The value and power of the water, facilitation of mobility beyond barriers, reaching towards the future through cultivation of state-of-the-art engineering. A sustainable environment with which people relate. Daily challenges to improve the quality of life. Innovation continues.

Established in 1984 in Turin [Italy], as an independent geo-engineering company. GEODATA is leader in Italy and internationally recognized in the field of design and engineering of underground infrastructures.

Still strongly focused on tunnelling and underground space use, GEODATA has gradually become a global multidisciplinary designer.

GEODATA presents itself as the ideal global partner to create the positive and effective synergy with partners and clients for developing complex projects.

With proven vast expertise in engineering underground infrastructures for road & rail transportation, water supply & waste water management, storage and hydropower, we are committed to implement digital innovation to enable comprehensive robust solutions both for new infrastructures and for the management and rehabilitation of existing facilities.

Today, GEODATA operates in 5 major market sectors: Metro, Road, Rail, Hydro, Earth.
OVERCOMING BARRIERS
From long and deep tunnels through mountains to urban transformation with underground infrastructures for transportation, water supply, waste water management and flood mitigation.

MOBILITY FREEDOM AND RESILIENT CITIES
It is the essence of the urban centers of tomorrow: smart efficient cities with functional, resilient and iconic infrastructures, designed respecting the environment, historical heritages and territories where they take shape.
A vast infrastructure expertise is needed for defining innovative reliable and sustainable resilient solutions for using the underground space and to meet the needs of:
- Fast growing urbanizations
- Smart cities
- Future quality of human life
- Climate changes
- Respect of historical heritages

WATER
The most precious natural resource for mankind.
Understanding and respecting this resource is the biggest challenge engineering is facing today in order to draw from water all potentials. To tackle different needs in different geographies transfer, storage, hydropower production are demanded in compliance with sustainability criteria. Prevent and manage in order to secure cities and population from flood and hydrogeological risks. New projects should analyze scenarios for disaster prevention and implement robust and resilient solutions.

DIGITAL ENGINEERING
Digital innovation is the most effective revolution in the engineering industry:
- Building Information Modeling
- Digital design
- Project Control
- Common and Cooperative Data Environment
are enhancing reliable efficiency, productivity and added value.

OUR CORE SKILLS
- GEOLOGY AND HYDROGEOLOGY
- GEOTECHNICAL
- ENVIRONMENTAL
- MINING
- STRUCTURAL ENGINEERING
- HYDRAULIC ENGINEERING

ARE SUPPLEMENTED, AT BOTH DESIGN AND CONSTRUCTION STAGE, BY MEANS OF:
- INFRASTRUCTURES PLANNING AND DESIGN
- ELECTRICAL & MECHANICAL ENGINEERING
- RISK MANAGEMENT
- PROBABILISTIC DESIGN AND ANALYSIS OF TIME AND COSTS
- SELECTION AND OPTIMIZATION OF CONSTRUCTION METHODS
- SITE ORGANIZATION AND LOGISTICS
- MONITORING
- PROJECT & CONSTRUCTION MANAGEMENT
- SUPERVISION
- KNOWLEDGE MANAGEMENT - INFORMATION TECHNOLOGIES FOR ENGINEERING
- HEALTH & SAFETY MANAGEMENT

NUMBERS
GEODATA WAS ESTABLISHED IN 1984 IN TURIN.

IN 35 YEARS OF ACTIVITY AVERAGE ANNUAL GROWTH HAS BEEN 15%.

THE AVERAGE TURNOVER OF LAST 3 YEARS IS 35 MILLION EURO, OF WHICH 90% ABROAD.

AS OF TODAY 4,000 km OF UNDERGROUND INFRASTRUCTURES HAVE BEEN DEVELOPED.

OVER 3,500 PROJECTS HAVE BEEN MANAGED.

GEODATA HAS WORKED ON 5 CONTINENTS IN 45 COUNTRIES.

GEODATA HAS OVER 400 EMPLOYEES.

OVER 500 PUBLIC AND PRIVATE CLIENTS.

OVER 300 ARTICLES IN INTERNATIONAL SPECIALIZED TRADE JOURNALS.

ISO 9001 CERTIFIED SINCE 1998,
ISO 14001 CERTIFIED SINCE 2010
AND OHSAS 18001 SINCE 2012.

