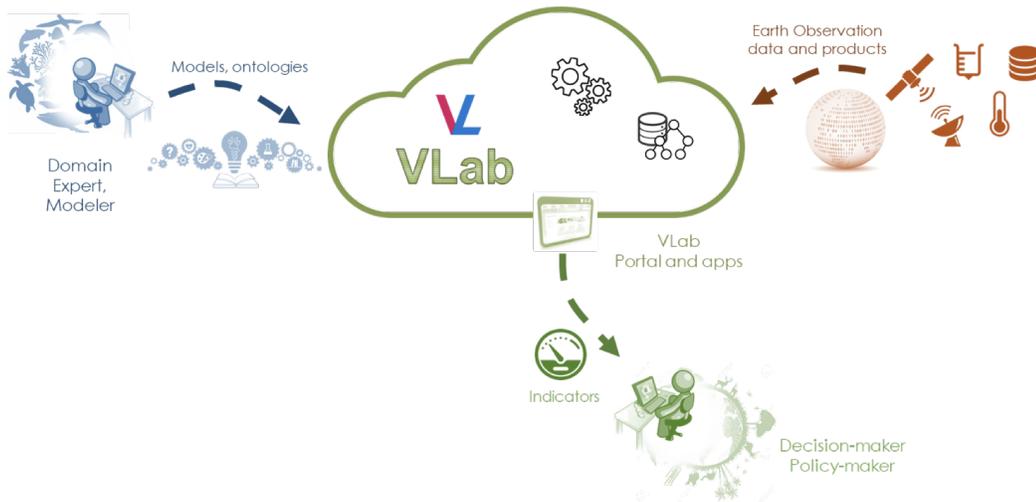# Virtual Earth Laboratory description

The Virtual Earth Laboratory (VLab) is a tool for facilitating the publication and invocation of scientific workflows supporting evidence-based decision-making.

A scientific workflow is a process for generating knowledge from observation/simulation data and scientific models. A scientific workflow can be as simple as a single scientific models using predefined datasets, or as complex as an integration of models working on multiple datasets.
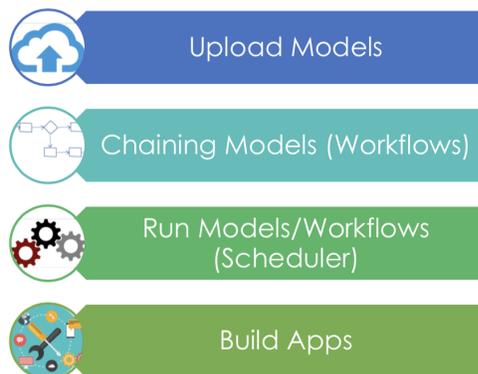
The typical VLab users are:

- Modelers who have developed a scientific workflow for generating knowledge, and who would like to make this workflow discoverable and runnable by other users.
- Application developers who would like to build desktop and mobile apps for end-users (e.g. decision-maker) on top of VLAB resources (data and workflows).
- Scientists or policy-makers who want to access knowledge generated by thematic workflows directly or through a dedicated user-interface

Through the VLab, modelers can discover and access a wide range of datasets from external systems, harmonised on-the-fly through transformation of format, coordinate reference system and resolution. They can also publish scientific models developed in different programming environments (e.g. Python, Java, R, NetLogo) and make them seamlessly runnable from external users.

Through the VLab, application developers can create application, including dashboards, Decision-Support-Systems, mobile apps, accessing VLab resources (data and workflows) through different interfaces with different level of complexity, including standard geospatial Web services, RESTful APIs, Javascript client libraries.

VLab High-level functionalities

The VLab was designed and developed in the context of the H2020 ECOPOTENTIAL project and is currently under porting and enhancement in the H2020 ERA PLANET project, with a major effort in the GEOESSENTIAL Transnational Project. For a technical description of the VLab architecture see Mazzetti P, Santoro M., Nativi S. Knowledge services architecture. GEOEssential Deliverable 1.1

In order to visualize the existing workflows in the VLab and to use it more generally, you need to login either with your Google account or with a specific VLab login that you need to create at the VLab login page.