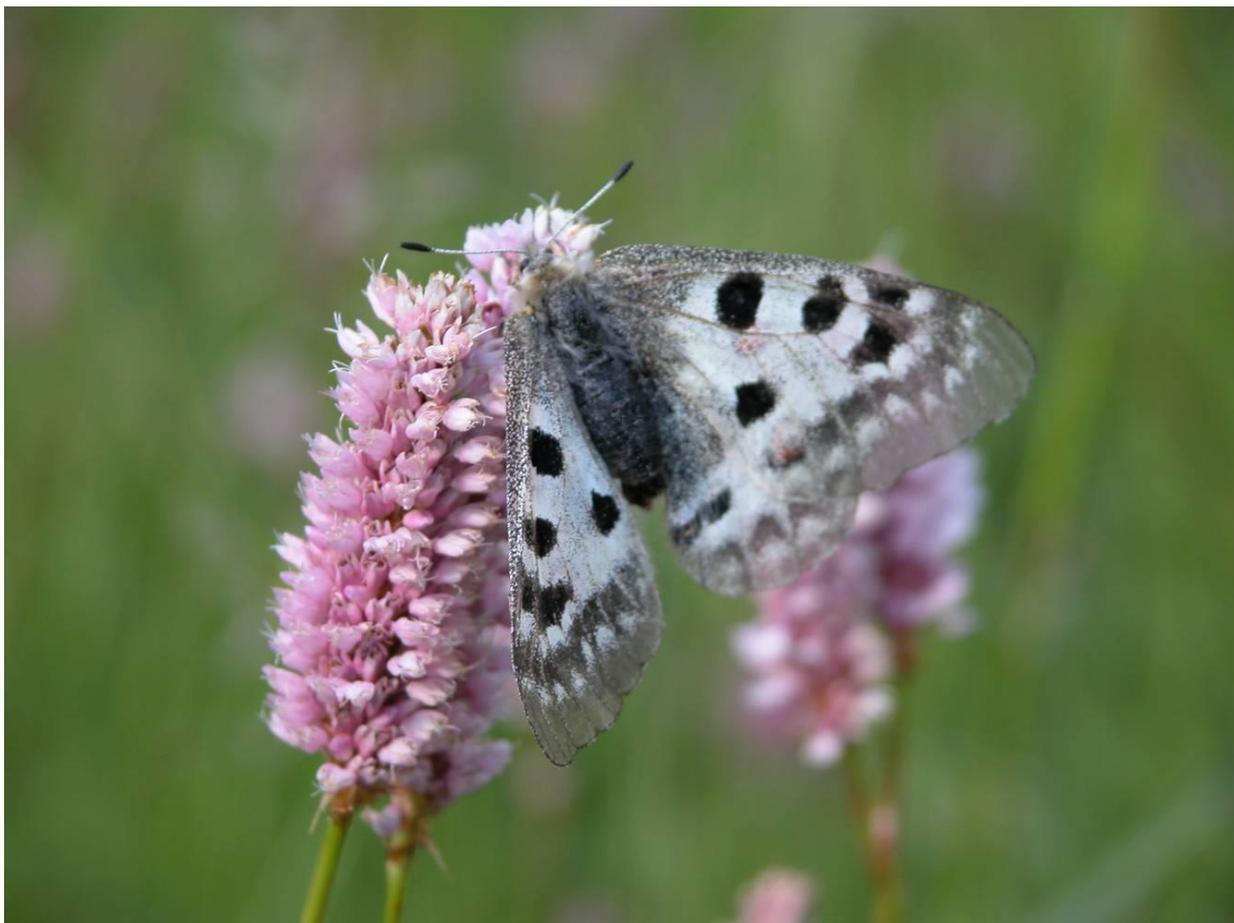# Services & solutions

Services e solutions

for environment and infrastructures

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Services & solutions ...

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Services & solutions – Project management

- Ecosystems, thanks to an extended network of small companies and expert professionals, offers high quality solutions at competitive costs

- The companies and the experts that cooperate with us are highly specialized and reliable

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Services & solutions – Information Systems

- Analysis and planning of Information Systems for environmental data management
- Analysis and planning of integrations or upgrades of existing Information Systems for environmental data management
- Analysis and planning of environmental monitoring systems
- Final testing, customer support, customer training
- More than 30 years of referenced "know-how"

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Services & solutions – Information Systems

Services & solutions - Monitoring

- Environmental and structural monitoring uses automatic systems (standard sensors or F.O. sensors managed by remote controllers), semiautomatic systems (standard or F.O. sensors with data-logger) or manual systems (sensors without local processing, sampling, measurement, ...).

