POLITECNICO DI MILANO

Advanced Research Intelligent Embedded Systems

Intelligent hybrid systems for landslide monitoring: the Premana deployment

Description

Prati di Ronco (Premana - LC, Italy) is a mountain area affected by a landslide phenomenon.
The monitoring system of Premana has been designed to anticipate and assess the risk of landslide. The system is composed of an hybrid wireless-wired sensor network that, inserted in a terrain hole inspects changes in inclination at different depths. The system also acquires acoustic emissions, potentially associated with the sliding phenomenon. The sensor platform can be enriched on demand. The unit, that builds a wireless sensor network whenever requested, can host pluviometers as well as strain gauges to measure changes in displacement among units. The information is routed to a server for data storage, visualization and decision making.
The control room remotely controls the operations of the sensor networks by sending commands to the remote area to change the interaction of the units with the environment.
All modules composing the monitoring system are designed to operate in the wilderness, harvesting the energy they need from the environment through solar panels and react to changes when needed.

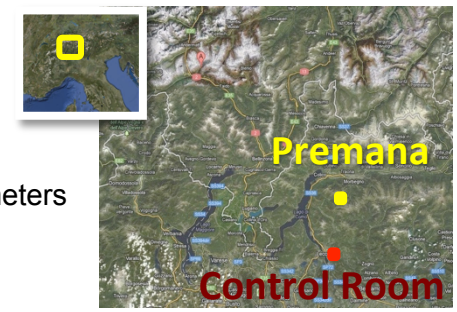
Sensors

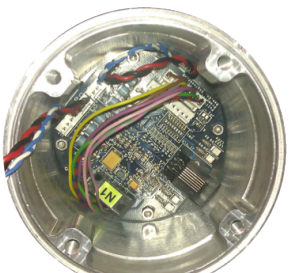
Acoustic investigation:

- 3 Accelerometers (MEMS)

Layers displacement investigation:

- 3 Inclinometers (MEMS)
- 3 Temperature sensors

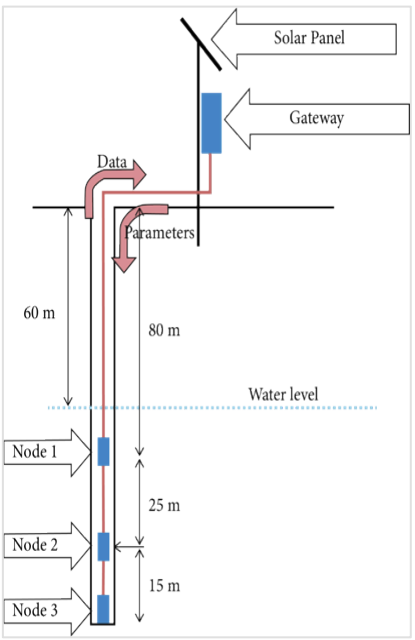




Sensing unit (Internal view)

Wireless gateway

Sensing unit



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