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- Building Information Modeling
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- Project Control
- Common and Cooperative Data Environment are enhancing reliable efficiency, productivity and added value.
OUR AREAS OF EXPERTISE

- Planning and feasibility of the project
- Geological, hydro-geological, and geotechnical studies
- Design of the line infrastructure and system studies according to specific needs and type of users
- Functional and architectural design for stations and depots
- Geotechnical and structural design of civil works
- Systems and safety design
- Fluid dynamics analysis for fire hazard simulations in risk scenarios
- Selection, enhancement and innovation of construction techniques
- Risk assessment and management
- Studies for construction site service road network
- Planning for traffic, utilities and services re-routing
- Safety coordination in planning and construction phase
- Value engineering
- Contract management
- Project & construction management
- GIS systems for real-time mechanized construction

OUR SKILLS

- Define best metro functional layout for line and station
- Integrated and complete design from demand study to rolling stock
- System integration between architecture, civil works and metro system equipment
- Urban integration and Transit Oriented Development (TOD) projects
- Value Engineering for underground solutions
- Ventilation strategies definition, Safety and Security assessment
- CFD and pedestrian simulations
- Experiences on Unattended Metro Systems (GoA4)
- General consultant for Owners and Public Authorities
- Designer for EPC contractors and PPP developers

Mechanical excavation has always been an area of excellence of our “know-how”, as demonstrated by the success of our technical and scientific publications. These have been the channel for us to define a specific methodology which has at its foundation a systematic approach to risk analysis as an operating, qualifying and permeating tool for the entire design process.
OUR AREAS OF EXPERTISE

- Conception of railway system
- Project & Risk Management
- Operation studies
- Alignment options study
- Track and route design
- Structure design
- Functional and architectural studies for stations and interchange nodes
- Urban Design for High Speed and Commuter Services
- Life Cycle Cost Analysis
- Cost-Benefit Analysis
- Design and organization of construction methods and phases
- Refurbishment of railway tunnels [new clearance profile definition, consolidation, safety standards]
- Control and signing systems
- Electric traction and substations
- Electric and mechanical systems
- Definition of rolling stock required by system

OUR SKILLS

- From High Speed to Commuter Rail projects
- Define functional layout for line and station
- Complete design from alignment to signaling solutions
- Multimodal terminals and marshalling yards
- DC and AC electric traction systems
- Opentrack railway simulation
- Tunnel safety assessment during construction and operation
- Long and deep rail tunnel design
- Maintenance, refurbishment and upgrade
- Construction supervision and commissioning support

LONG AND DEEP TUNNELS

ITALY-AUSTRIA • 55.0 km
Brenner Base Tunnel (BBT)

ITALY-FRANCE • 57.7 km
Lyon-Turin Base Tunnel

ARGENTINA-CHILE • 52.5 km
Corredor Bioceánico Aconcagua

SPAIN-MOROCCO • 38.7 km
The Gibraltar strait fixed railway link

ITAM • 20.0 km
New Termini-Spoleto railway line

ITALY-FRANCE • 13.7 km
Upgrading of the Frejus historical tunnel

INDIA • 8.7 km
Kashmir new railway line, Dharam-Qazigund track

VENEZUELA • 6.9 km
Caracas-Cua railway line

AUSTRALIA • 8.3 km
Northern Sydney Freight Corridor

RAIL

ALGERIA • EL ACHIR NEW TUNNEL AND LINE IMPROVEMENT AND LEV2 HSR
ALGERIA • Oued Tekat-Morocco Border New Line PPP RAIL LINK
ARGENTINA • CORREDOOR BIOCEANICO ACONCUAGA
CHILE • NORTHERN SYDNEY FREIGHT CORRIDOR
CHILE • SANTIAGO-BATUCO RAILWAY LINE
CHINA • SHENYANG-DANDONG NEW PASSENGER DEDICATED HSR
CHINA • BEIJING-FUZHOU PASSENGER DEDICATED RAILWAY
CHINA • RISHIKESH-KARANPRAYAG NEW RAILWAY LINK
INDIA • SIYOK-RANGPO NEW RAILWAY LINE
INDIA • 13.75 & 7.7 km RAILWAY TUNNEL ON UDHAMPUR-SRINAGAR RAILWAY LINE
ITALY • PALERMO-AGRIGENTO UPGRADE OF EXISTING RAILWAY
ITALY • TERNI-SPOLETO NEW RAILWAY LINK
ITALY • BOLOGNA HSR BY-PASS
ITALY • PALERMO RAILWAY UNDERGROUND BY-PASS
ITALY • TURIN AIRPORT RAILWAY LINK
ITALY • UPGRADE AND CLEARANCE ENLARGEMENT OF HISTORICAL FREJUS RAILWAY TUNNEL
FRANCE • LYON-TURIN HSR
ITALY • TEHRAN-MASHHAD LINE
PERU • MARCONA-ANDAHUAYL RAILWAY
PERU • UPGRADE OF TRASANDINO RAILWAY
PORTUGAL • UPGRADE OF PORTO- LISBON LINE
RUSSIA • SOCHI-ADLER KRASNAYA-POLIANA COMBINED HIGHWAY AND RAILWAY CORRIDOR
SPAIN • MADRID-SEGODIA HSR, GUADARRAMA TUNNEL AND LEON-OVIEDO HSR, PAJARES TUNNEL
SPAIN • GIBRALTAR STRAIT TUNNEL