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Services & solutions – Standard sensors

- A network of standard sensors with analog or digital interface are linked to one or more units to collect, elaborate and register monitoring data. This is possible both *in-situ* or in remote control, using adequate transmission systems

- Examples:

  the geognostic monitoring of the archeological area of Capo Colonna (Crotone). It was realized by Ecosystems for Saipem: data are collected from different sensors by two control units near the monitored area and are sent trough a f.o. backbone to the main control unit that put them on VPN

  the environmental monitoring system of the Natural Reserve of "Il Biviere" near Gela (Sicily) where is monitored the water-table level and the water conductivity as salinity index. As in previous example, data are put on VPN and pushed on the Internet site of the Reserve.

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Services & solutions – Standard sensors

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Services & solutions – F.O. sensors

- Monitoring of structures with f.o. is reliable and very flexible and it meets the need of the most demanding   customer

- FBG sensors detect stretch or compression: they not only monitor structures deformations, but also measure temperature, pressure, vibrations, load, water table level,...

- F.O. assure high performance to wire bridges, dams, tunnels, roads, buildings, with the possibility of monitoring in continuous or periodically.

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Services & solutions – F.O. sensors

- Thanks to their characteristics, f.o.sensors are used to monitor dams, railway tunnels structures (f.o. are immune to magnetic and electric fields), portions of pipelines subject to risks (sliping areas, vibrations,...)

- It is possible to build an almost invisible network of sensors to measure the smallest deformations due to climate change or weather conditions. It is so possible to identify vulnerable areas and intervene quickly, in order to maintain at their best structures and monuments
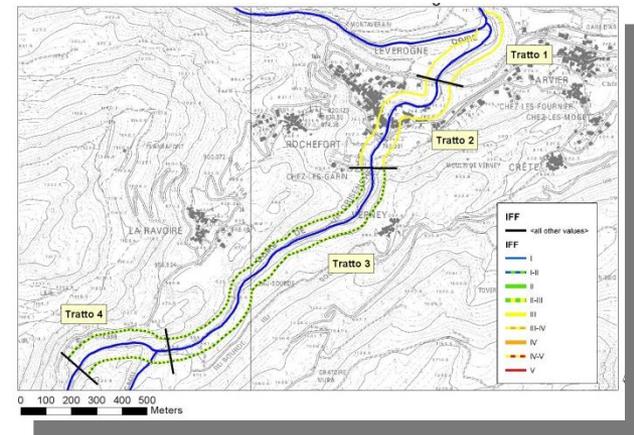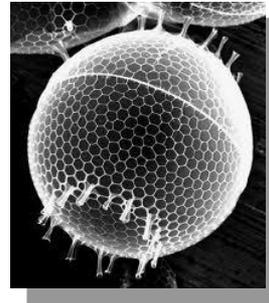
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Services & solutions - Monitoring

- Sites localization, sampling and computing of environmental quality index (water: IBE, MacrOper; air: LBI, ...), first level of data interpretation or complete analyses with report, also in cooperation with Universities or Local Environment Protection Agencies.
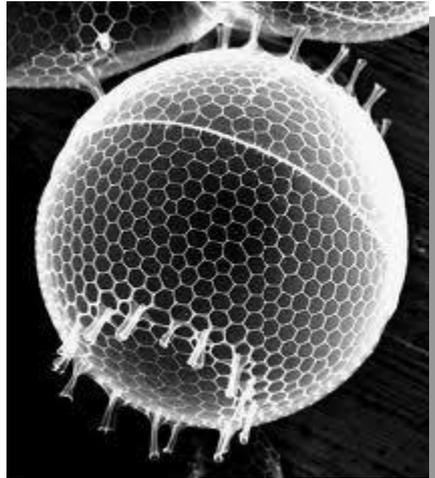

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Services & solutions – Environment quality

- Sampling and calculation of EBI / MacrOper / star-ICMi, ICMi indexes to monitor water quality
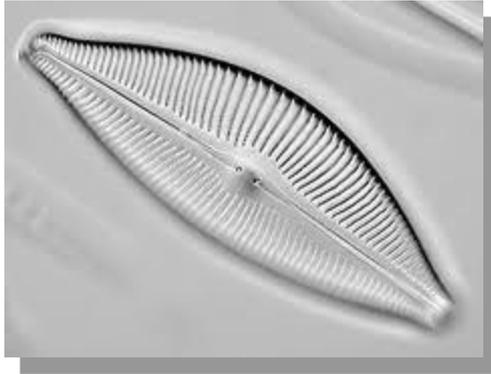
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Services & solutions – Environment quality

- Measurement and calculation of LBI (lichen biodiversity index) to control air quality

Services & solutions – Environment quality

- Sampling for chemical, microbiological and physical analyses to control critical situations punctual in time and space

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Services & solutions – Areas Remediation

- Planning and management of environmental areas remediation for many kind of pollutants as asbestos, hydrocarbons, chemicals, and so on

Services & solutions – Wildlife management

- Fauna censuses for wildlife area management and biodiversity evaluation

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Services & solutions – Risk monitoring

- Monitoring of fire risk using integrated systems of "wireless sensor network", standard sensors, thermocameras, fiber optic sensors, ecc.

