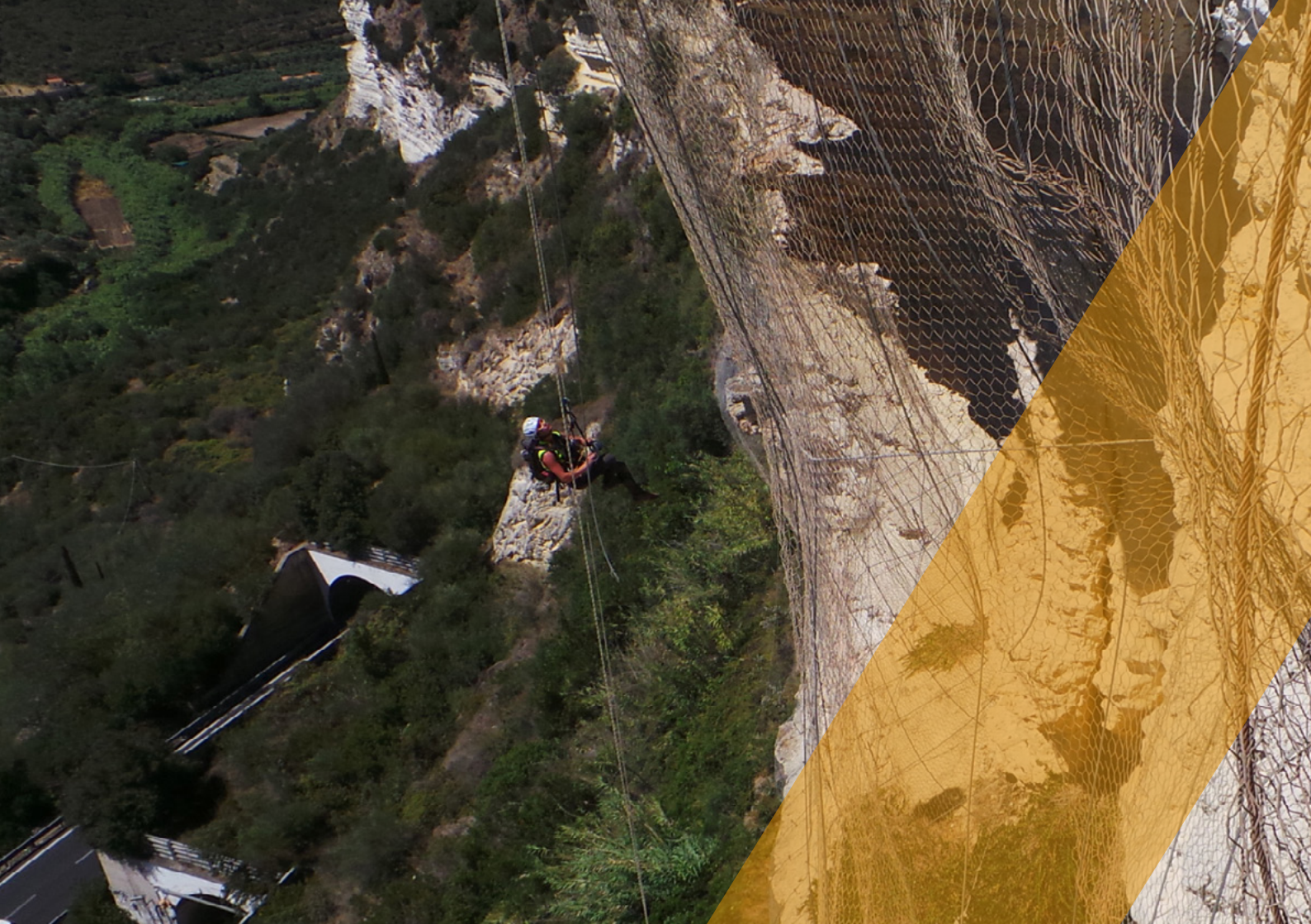




INNOVATIVE GEOTECHNICS  
AND GEOPHYSICS SERVICES



# WHO WE ARE

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## IGS - Innovative Geotechnics & Geophysics Services

**IGS Srl** is a highly specialized company born in 2018, with a wide range of services offered, from geophysical and geognostic **surveys** to **monitoring** services, from **geology** to **geotechnic engineering**, with an **innovative and organized approach**. The company consists of a team of **geologists** and **engineers**, all working in synergy and with passion on every project, using a **highly specialized** and **multidisciplinary** approach. Always looking for new challenges, IGS Srl offers and develops **cutting-edge solutions** in various fields of application. IGS Srl manages directly the entire process from data acquisition, processing, interpretation and monitoring: geotechnical, seismic, geomechanical aspects are covered in a combined way, with a guaranteed result in **great detail**.