METRO RAIL ROAD HYDRO EARTH
**OUR AREAS OF EXPERTISE**

- Project & risk management
- Transport sustainability analysis
- Economic and financial analysis
- Probability analysis of costs and construction times
- Multi-criteria analysis
- Selection of routes, layout and typical road sections
- Functional and accessibility analysis of the infrastructure
- Roadway, geological, geotechnical, hydraulic, general and structural design of the major structures and minor structures
- Environmental feasibility and pre-feasibility studies and impact assessment
- Design and organization of construction methods and phases
- ITS
- Maintenance and requalification programmes
- Project management and control

**OUR SKILLS**

- Complex highway, junctions and urban by-pass
- Road layout definition: combining cost-benefit and multi-criteria analysis to define best layout and alignment
- Analysis, planning, management and appraisal of road maintenance, improvement and investment decision (HDM-4 Software)
- Mechanized and double deck road tunnel
- Underground parking design
- CFO and egress simulations
- Tunnel ventilation and Fire Safety
- Drainage solution and landscape design
- Value engineering for complex underground solutions
- Environmental studies

**ROAD**

- **ALGERIA** - RN 77 National Highway
- **AUSTRALIA** - Brisbane Legacy Way Project
- **BRAZIL** - Rodovia dos Imigrantes
- **COLOMBIA** - Bogota Villavicencio and Concession Tunnel, Alvarado Greinte
- **FRANCE** - Grenoble-Sisteron Highway A51
- **FRANCE** - Montecarlo Tunnel Descendant Guest
- **GREECE** - Egna/Atlanta ODGS Motorway
- **GREECE** - Sigma 1 and Sigma 2 Tunnels
- **INDIA** - Razavian Pass and Baralachala Pass Tunnels
- **INDIA** - Chennai-Nashri section on NH-1A
- **INDIA** - Mumbai-Pune Express Way
- **INDIA** - Dwarka Express Way for Western Connectivity to Delhi Airport
- **IRAN** - Tehran-Sialkot Freeway Alborz Tunnel
- **ITALY** - Torino-Bardonecchia Highway A32
- **ITALY** - Salerno-Raggio Calabria Highway
- **ITALY** - Enlargement Venice-Trieste Highway A4
- **ITALY** - Doubling of the Torino-Savona Highway A5
- **ITALY** - Mont Blanc-Aosta Highway A5 and Aosta underground by-passes to Gran San Bernardo Pass
- **ITALY** - Various underground city by-passes (Carcare, Porto, Omegna, Menaggio)
- **MALAYSIA** - Western Kuala Lumpur Traffic Dispersal Scheme-Penchala Tunnel
- **MONTENEGRO** - Bar Doljare Highway
- **PERU** - Interamerican Road
- **PERU** - Antamina Road
- **PORTUGAL** - New Agus Santas North Tunnel on Amarante Highways
- **RUSSIA** - Sochi-Adler Krasnaya-Poliana Combined Highway and Railway Corridor

**LONG AND DEEP TUNNELS**

- **INDIA** - 18.0 km @2,700 m asl Razdan Pass on Gurud-Saradpur
- **FRANCE-ITALY** - 12.3 km Safety tunnels Frejus Highway Tunnel
- **INDIA** - 11.25 km Baralachala Tunnel on Manali Sarchu Road
- **INDIA** - 9.0 km Chennai-Nashri tunnel (Patnitop)
- **IRAN** - 6.4 km Alborz Main Tunnel
- **ITALY-SWITZERLAND** - 5.8 km Gran San Bernardo tunnel

**DOUBLE DECK URBAN TUNNELS**

- **RUSSIA** - 19.1 m Diameter Orlovsky tunnel
- **GREECE** - 15.9 m Diameter Thessaloniki Submerged tunnel
- **ITALY** - 15.5 m Diameter Verona by pass tunnel
- **MALAYSIA** - 13.5 m Diameter Kuala Lumpur (SMART)
**OUR AREAS OF EXPERTISE**

- Hydrological, hydraulic, and sedimentology studies
- System layout design
- Preliminary, final and executive design
- Multi-criteria analysis, probability assessment of timing and costs
- Risk analysis, Risk Management Plan
- Technical specifications
- Project and construction management
- Value engineering
- Contract management
- Geological, geomechanical and hydrological studies
- 3D Geological model [LEAPFROG]
- Definition of Geotechnical Reference models (GTRM)
- Geotechnical and Structural Design of Dams
- Geotechnical and Structural Design of Underground Caverns
- Design and organization of construction methods and phases

