



Satellite Services for Structural Monitoring

## I.MODI exploits Earth Observation data to **monitor the stability of buildings and civil infrastructures** providing **user-friendly reports**

I.MODI offers an **advanced system to monitor the displacements of structures and infrastructures**, using satellite technologies (DInSAR) and **in situ measurements**.

Current satellite missions collect data with high **frequency**, even every **15 days**. Past missions allow us to undertake a **backwards analysis** using archived data that **from 1992 to now** cover the whole Earth.

Video



## WHY MONITOR THE STRUCTURAL HEALTH OF LARGE URBAN AREAS AND INFRASTRUCTURES

Monitoring activities are strictly devoted to **safeguarding the population** and has a primary role in setting up **mitigation and prevention actions**, as well in the implementation of an **alert system**.

### TYPE OF MONITORING SERVICES

**SINGLE STRUCTURE**



### I.MODI® Multi-platform WebGIS

#### Wide Area Analysis

Overview of the magnitude and distribution of the subsidence process overlapped to surface and subsoil interferences.

#### Buildings Classification

A displacement indicator, derived from the magnitude of the settlements, is associated to each structure providing a ranking to be used for prioritizing further actions.

*Each map is associated with an information form that summarizes the main conclusion of the interpretation analysis.*



### Preliminary Analysis

Analysis of displacements registered from satellite during years.  
Evaluation of any external event that may have caused the displacement.

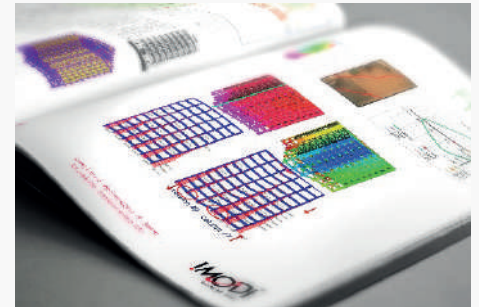
On-site surveys not required.



### Preliminary Damage Analysis

Data obtained with satellite technology is used in simplified structural models to verify the degree of damage suffered by structures.

On-site surveys are required.



### Quantitative Analysis

Data obtained with satellite technology is used in advanced structural models to quantify damage and analyse its evolution over time, past present and future.

On-site surveys and additional data are required.

### Integrated Monitoring from 2008

I.MODI is developed by Survey Lab Ltd, a spinoff of Sapienza University of Rome, established in 2008.

The expertise of the Company in the techniques for monitoring land, structure and infrastructure derives from the strict connection with researchers of the Area of Geomatics in the Department of Civil, Environmental and Construction Engineering.

## BENEFITS OF USING I.MODI®



**Systematic control over large areas**



**Satellite data easy to understand**



**No on-site inspections or devices on structures**



**Back Analysis using archive data from 1992**



**Integration with geological context**



**Modular solutions for customer's needs**

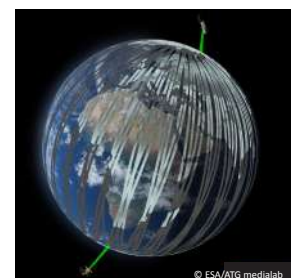
## The DInSAR technology

One of the most advanced satellite technologies, the Differential SAR Interferometry - DInSAR - applied to data acquisition through synthetic-aperture radar allow monitoring displacements of buildings and infrastructures with the accuracy of mm/year.

In this field, Italy is one of the leading country at an international level for both the satellite infrastructure, based on the COSMO SkyMED constellation, and the algorithms that research centres have developed for the elaboration of the SAR data.

The exploitation and circulation of the information available thanks to the DInSAR technology is currently hindered by the complexity in representing and interpreting the results of these analysis from an engineering point of view.

Here is where I.MODI comes into play.



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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 720121