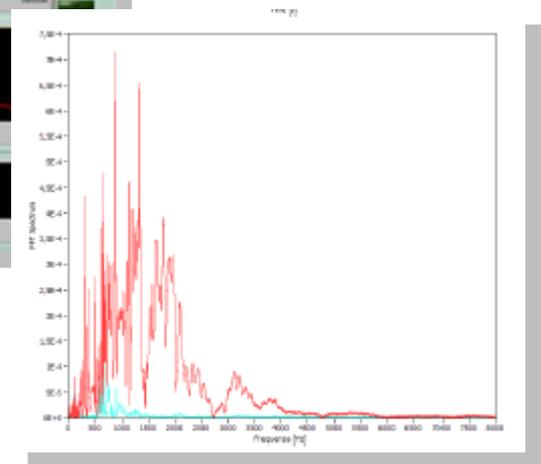- Monitoring of slipping, farming conditions (humidity, temperature, insulation,...) using "wireless sensors network"

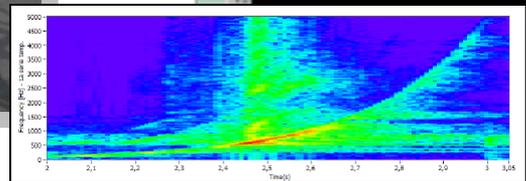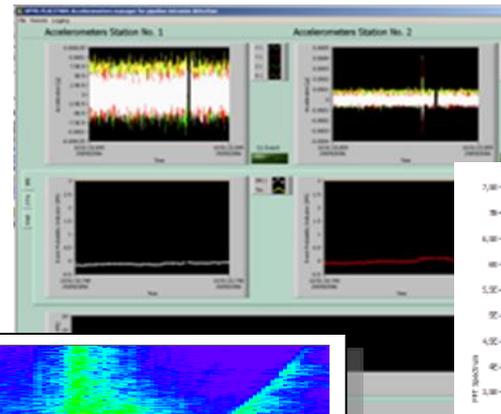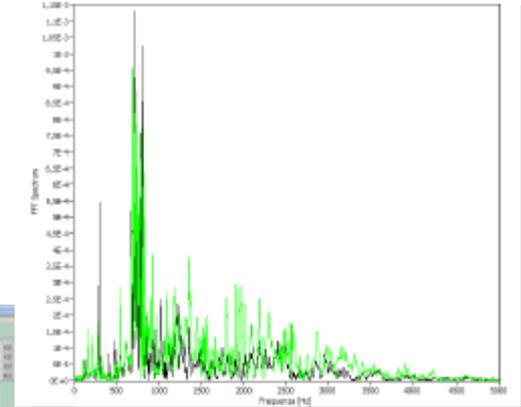# Services & solutions – Noise & vibrations

- **Noise** monitoring and measure

- Monitoring of **vibrations**

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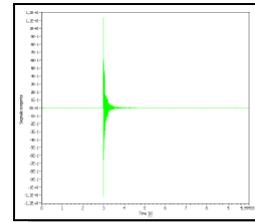
Service & solutions – Temperature monitoring

- Localized temperature sensors or thermocameras

- Software integration (between both systems) for a more accurate control of:

  - ❖ Fire risk in both wooden or urban areas
  - ❖ Industrial processes
  - ❖ Heath produced by means of transport as wheel hubs of trains or trucks.
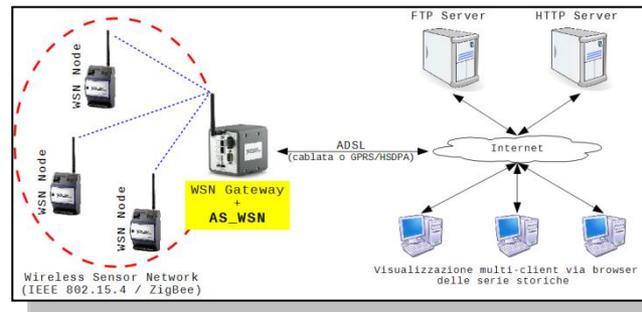
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Services & solutions – State of the art

- Sperimentation at the state of the art:

  - Accelerometer to monitor linear structures

  - Analysis of vibrations

  - Recognition of signal footprint

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Services & solutions – Legislation

- Individuation of restrictions – local, national, supranational

- Management and life - span of derogations

- Database

- Cartography of information and regulations (restrictions)

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Services & solutions – Technical support

- Planning and realization of studies made by environmental experts with specific competences about:

  - ○ Strategic Environmental Assessment (S.E.A.)
  - ○ Environmental Impact Assessment (E.I.A.)
  - ○ Assessment of environmental implications (directive 92/43/CEE "Habitat")

- Management of team work

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Services & solutions – Language support

- Translation of instruction manuals, technical relations, from / into

  - English
  - German
  - Portuguese
  - Bulgarian
  - Spanish
  - Turkish
  - Italian

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Thank you for your kind attention ...

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