

GEOINFORMATICS

Natural Disasters & HLS

Paving the path from Natural Disasters to Homeland Security

We provide tailored solutions that meet the complex and sophisticated challenges of the modern security environment.

Societies face challenges from threats of increasing scale and sophistication. Natural and man-made disasters like forest fires, floods, earthquakes, terrorism, organized crime and cybercrime are threatening citizens and businesses daily lives and operations. Building **resilience and securing** infrastructures is critical to the well being of the European societies and economies.

In Natural Disasters & HLS EPSILON offers:

Engineering, consulting, contract research, training, educational and capacity building services, aimed to assisting and addressing modern security challenges natural and man-made. EPSILON has been active in Natural Disasters & HLS since 1997 and our diverse group of engineers, scientists and policy makers provide consultancy and technical services in the fields:

- **Homeland Security technologies** covering a broad spectrum of applications such as Navigation, Surveillance, Mapping/Monitoring and early-warning via various platforms (UAV/UAS/UGV/UMV)
- **National Risk Assessment and Risk Management Plans & Mapping** and among them disaster recognition and assessment, prevention & preparedness strategies, risk analyses and risk mapping
- **Critical Infrastructures/Networks Patrolling and Monitoring**, as for example Energy (PPs, HPPs), Industrial Bases, Health, Water (Dams, WTP), IT, Ports, Airports, Government Facilities and Linear Networks (gas, oil, water, transport, telecoms)
- **Natural Disaster Assessments and Mapping**, such as geohazards (earthquake, volcano, landslide, ground movement), forest fires (FF), flash-floods, extreme weather, tsunami, industrial accidents
- **Mathematical Modelling and Assessments** of natural phenomena, critical infrastructures performance as gas flows, single risk and multi risk natural disasters and emergency management
- **Research and Development** on HLS technologies, including modelling, business continuity following natural disasters, and media modelling.
- **Geo-applications** for civil protection and HLS
- **Forest Fire Management/Prevention Turn-key Systems**, as for example automated fuel mapping, forestry sensors monitoring, fire alert and ignition estimation, for propagation and integrated forest fire management, including civil evacuation.
- **Environmental risks** monitoring and development of field monitoring telematics system, including UAV/UAS technologies coupled to sensors and Geoinformation technologies.

The **EPSILON Group** track record includes a number of Civil Protection/HLS projects at international, national, regional and local level. The years' experience of our group's partners and staff guarantees high quality services for any Civil Protection/HLS project.

epsilon group Natural Disasters & HLS

10 ongoing & recent indicative projects:

1. **"Hero20FF": NewGen low cost UAS for forest fire management:** Hero20FF delivers a platform with increased capabilities to: (i) accurately predict wind-field and other parameters along an erupted forest fire in real-time, (ii) forecast fire rekindling and fate, (iii) deliver an integrated forest fire management plan guiding resources and evacuating endangered people among others (2014-2015).
2. **"EU-Gas": European natural gas transmission infrastructure platform for 10 EU countries:** EU-Gas is an energy risk assessment platform developed for the JRC/Ispira and the European NNGTS from 16 Member States (i.e., Austria, Bulgaria, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Latvia, Lithuania, Netherlands, Poland, Romania, Slovakia, Sweden). The GIS-based platform can integrate the 48 utilities into a single geoinfo platform, and delivers gas-flow simulations and risk scenarios linked to the systems supply and demand (2013-2015).
3. **"Greco-Risks": Hellenic Natural Hazards Risks Management:** Greco-Risks delivers a Multi-Risk geointelligent webplatform integrating risk modules for 9 hazards: geohazards (earthquake, volcano, landslide, ground movement), forest fires (FF), flash-floods, extreme weather, tsunamis, industrial accidents. The geobased platform delivers combined and aggregated surface risks for user specified regions, as demanded by Civil Protection Agencies, insurance companies and other organizations linked to the Hellenic HLS (2014-2015).
4. **"C4I-Athens": Security of the Athens-2004 Olympic Games—C4I Project:** Risk Analyses: EPSILON was key contractor for geo-applications during the Athens-2004 Olympics; a project managed by SAIC, Inc. It developed multiple risk and security system for the major ports and airports, related to the arrival and departure of tourists, athletes, VIPs, and of other personalities who visited Greece in that period. It also developed the water supply and other infrastructural security and safety systems, including their remote monitoring and control (2003-2004).
5. **"Seix-Sou" Forest Fire Protection System;** Thessaloniki: The project delivered an integrated system for forest fire management and monitoring aimed to consider four modules in a separate mode from each other, one for each of the four phases of a Fire-Life-Cycle: Awareness, Emergency, Impact & Post Assessment. The system offers among others: Siemens monitoring cameras on 10m pillars, wifi data transfer and processing, a CCC for fire simulations, a command platform guiding the Fire brigade and Security Authorities in real time, and an evacuation system. The platform is operational today (2010-2014).
6. **"ArcFuel": Mediterranean Fuel Maps Geodatabase for Wildland & Forest Fire Safety:** ArcFUEL delivers a complete, up-