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# DEPARTMENTS

The structure is divided in 4 department, to be able to offer highly specialized and integrated services:

## GEOTECHNICS

Engineering services  
Landslides  
Monitoring



## GEOPHYSICS

On the wall  
Unconventional methods  
Conventional methods



## SURVEYS

On the wall  
Geognostic  
Field survey



## LAND PLANNING

Thematic mapping  
GIS analysis  
Specialist advices



# IGS IS INNOVATION

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*"It is not the strongest of the species that survives, nor the most intelligent. It is the one most adaptable to change"*

CHARLES DARWIN

**IGS** is the acronym of "**Innovative Geotechnics & Geophysics Services**": the innovation is not just in the services offered (some of them unique in Europe), but also in the method. **IGS Srl** follows the ISO 9001 certified **quality** standards and uses the latest **project management** tools, applying them throughout all fields of engineering, geology, investigations and surveys. A **modern and multidisciplinary** approach: while every field is facing a recession, **IGS Srl** invests in **training**, constant **update** of instruments and softwares, covering the **most remote** areas in the country, where our experts can follow their **passions**, transferring their **competence, enthusiasm and love for the territory** into their everyday job. **IGS Srl** is involved in **Research & Development** projects to perfect the services offered and uses **robotic** instruments, **remote control and remote-sensing techniques**.

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# IGS IS: WHERE OTHERS CAN'T REACH

*"Everyone knew it was impossible, until a fool who didn't know came along and did it"*

ALBERT EINSTEIN

*"Do what you love and you won't work a day in your life"*: this is what pushes **IGS srl** to find and work on new and complex projects every day. Most of all, the vertical ones, hanging on a rope, are the ones that made the company famous on a national level. **IGS srl** has **5** team members (geologists and engineers) certified on rope access work (on natural or artificial sites). The only company capable of offering a service going from **survey**, to **investigation**, **monitoring** and **work supervision** on the wall. Not only that, it's done reversing the point of view: every problem is solved starting from a specialistic and transversal analysis to then model a project on top of it.



# OUR STRENGTHS

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## DYNAMISM

we quickly adapt to every situation, finding a solution to the problems that we are faced with



## TIMELINESS

thanks to the synergy and our approach, we can optimize time and meet deadlines



## QUALITY

we are certified ISO 9001 for quality, our objective is the constant improvement of the performance of our activities



## WIT

through the constant search of innovative systems and techniques that can adapt to different problems, we can guarantee a continuous technical-scientific update



## OVERVIEW

every challenge is analyzed by a multidisciplinary team, giving that added value that differentiate a product from a service. This allows us to hit the target



## PASSION

every team member brings his essential contribution with passion, feeling like an integral part of the team

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Consolidation of Ponte degli Alpini (Alpini's Bridge) in Bassano del Grappa (VI)

# GEOTECHNICS

## Some references:

- Restoration of hydraulic efficiency of a stretch of the Isonzo River in Poggio Terza Armata – Gradisca di Isonzo (GO) | Client: Commissario Rischio Idrogeologico Regione Friuli Venezia Giulia | Location: Province of Gorizia | € 7,500,000
- Safety implementation of the old town center of Soverzene – first phase | Client: Soverzene Council | Location: Province of Belluno | € 600,000
- Geotechnical-topographic monitoring of a stretch of high-speed railway line Milan-Venice during implementation of experimental consolidation under the tracks | Location: Province of Verona | Instrumentation for continuous monitoring: 4 robotic total stations, 8 geotechnical sensors



# GEOTECHNICS

## Surveys, monitoring and geotechnical planning

IGS' **Geotechnics** department deals with problems related to planning, construction and behaviour of natural soils and rocks and their interaction with structures. It supports corporations and companies through the various planning and construction phases and in the post-operam phase. To manage the increasingly challenging projects while meeting deadlines and quality standards, IGS srl uses **BIM** softwares and **finite elements** calculation codes. The main activity areas of this department are:

- geotechnical and naturalistic engineering
- technical geology
- study and modeling of landslide movements
- planning of hydrogeological and hydraulic defense works
- geotechnical and structural monitoring





# GEOTECHNICS

Defense works of the southern entrance of the Cave Est tunnel pkm 70+000 on Autostrada A27

