



## Innovative solutions to anticipate project design parameters: geotechnical, topographic, bathymetry and object detection campaigns

How can we obtain accurate and reliable information in an automated way in early stages of the project to design and build more efficiently while minimizing our impact?

### Challenge context

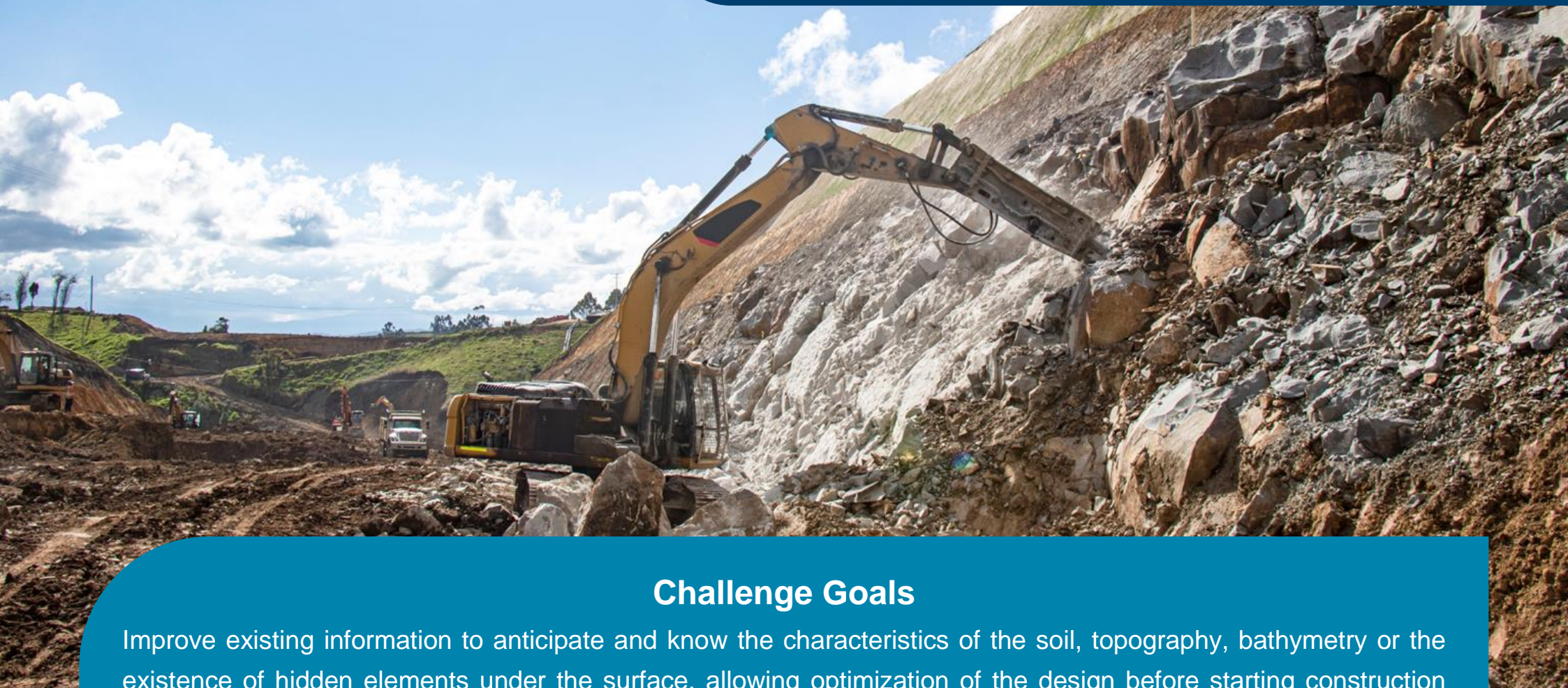
#### Origins

The fundamentals of terrain evaluation for design and construction purposes have not kept pace with the technological advances in other fields.

This approach lengthens deadlines and adds costs to the projects, whose design phase depends directly on the quality and quantity of the information obtained during the geotechnical, topography and bathymetry campaigns.

#### Problem description

- The traditional procedures for obtaining geotechnical, topographic and bathymetric data require complex logistics and often do not allow the creation of a complete map of the terrain characteristics.
- Some projects present difficulties during collection campaigns due to their remote location, complex orography or difficult access.
- The existence of elements hidden under the surface can lead to serious risks due to the proximity and/or manipulation of objects that are potentially dangerous or costly to repair, which can cause unforeseen delays in the planning of the work.
- Obtaining reliable and precise data on geotechnics, topography and/or bathymetry is essential for the development of any project in a terrestrial or aquatic environment. Having reliable access to this information would allow the designs to be adjusted to the reality of the terrain, improving the planning and final design of the work.



#### Challenge Goals

Improve existing information to anticipate and know the characteristics of the soil, topography, bathymetry or the existence of hidden elements under the surface, allowing optimization of the design before starting construction activities. We are looking for technological solutions that present advances in the following areas:

- **Early geotechnical characterization of the terrain to optimize the design**  
We seek innovative solutions that allow us to characterize the composition of the soil in a non-invasive way in areas of difficult access and/or with limited visibility.
- **Detection and location of objects of interest (pipes, dangerous objects, archaeological remains...) in aquatic, swampy or terrestrial environments (coastal areas, rivers, canals, swamps,...)**  
We seek innovative solutions that allow us to locate archaeological or dangerous objects and underground supply networks in areas where official data is not available, both underground and in aquatic or swampy environments.
- **Bathymetry and/or topography in remote areas, with difficult access and complex orography**  
We seek innovative solutions that allow us to obtain a digital model of the terrain under the surface of the water and in land areas with difficult access and limited visibility.

#### Aspects to be considered

We are looking for innovative solutions that:

- Give information on the terrain's humidity, cohesion, friction angle, elasticity modulus or other relevant parameters in the design phase.
- Obtain reliable topography and bathymetry data in areas that are difficult to access or have limited visibility.

#### Target audience

This challenge has a global scope and is aimed at the entire professional innovation community such as startups, scaleups, technology centers, universities and established companies.

#### Expected impact

- Knowing in advance the geotechnical properties of the terrain in order to optimize the design.
- Mitigating the impacts on operations caused by the presence of distribution networks and underground or submarine objects.
- Acquiring methods for obtaining topographic data in areas of difficult access and limited visibility.
- Improving the safety and efficiency of operations during the processes of obtaining information from the field.

[Register to the Challenge](#)