to-date, methodology for Fuel Classification Mapping (FCM on a Web-Geodatabase) based on readily available data, harmonized, accessible & interoperable according to INSPIRE principles, for the Mediterranean Region. It is the first technology of its kind that delivers fuel maps at high accuracy and resolution dependability, updatable automatically after every summer season. (2013-2015).

7. **"BRIDEID": Bridging Services, Information and Data for Europe:** BRIDEID provides Civil Protection operators and Public Administrations, engaged in urban & river basin planning, resource & environmental management, with spatio-temporal processing of GI to support decision-making. It is an EU-wide platform that accommodates multiple hazards and risks and their combination (2010-2013).
8. **"EU-risks": Assessment and Management of Risks in Urban/Rural Areas on GIS:** The project derives strategies with direct positive effects on all European citizens' lives including: Improving citizen security as it is well understood that prosperity is directly related to citizen security, Minimizing environmental impact, Minimizing damages thus reducing financial cost of urban risks and Minimizing the population at risk (2010-2012).
9. **"SCIERS": Sensor & Computing Infrastructure for Environmental Risks (via GRID & webGIS):** The SCIERS platform is a complex Integrated System which embodies technologies and structures from different Scientific Fields: Wireless Sensor Networks, Environmental Engineering and Modeling, Grid Computing for parallel processing. All technologies are applied to the Forest Fire and Flood emergencies, whilst the project offers services to local administration and regional governments (2008-2011).
10. **"FOMFIS": Forest Fires Management and Fire Prevention System:** FOMFIS is a computerized system based on ESRI GIS technology, aimed to forecasting and managing forest fires. It consists of the modules: fuelling, ignition, risk mapping, fire propagation and behavior, and resources allocation to tackle fires.

Our Services are supported by:

- GIS/GPS/GSM/GPRS and other IST and field mapping technologies, also offered by Epsilon Italia srl, www.epsilon-italia.it
- Flight & UAV/UAS operations, also supported by our associated company www.aviontek.com
- Hardware, software, middleware integration supported by PC-Systems SA, www.pcsystems.gr
- Research & development (eg. Fp3 - Fp4, HORIZON2020)
- Statistics & GIS database products (for Greece & Cyprus)
- Training and capacity building also offered by Epsilon Bulgaria ood, www.epsilon-bulgaria.com
- Management Consulting also offered by Epsilon Consulting Ltd., Cyprus, www.epsilon-cyprus.com.cy

We address cross-sectored and institutional issues on an international, national and local level to ensure the sustainable use of technologies that offer financially viable solutions for HLS. This multi-disciplinary approach aims, amongst others, at safety management, risk reduction, emergency recovery, increased public awareness and policy adaptation.

EPSILON is certified according to ISO 9001:2008 by TUV NORD for: civil & environmental engineering consulting services, design & development of information technologies applications in the field of Geoinformatics and GIS, surveying - collection and production of GIS data, project management, GIS & environmental studies, remote sensing & photogrammetry services (all applied to HLS).



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Number of
EPSILON Group
offices in Europe

35

Number of countries
where EPSILON has
significant presence

150

Number of large
projects conducted
during last decade

www.epsilon.gr