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European computing infrastructures for digital twins: the EGI project 'interTwin'

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Modern data-intensive and compute-intensive science from all domains involves modelling and simulation at very high resolution for prediction and inference workflows. Given the complexity of the computing workflows and the data required by models which can vary from Gigabytes to Petabytes of information per day to be processed, the

ability to deploy ready to use tools that federate the access to resource to run complex AI-based processing workflows federating access to heterogeneous and distributed computing architectures is required. This requires ground-breaking innovation in computational and data handling capacity needs. The EGI Federation ambition is to develop a Digital Twin blueprint architecture and an interdisciplinary Digital Twin Engine (DTE) that will deliver generic capabilities for high volume and high and high speed data acquisition-volume and high-speed data acquisition and pre-processing, big data assimilation into model, forecast production by different simulation models, real-time processing of data, and validation of accuracy in modelling and simulation. These functions, delivered by generic Digital Twin Engine modules, will be demonstrated in the context of different DT applications and the modularity will be demonstrated with a set of specific simulation and modelling capabilities that are tailored to the needs of multiple adjacent scientific communities in four different scientific domains. In this context, the interTwin project will demonstrate the federation of research data from High Energy Physics, Radio Astronomy, Gravitational-wave Astrophysics, Climate research and Environmental monitoring.

Any relevant links

Topic

Machine Learning/Artificial Intelligence

Primary authors: FRANCK, Gwen; MANZI, Andrea (EGI.eu)

Presenter: FRANCK, Gwen

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