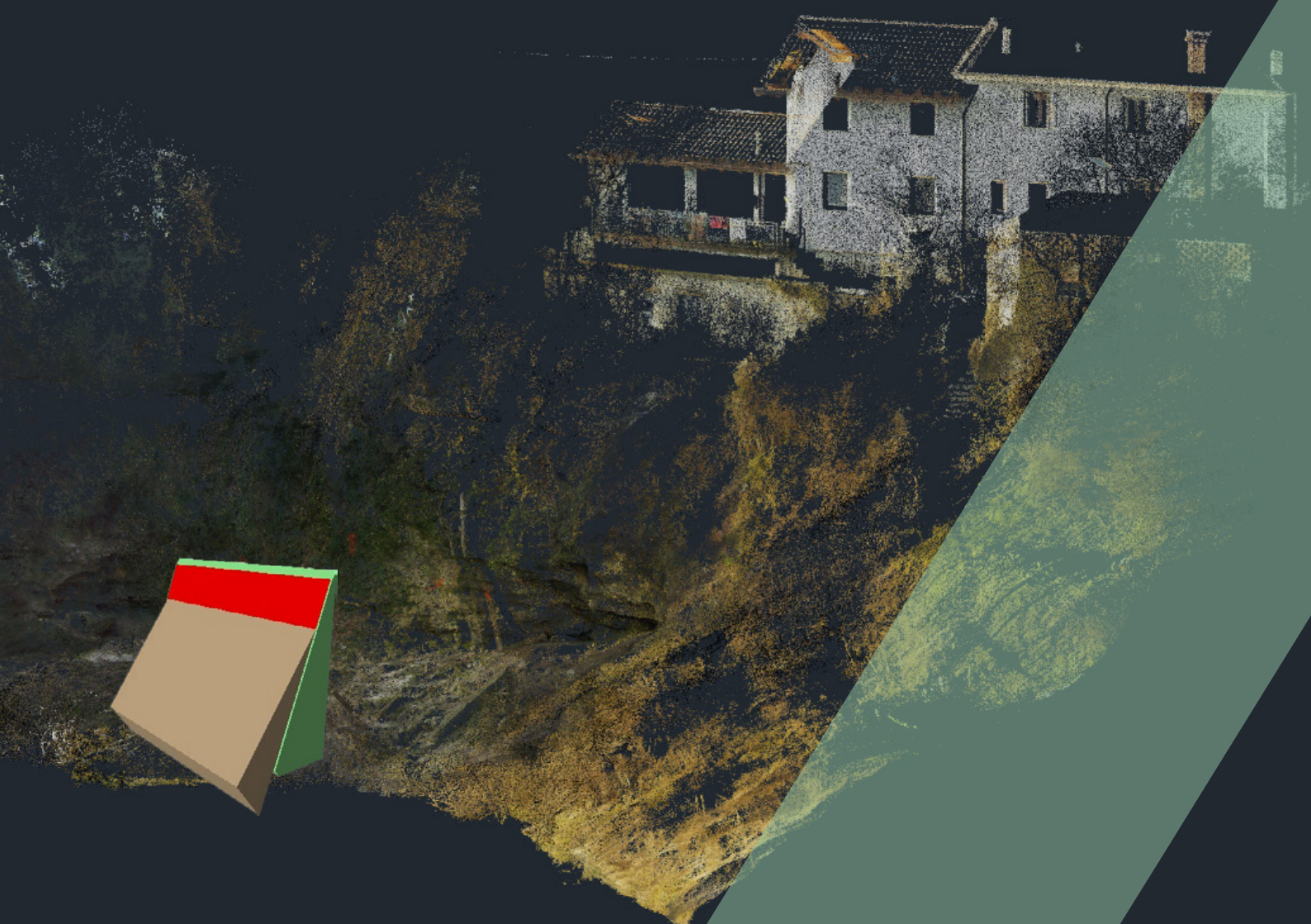
IGS srl followed the entire process, from the **investigations** and **3D surveys**, to the **planning** and **safety**, including specialized activities, to the **monitoring** and management of the **alert protocol**, ensuring **linearity of action** and extreme containment of **timing** to the customer. Because the market doesn't offer a commercial application to model the complex landslide phenomenon, IGS srl is implementing the modelling, on the basis of monitoring data, as part of a Research and Development project

**Location: Province of Belluno**

**Client: Autostrade per l'Italia SpA**

**€540.000**





# GEOTECHNICS

## Consolidation of the Natisone Gorge downstream of Via Zugul | Cividale del Friuli

The project objective is to consolidate the rocky banks of the Natisone River, directly downstream of some **evacuated buildings**, prone to **erosion** and **collapses**, while preserving the **landscape** peculiarities. For an accurate sizing, preceded by detailed **geotechnical modelling**, it was necessary to perform **geophysical investigations** on the wall (high resolution seismic reflection and georadar) and **laser-scanner surveys**, which allowed us to identify discontinuities concealed at several meters of depth. The entire services was followed internally: it wouldn't have been possible otherwise to discern various types of intervention (soilnailing, clogging, local bolting, etc.) and to accurately evaluate their applicability and effectiveness.

