative.

Forest layer

A major challenge will be to reconstruct the behaviour of forest ecosystems on a global scale by integrating environmental models with EO data to digitally describe forest habitats. Forest is an important and complex layer in the global Earth modelling. It influences serval areas such as water management, meteorological and climatological variables (wind, humidity, carbon flux). It is important to integrate the Forest Precursor with other domain-specific components using numerical models, automated data ingestion with data flows, based on powerful infrastructure that will be able to handle computations and growing data volumes.

"We are proud to be part of such an ambitious project that will improve our understanding of global ecosystems evolution, providing scientific evidence for environmental actions and policies, leading the way to a sustainable future for all citizens. Such large scale research projects as the Digital Twin Earth require advanced competences and vast resources as they need to collect, store and process large volumes of data in an easy, cost effective and timely manner," commented Stanislaw Dalek, CloudFerro vice president and chief technology officer.

Hundreds of petabytes of data

Dalek continued: "Building on our expertise and past experience in providing and operating scientific cloud platforms such as CREODIAS, Climate Data Store, CODE-DE, WEkEO, EO IPT and others, whose combined storage exceeds 100PB, we are able to ingest, store, index and disseminate tens and hundreds of petabytes of data. CloudFerro has recently conducted tests that show our ability to deliver over 2PB of data per day from our repositories, which is sufficient to provide cloud services to the entire Digital Twin Earth Project."

The Forest Digital Twin Earth Precursor is led by a Finnish state-owned company VTT. Apart from CloudFerro, the project partners are: the University of Helsinki, UNIQUE from Germany, SIMOSOL from Finland and ICAS from Romania. The Precursor phase is scheduled to be completed in September 2021, when a roadmap and demonstration versions will be produced.

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