Suricat

The new **3D all-in-one accelerometer and velocimeter** for permanent monitoring of structures

| Precise and economic, to be employed also in extended networks

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Technical specifications

9-channel, 24-bit, acquisition system

- **3D velocimeter**

  [Adjustable resolution and dynamic range from ±5 mm/s to ±100 mm/s]

- **3D accelerometer**

  [Dynamic range: a) ±2g, b) ±6g. Resolution: a) 10^{-4} g, b) $3.5 \cdot 10^{-4}$ g]

- **2 high resolution analog channels**

  [Dynamic range from ±0.1 V to ±4 V]

- **1 auxiliary digital channel**

  [for triggering, time synchronization, etc.]

Size and weight

- 14 x 8 x 6 cm, < 0.4 kg

Sampling rate

- 16 kHz on all channels
- output rates: 256 Hz, 512 Hz, 1024 Hz, 2048 Hz, 4096 Hz

Time synchronization

- via GPS (internal or external antenna)

Data storage

- internal memory

Data access/transmission via

- 3G network, by using the internal SIM card, to the MoHo DaCo server
- Bluetooth®, with the Suricat App (for Android)
- miniUSB

Event detection

- thresholds based on amplitude, amplitude and time, STA/LTA (Short Time Average over Long Time Average)

Power supply

- miniUSB connection
- internal lithium battery (few days of autonomy)

Suricat has several applications in **engineering geology** and **seismic engineering**, both in single station and network configurations.
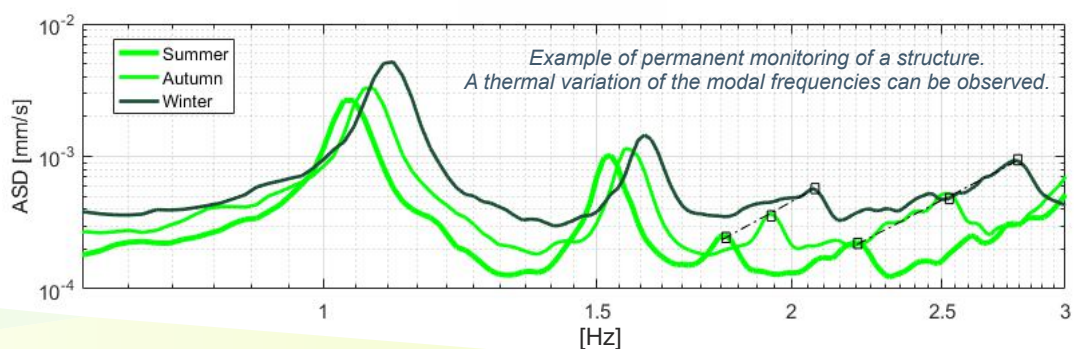
A few examples:

SEISMOLOGY

- event location
- shake-mapping

  Peak Ground Acceleration (PGA)

  Peak Ground Velocity (PGV)

SHAKEMAP - Mw 6.1 - Oct 26, 2016

Modified from USGS
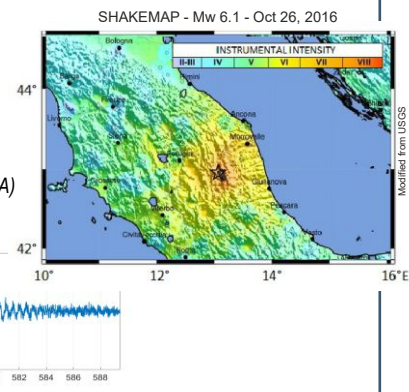
ENGINEERING

- structural health monitoring and modal analysis
- vibration monitoring
- threshold-based event detection

MATILDI + PARTNERS

Example of permanent monitoring of a structure. A thermal variation of the modal frequencies can be observed.