**Location: Province of Udine**

**Client: Regione Friuli Venezia Giulia**

**Difesa del Suolo**

**€410.000**



Geophysical investigations for the construction of new cable car arrival station Valgrande-Staunies

# GEOPHYSICS

## Some references:

- extraordinary plan for accessibility to Cortina 2021 | Client: ANAS SpA and various others | data: 12.000 m of seismic investigations
- SS51 – Vittorio Veneto variant/bypass – second lot: Sega-Savassa tunnel  
Client: ANAS SpA | € 65.000.000



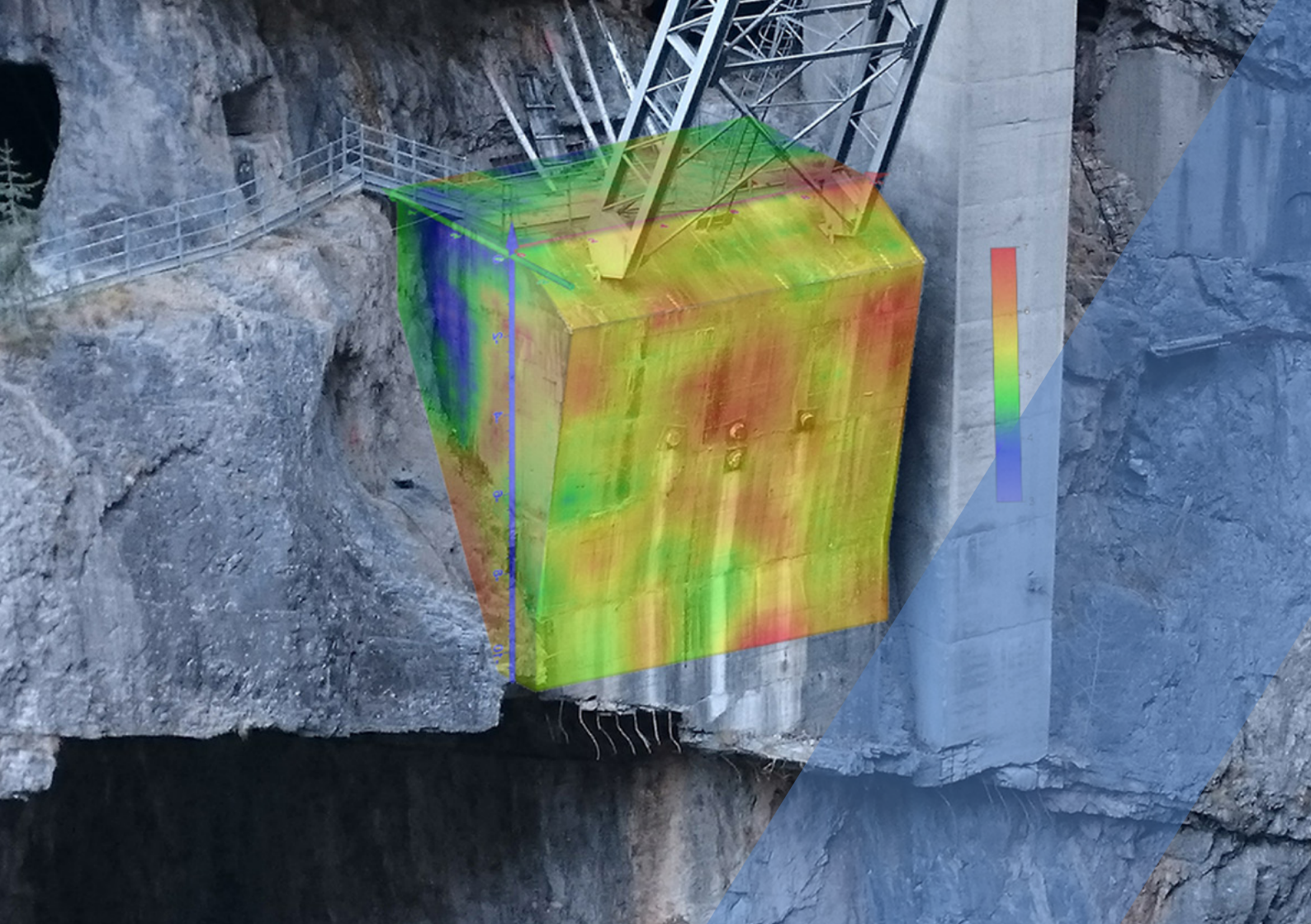
# GEOFYSICS

Geophysical investigations on the wall,  
indirect non-invasive geophysical studies,  
3D modeling

IGS' **Geophysics** department, through the combination of various **indirect non-invasive** geophysical methods and **3D** modeling, is able to find the solution to every problem, even through **rope access** operations. Using the most advanced instruments and analysis techniques, IGS srl offers a physical and geometric characterization of underground structures without using direct methods. In addition to conventional methods, IGS srl utilizes **non-conventional methods**, like 3D acquisitions with irregular geometries, hole-surface recordings, applications on big structures, seismic monitoring, etc.

