

The RESCUE System

RESCUE is a localization and navigation system based on the processing of raw inertial data for the tracking of pedestrians wearing RESCUE when the GPS signal is unreliable or absent.

Underground Areas

The capability to obtain, record and/or send to a remote station the current position of a pedestrian can be exploited in **underground areas** to perform a **fast mapping** of the environment and/or to **check operator's location**.

UNDERGROUND

AREAS

Tunnels

Caves

Grottoes

Archeological sites

Hypogeal water tanks

Speleological sites

Urban sewers

Mines

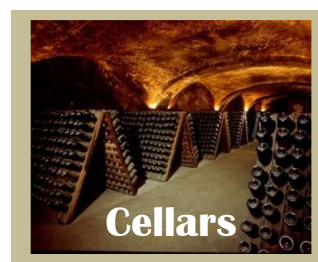
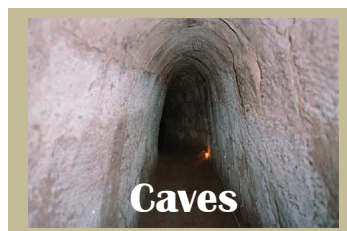
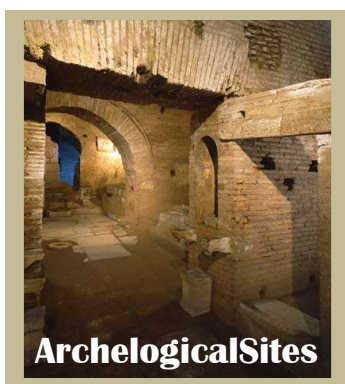
APPLICATIONS

Fast Mapping

Tracking of operators

Tracking of visitors

Mutual positions of
an intervention
squad



RESCUE Operative Modes

The RESCUE system can be used in three main configurations:

- **ON-LINE Mode (Wi-Fi)**, for dispatching in real-time the path data walked by the operator wearing RESCUE, if a Wi-Fi connection is available.
- **ON-LINE Mode (Radio-Modem)**, for dispatching in real-time the path data by means of Radio-Modem commercial devices in areas where a Wi-Fi connection is unavailable.
- **OFF-LINE Mode**, for recording the walked paths which can be displayed off-line.

The last mode may be suitable for **fast mapping** of unknown underground areas and for helping the return along the walked path.

A Real Trial - Tor Fiscale Caves (Rome)

A fast mapping of the **Tor Fiscale Caves in Rome** has been carried out to evaluate the RESCUE capabilities inside a wide underground area.

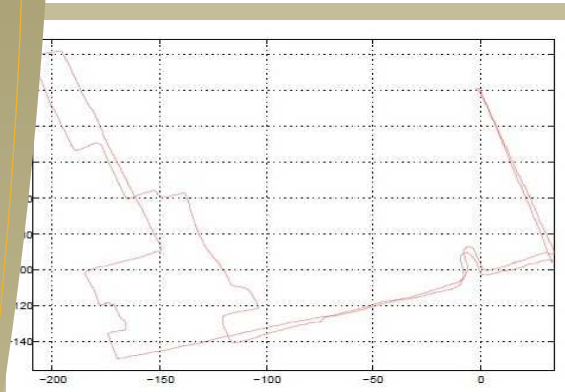


The **ON-LINE Mode with Radio-Modem** support has been used to send data to a remote Control Station located at the entrance of the Caves.

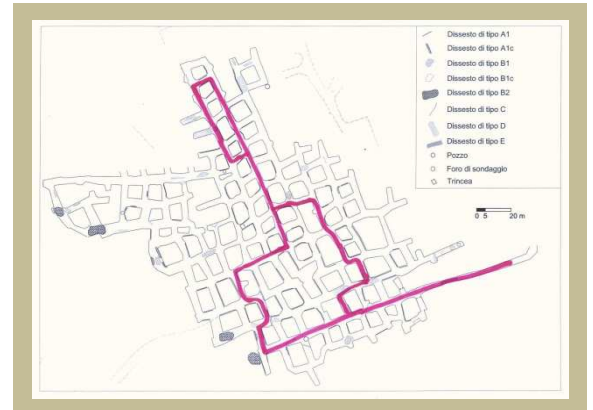
A path suggested by geologists knowing the area has been followed. Data were both sent in real-time to the Control Station and recorded to check them off-line.

The acquired path has been displayed upon maps of the caves and also on the aerial map of the site, to verify the match between the actual maps and maps derived by recorded data and to show the estimated maps of the caves with respect to the buildings located above them.

Recorded Path



Path on Cave Map



OPERATIVE MODES

ON-LINE Mode (Wi-Fi)

ON-LINE Mode (Radio-Modem)

OFF-LINE Mode

SUITABLE FOR:

Fire and Police Departments

Maintenance Companies

Archeological Organisations

Speleological Organisations

Geological Organisations

Tour organizers



DUNE thanks

Servizio Geologico di Roma Capitale XII Dipartimento



Roma Capitale

Ente Parco Appia Antica di Roma



PARCO REGIONALE DELL'APPIA ANTICA

Centro Ricerche Speleo Archeologiche di Roma



for the valuable support given during the trials at Tor Fiscale Caves in Rome.