$\int uricat$ data can be exported in several formats (miniSEED, TRC, ASCII, etc.) to be processed with ![Grilla icon] **GRILLA** or with other software.
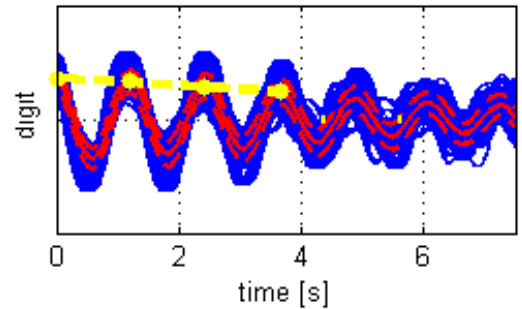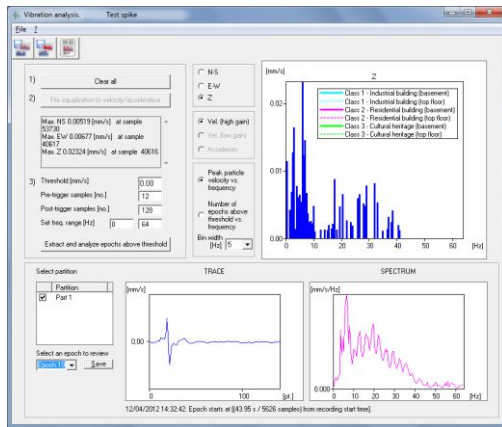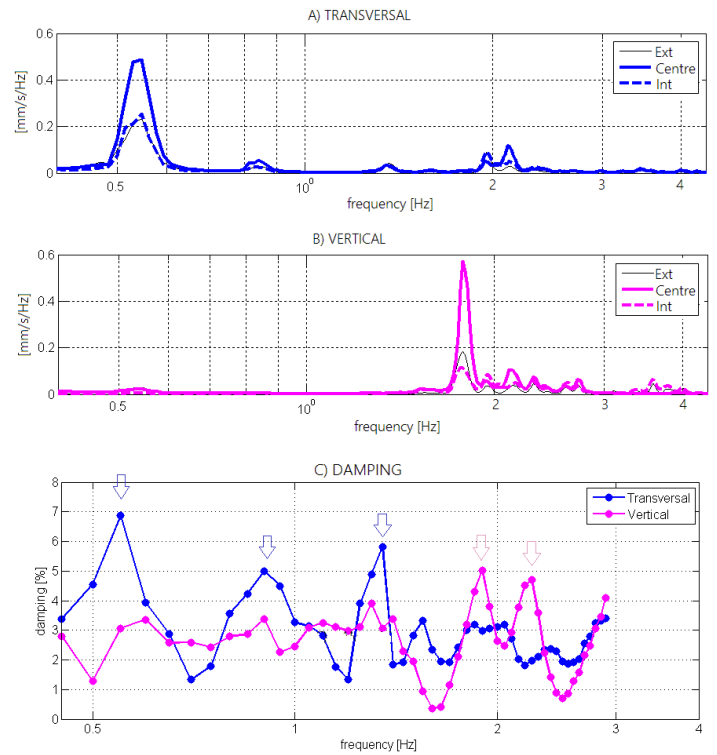
![Grilla icon] **GRILLA** is the user-friendly software to archive and analyze the recordings of $\int uricat$ and of all MoHo products.

![Grilla icon] **GRILLA** can perform:

SPECTRAL ANALYSIS of the recordings, including averaging operations and transient removal.

VIBRATION ANALYSIS, including the extraction of signal sections above threshold, according to the European regulations about the effects of strong vibrations on structures (UNI 9916, DIN 4150). Automatic reports including tables and figures.

MODAL ANALYSIS OF STRUCTURES outputting the mode frequencies, shapes and damping from experimental data and to monitor these parameters over time.

A) TRANSVERSAL

B) VERTICAL

C) DAMPING

![Grilla icon] **GRILLA** *interface for vibration analysis according to European regulations.*

Assessment of the modal frequencies of a structure and of the damping dependance with frequency.

WORKFLOW FOR LONG TERM MONITORING

Suricat App
sets the acquisition parameters, enables/disables channels, sets thresholds, sends data to the server

3G, ⸙

3G

MoHo DaCo or user-defined server
to manage Suricat and to download records

![MoHo SCIENCE & TECHNOLOGY logo]