- various seismic methods 2D and 3D
- various electrical methods 2D and 3D
- georadar









# GEOPHYSICS

Experimental geophysical investigation on the wall through mountaineering techniques at the foundation of the tube bridge opposite the Vajont Dam

Thanks to its innovative approach, applied through **mountaineering techniques**, IGS srl was able to investigate and model the foundation of the tube bridge located in front of the Vajont Dam, subject to a massive rock fall at the base, as a result of which it ended up **suspended in the air**. The data obtained allowed to locate the areas subject to torsional stress which favours the detensioning, offering specific consolidation and monitoring interventions. The context made the operations particularly difficult, carried out in the air, 100m from the ground, with **experimental techniques** of **3D seismic tomography in transparency** and **GPR** techniques, combined with **geomechanical** surveys, **laser-scanner** and laboratory testing on cores taken.

**Location:** Province of Pordenone

**Client:** Enel Green Power





# G EOPHYSICS

Italia Overpass - Salso Overpass, Mediterraneo Motorway. Geophysical investigations and geomechanical surveys on the wall to improve the structural safety

IGS srl was awarded the tender for the characterization, through various **geophysical investigations**, of foundational sediments of **Italia Overpass**, on the **Mediterraneo Motorway**. During the contract we performed geophysical investigations on the **Salso Overpass**, on the same A2 Motorway. To guarantee a quality result, it was pivotal to adopt **mountaineering techniques**. The Italia Overpass is among the **greatest works** of its kind, on a national and continental level; built in 1969, to date it holds the record of highest motorway overpass in Italy (261m) and second highest overpass in Europe.

**Location: Province of Cosenza**

**Client: ANAS SpA**



Surveys and investigations for the construction of 2 tourist resorts  
with roughly 200 places each | Auronzo

# SURVEYS

## Some references:

- preliminary investigations for the verification of the seismic vulnerability and static suitability of 6 Guardia di Finanza barracks | Location: Province of Verona, Venice, Treviso, Belluno | Client: Ministry of Infrastructure and Transport
- multi-year framework agreement for investigation services for the construction of mobile telephone systems on the entire national territory | Location: Italy | Client: DBA Progetti SpA | data: over 100 sites investigated as of today

# SURVEYS

Laser-scanner, topographical and aerial surveys. Geognostic surveys, geomechanical surveys on the wall

Inside IGS' **Surveys** department are included all **data acquisition** activities: **topographical surveys, collection and sampling, geognostic surveys, thematic on-site surveys, on the wall inspections**, etc. These activities are necessary for the modeling performed by other departments, often addressed to professionals, companies and institutions.

- laser-scanner surveys with generation of 3D models and DTM
- planoaltimetric measurements with 2D-3D restitution
- aerial surveys
- tracking
- geomorphological, hydrogeological, geomechanical surveys
- light or medium dynamic penetrometric tests, DPSH





Frattura

# SURVEYS

## Laser-scanner survey and georadar of the Comelico Tunnel

**12.000m of georadar, 4.000m of laser-scanner survey** (over 100 scan points), 156 cornerstones (over 4 master cornerstones) detected with reading layers with a precision total station: these are the numbers that allowed us to finish the surveys with a difference of just a **few centimeters** on a **4km tunnel**. With the data collected with the surveys, we were able to identify and catalogue **277 defects**. Thanks to the serial organization, with the overlapping of different phases, the field activities were carried out in **5 nights**, limiting to the minimum the traffic disruptions.

**Location: Province of Belluno**

**Client: Vicenzetto Srl**





# SURVEYS

## Seismic vulnerability of the Maritime Station (Molo Bersaglieri) in Trieste

The Maritime Station, inaugurated in 1930, is one of the **most significant historical monuments in Trieste** and marked the **beginning of modern architecture in Italy**. IGS srl reconstructed the point cloud of the entire building (inside and outside), creating **135 scan points**. The point cloud has been investigated and resulted in a **BIM model**. In addition to this, IGS srl has a database of **132 surveys** and has developed a survey plan to implement a finite element model to evaluate the **3D local seismic response**.

