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Enabling seamless integration of Copernicus and in-situ data

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BUILDSPACE aims to combine terrestrial data from buildings collected by IoT devices with aerial imaging from drones equipped with thermal cameras and location annotated data from satellite services (i.e., EGNSS and Copernicus) to deliver innovative services at building scale, enabling the generation of high fidelity multi-modal digital twins and at city scale providing decision support services for energy demand prediction, urban heat and urban flood analysis. A pivotal element and the foundational support of the BUILDSPACE ecosystem is the Core Platform and it plays a crucial role in facilitating seamless data exchange, secure and scalable data storage, and streamlined access to data from three Copernicus services, namely the Land, Atmosphere, and Climate Change. The platform's underlying technology is robust, incorporating two key components: OIDC for user authentication and group authorization over the data, and a REST API to handle various file operations. OIDC stands for OpenID Connect, a standard protocol that enables secure user authentication and allows for effective management of user groups and their access permissions. On the other hand, the platform employs a REST API for seamless handling of file-related tasks, including uploading, downloading, and sharing. This combination ensures efficient and secure data exchange within the system. Additionally, the use of an S3 compatible file system ensures secure and scalable file storage, while a separate metadata storage system enhances data organization and accessibility. Currently deployed on a Kubernetes cluster, this platform offers numerous advantages, including enhanced scalability, efficient resource management, and simplified deployment processes. The implementation of the Core Platform has led to a current focus on integrating APIs from Copernicus services into the Core Platform's API. This ongoing effort aims to enhance the platform's capabilities by seamlessly incorporating external data, enriching the overall functionality and utility of the project.