**OUR SKILLS**

- Integrated river basin management
- Water resources management
- Water transfer
- River engineering
- Multipurpose project
- Hydraulic tunnels
- Dams
- Flood and natural hazards
- Risk and hazard assessments
- Strategic sewage
- Hydropower
- Value engineering for complex underground solutions

**HYDRO**

- **ALGERIA**
  - Douera, Kramis, Irana, Tahnt & El Abid Dams

- **ARGENTINA**
  - Flood Relief Tunnels for Maldonado River
  - Sustainable Development of the Matanza–Riachuelo Basin (Lot 1 & 3)
  - El Bala HPP 3675 MW

- **BOLIVIA**
  - Toranto West Vaughan Sewage System

- **CANADA**
  - Toronto West Vaughan Sewage System

- **CHILE**
  - Alto Maipo HPP 531 MW

- **CHINA**
  - Zhen’an and Fukang PSP 350 MW
  - South–North Water Diversion

- **COLOMBIA**
  - 3D Geological Model (LEAPFROG)
  - Definition of Geotechnical Reference Models (GTRM)

- **ECUADOR**
  - Guayaquil Sinclair HPP 1500 MW
  - Minas–San Francisco & La Unión HPP 276+94 MW
  - Chontal 194 MW
  - Del Sanisagua HPP 180 MW
  - Ancey Sewage Tunnel

- **FRANCE**
  - Chonuly Sewage Tunnel

- **SWITZERLAND**

- **INDIA**
  - Bajoli Holi HPP 180 MW

- **ISRAEL**
  - Kokhav Hayarden PSP 340 MW

- **ITALY**
  - Fiumicello Multipurpose Dam
  - Flood Relief Tunnel for Bisagno River in Genova

- **ITALY**
  - Santa Vittoria d’Alba On Tanaro River HPP 41.2 MW

- **NEPAL**
  - Bheri Bagh Diversion Multipurpose Project

- **RUSSIA**
  - Zagorskaya PSP-2

- **SRI LANKA**
  - Colombo Flood Mitigation New Muttal and Torrington Tunnels

- **USA**
  - New York Suffolk Outfall Replacement Project

**HYDRO**

- **15 km**
  - Flood Control
  - Tunnels

- **143 m**
  - RCC Chontal
  - Dam

- **72.5 km**
  - Water Transfer
  - Tunnel
### OUR AREAS OF EXPERTISE

- **Geological and Geomorphologic Studies**
  - Brittle and ductile structural geology studies
  - Sedimentologic, tectonostratigraphic and petrographic studies
  - Hydrogeological studies and numerical modelling of groundwater flow
  - Geochemistry, hydrochemistry studies

- **Geological Investigations and Surveys**
  - Planning and management of:
    - In situ geological investigations
    - Geological surveys and geotechnical measurements
    - Interpretations of geological and geotechnical data

- **Geological and Geotechnical Studies**
  - Study and characterization of rock mass and weak rock behaviour
  - Geotechnical characterization
  - Slope stability FED and DEM analyses
  - Geotechnical engineering for underground infrastructures
  - Geotechnical engineering for foundations, settlements and embankments
  - Geotechnical engineering of quarries and mines
  - Seismic Dynamic Analysis

- **Environmental and Mining Studies**
  - Land planning studies and natural hazard [e.g. landslides, floods] analyses
  - Study of rock and soil aggregates
  - Study of muck material and deposits

### OUR SKILLS

- Engineering Geology, geological survey and mapping
- Geological and Geotechnical Reference Model (GRM)
- Dynamic 3D geological modeling, LEAPFROG Sequence GIS models, Info-graphy
- Reliability of geological forecast (R-Index) and Risk Analysis
- Geomechanical & Geotechnical Characterization and Modelling
- Hydrogeological and Geothermal Studies
- Slopes Stability, Excavations Analysis, Support Calculation
- Natural risks assessment (landslides, floods, snow avalanches, rock & debris flows)
- Environmental impact assessment
- Climate change and the impacts on infrastructures and hazard managing
- Mining development, rehabilitation of disused mine sites

### EARTH

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<td>750,000 m² - Mining, natural disaster surveys</td>
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<td>120,000 km² - Geological survey</td>
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**Geodata**

**320,000 m²** - Borehole log interpretation

**3,200** - Geological and geotechnical models

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**Environmental Impact Assessment**

- Study of rock and soil aggregates
- Study of muck material and deposits

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**Seismic Dynamic Analysis**
GEODATA, a provider of sustainable and value-added solutions, for underground projects, to meet the ever-increasing demands of transportation and sustainable development.

GEODATA is active in 25 countries at over 50 work-sites for the development of projects in metro, rail, road and highway, hydro power and multi-purpose, mining, environment protection, flood mitigation and treatment of combined sewer overflow, and territorial planning. Geodata has designed over 4000 km tunnels and followed the construction of over 3300 projects.