**Location:** Province of Trieste

**Client:** Port Authority

Rockfall 3D modeling | Soverzene (BL)

# LAND PLANNING

## Some references:

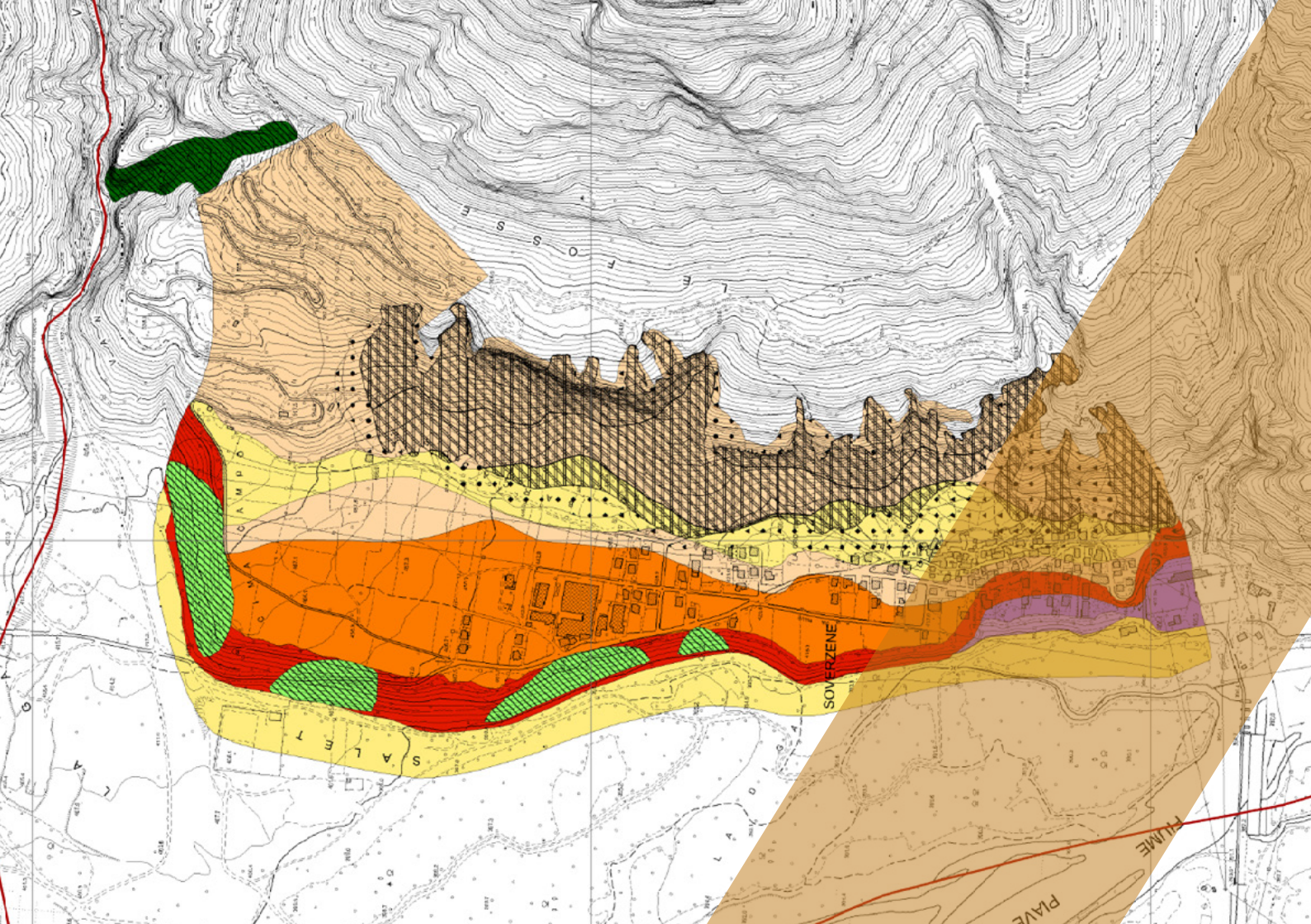
- study on karst sinkholes in peri-urban and urban areas of Domegge Council | Location: Province of Belluno | Client: Comune di Domegge | data: 50km<sup>2</sup> analyzed and monitored
- rationalization of the sewage and purification system of the Centro Cadore Lake | Location: Provincia di Belluno | Client: BIM GSP SpA | data: 60km<sup>2</sup> (developed on 30km) analysed
- renovation of the Codivilla Putti Hospital in Cortina d'Ampezzo | Location: Province of Belluno | Client: GVM Cortina | € 20.000.000

# LAND PLANNING

Creation of thematic maps, spatial analysis, RSL studies, geological, hydrogeological and environmental

In IGS' **Land Planning** Department are included all **territorial planning** activities, development of **thematic maps**, **database** management, **spatial analysis**, **RSL** studies that are developed through GIS and CAD software using algorithms, topological overlay and extension with a high degree of innovation. Part of the department are also the specialist consulting activities (geological, hydrogeological, environmental, etc.) and drafting of reports and authorizations.





