Press release

Gaia-X Project Tellus reaches next development milestone: Technical architecture is defined

Frankfurt am Main, 21.03.2023. Tellus, the Gaia-X development project led by Internet Exchange (IX) operator [DE-CIX](), has reached a new milestone: The definition of the technical architecture for the existing use cases has been successfully completed. The project goal is to develop and deploy a Gaia-X compliant network infrastructure for critical use cases that leverages existing Internet infrastructure and adds a software layer. An operational prototype for this software-based network infrastructure is expected to be ready by the end of 2024.

The project is supported by a consortium of 10 companies and organizations, with funding of around 8.75 million Euro provided by the German Federal Ministry for Economic Affairs and Climate Action (BMWK). In a first step, the Tellus consortium defined specific use cases that are characterized by particularly high requirements in terms of the interconnection of different parties – for example, connecting to various cloud services and digital resources. These include the real-time creation of the "digital twin" of machines and plants in Industry 4.0, and the transmission of motion stimuli to robots. On the basis of these requirement profiles, the project team has now designed the technical architecture, consisting of integrated software instances and homogeneous interfaces. This is intended to create a software-based networking layer (cross-domain SDN) that is based on the technical foundation of the public Internet, but that reduces complexity for connections through automatic matchmaking with appropriate providers and enables performance guarantees.

"Future-oriented digital services can no longer simply be executed in one location and in one data center," explains Dr. Christoph Dietzel, Head of Global Products & Research at DE-CIX and Project Leader for Tellus. "These require interconnection across different cloud services and data sources, all the way to the end user. The more modern and innovative the services, the higher the demands on this interconnection in terms of performance and security. The technical Tellus architecture now presented will make this interconnection possible – and it will be uncomplicated and automated, with guaranteed performance and security."

A core of the technical architecture is a hierarchical concept with a Super Node, and in addition Tellus Nodes hosted by each participant. The Super Node takes over the calculation in each case of the best route. To do this, it uses a service registry in which other providers register their services along with the performance guaranteed and security requirements fulfilled. The Super Node then compares these entries with the requirement profile for the respective use case and automatically takes over the matchmaking with suitable providers. The Super Node is a logically centralized component, but it can be physically distributed across different systems.

Facts, figures & data on the Tellus project

- 10 participating companies & organizations: DE-CIX, Cloud&Heat, KAEMI, Mimetik, plusserver, CISPA Helmholtz Center for Information Security, SpaceNet, WOBCOM, TRUMPF, and IONOS.
- 45+ team members
- Funding of 8.75 million Euro
- 36 months project duration, started in November 2021
- 3 specifically defined, future-oriented use cases

Project Milestones

1. Completion of the requirements analysis – already achieved
2. Definition of the technical architecture – already achieved
3. Completion of network and cloud layer design – planned for summer 2023
4. Completion of the implementation phase – planned for fall 2024
5. Tellus prototype is implemented and available – planned for the end of 2024

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