3D TECHNOLOGIES AND APPLICATIONS

Innovations and Benefits -
A set of integrated technologies and applications under HPC (High Performance Computing) for scanning, digitalizing and displaying 3D models and scientific data. The service is implemented on Linux and Windows workstations with last-generation graphics cards integrated into the ENEA HPC infrastructure. The innovation stands in the possible access to 3D applications from the Internet by using the graphics resources available on the infrastructure (Remote 3D), directly sharing and displaying data with no installations or downloads on one's own device to the benefit of data security and protection.

Uses - Use of computer graphics technologies and skills developed in different areas: from cultural heritage to industry.
3D laser scanner for acquiring geometrical data of buildings, facilities or archaeological areas for 2D and 3D digital rendering.
Structured light scanner for high-resolution acquiring of small objects for diagnostics, reverse engineering and 3D reconstruction imaging.
Applications for 3D image-based modeling integrated with ENEA's data storage and HPC resources.
High-resolution display, also remote, of 3D models and large amounts of data from numerical simulations.

Past and Present Activities - 3D scanning is mainly applied to cultural heritage, industry and terrestrial sectors, such as: 3D laser scanner imaging of the archeological park of Juvanum (Chieti); 3D scanning of the whole Cathedral of San Paolo Maggiore in Bologna for producing technical documents and analyses of fractures; digitalization of archaeological finds at Geological Museum G.Capellini in Bologna; high-resolution digital terrain model (DTM) for the realization of an airfield at the Italian Mario Zucchelli Station in Antarctica; display of data from modeling codes and climate, fluid-dynamic and computational chemistry simulations.
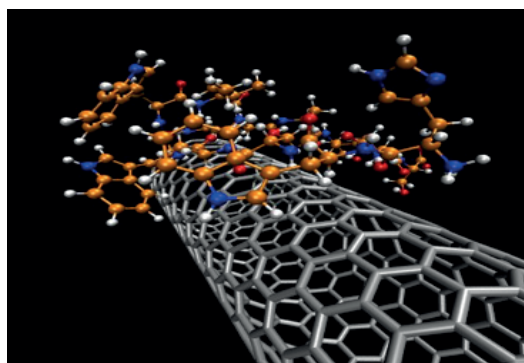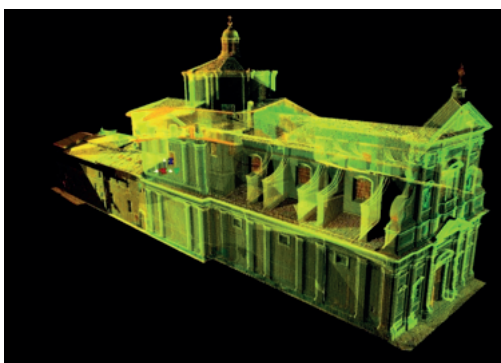
Characteristics: CUSTOM
Thanks to its flexibility, the service can be adjusted to different needs and contexts