SOVERZENE

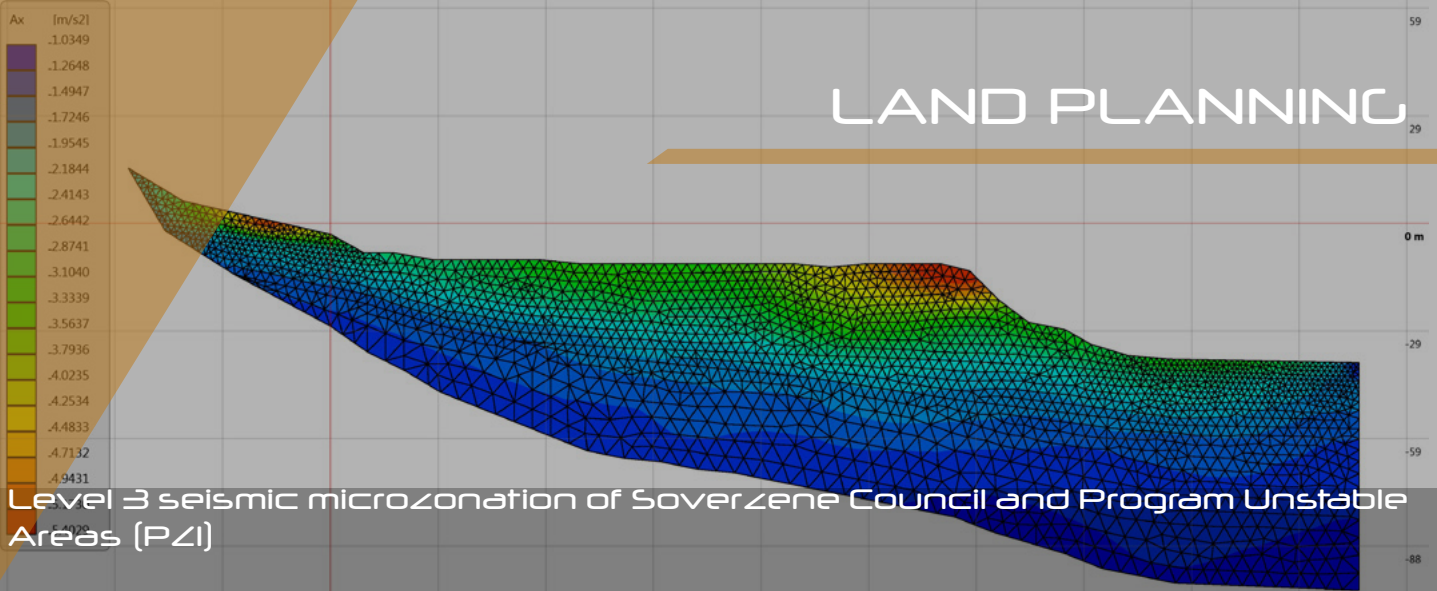
SALB

LAUB

PAVE

FUMME

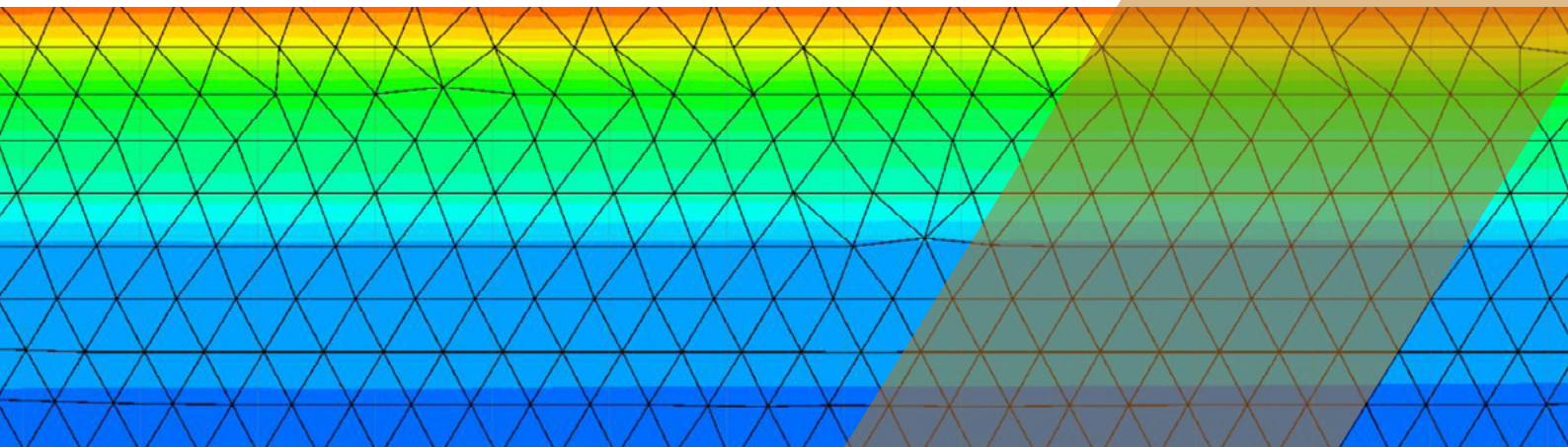
# LAND PLANNING

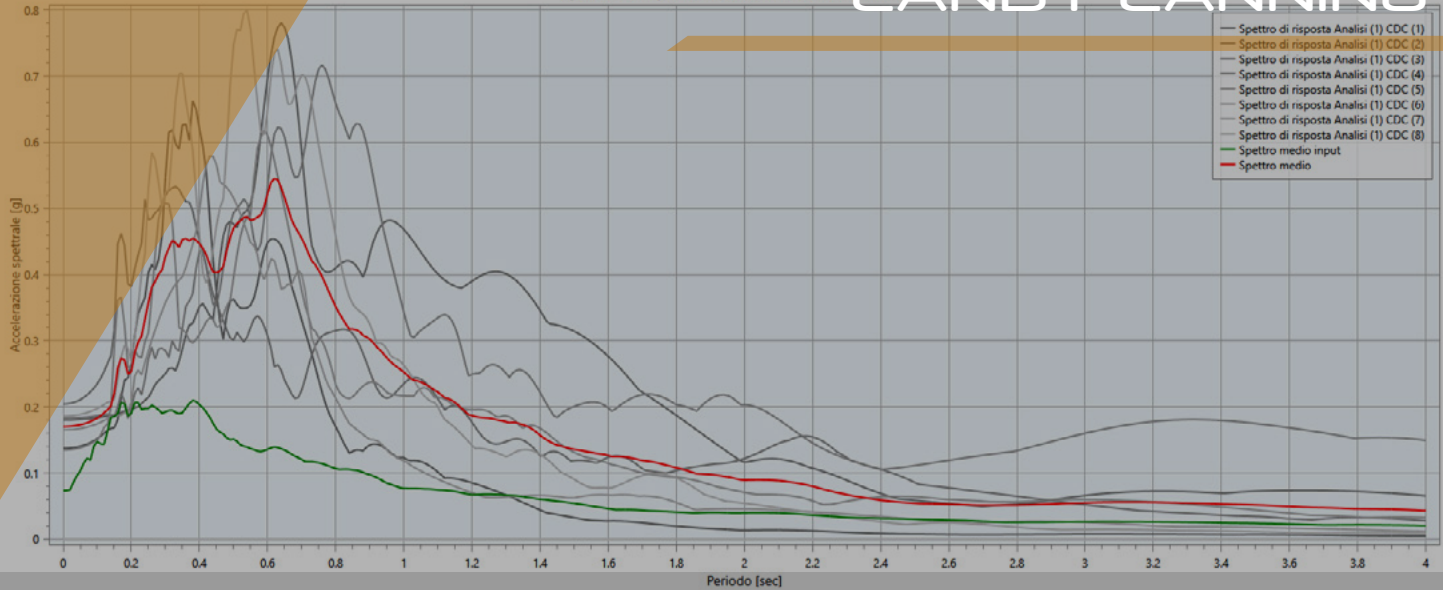


The third level of seismic microzonation is the most thorough and allows to obtain an elevated knowledge level, based on specific investigations and modeling. In the specific case of Soverzene, the potential seismic instabilities were related to stratigraphic and morphologic effects and slope instabilities. The concomitance of expected effects, hard to quantify in relation to the heterogeneity and extension of the territory, was causing problems to the urban planning. IGS srl met the needs of the administration with numerous **investigations** and **surveys**, the results of which were analyzed with **finite elements calculation codes** and **3D** resolution, managing a large number of variables. The **accuracy** of the study allowed to propose to the Council a **planning of necessary interventions** for the safety of the territory, together with a careful **urban planning**. The investigations have been carried out in over 100m depths.

**Location: Province of Belluno**

**Client: Comune di Soverzene**





## Detention halls for 120 places in the Rovigo correctional facility

The **Ministry of Justice** commissioned IGS srl for the studies and **geological-geotechnical** and **seismic** modeling, including necessary surveys, to proceed with the extension of Rovigo correctional facility with the construction of 2 new buildings; the massive structure will go from 270 prisoners up to **510**, becoming a **highest rank** institution

**Location:** Province of Rovigo

**Client:** Ministry of Justice

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