



# enviro-LENS

## Earth Observation Platform for Environmental Law Enforcement Support

### SATELLITE-DERIVED INFORMATION SOLUTIONS FOR ENVIRONMENTAL LAW

enviro-LENS will bridge the gap for the utilization of the European satellite capacities for environmental law enforcement and related cross-cutting sectors. The project is responding to the demands of the European jurisdictional sector for ready-to-access evidence and scenario information on environmental situation and/or violations.

Monitoring the environment in order to support its protection and sustainable use is the main „raison d'être“ of the EC Copernicus satellite programme. It permanently monitors land, atmosphere and oceans and provides timely and accurate information on the state of our planet. While standardized statistical products for reporting are produced, these are not available for or rarely fulfill the requirements of individual legal case studies.

Satellite-derived information is not being used on regular basis as primary evidence in legal cases and related administrative proceedings concerning environmental law enforcement, auditing, decision-making and liability for environmental damage. In Europe alone, some 286 open environmental infringement cases on national level have been reported in 2015 alone. Despite the significant application potentials and resulting new EO market, there has been very limited interaction between lawyers and technology professionals in this area. This is because the use and development of satellite-derived information has almost exclusively been technology-led so far and is quite new to the juridical sector. As a result, there is limited awareness among la-

wyers and administrators of environmental procedures about the range of applicable satellite-derived information solutions, their access and affordability for the establishment of hard fact evidences.

**Earth Observation (EO) systems offer significant capacities to monitor, verify and enforce compliance with legal and administrative requirements in this field.** Particularly violations of environmental laws, which result in physical, chemical or biological alterations of landscapes or ecosystems can be documented through EO in spatially explicit and quantitative means. Linkage of satellite monitoring procedures with legal specifications would allow both for identification of historic violations and identification of ongoing violations along standardized routines. In addition, in some cases the EO information is treated as direct evidence, probative of a fact in issue, whereas under other circumstances it can provide circumstantial or other indirect evidence of facts.



## Specific Goals of enviro-LENS

**1. enviro-LENS scopes EO product demands and specifications for environmental law enforcement** to be shaped according to users' needs, workflows and highest impact service provisions, ultimately determining the desired innovation degree of the solutions and the design of the commercial service platform and service models; To reach this goal we involve end users covering the entire targeted market spectrum on national, local and European level active in the field of environmental law enforcement.

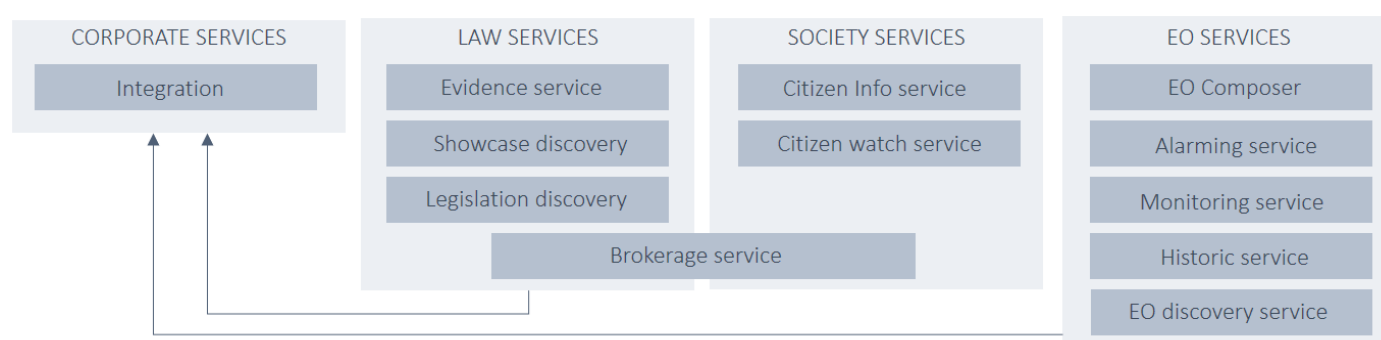
**2. enviro-LENS will develop an innovative service platform along open standards,** sustained by fully automated production processes capable to fully exploit the EO data to deliver case specific evidences. We build upon established Copernicus data access technologies and automated value adding service provision platforms, and expert companies for developing dedicated information solutions, and SMEs specialized in innovative EO market place creation.

**3. enviro-LENS will demonstrate the value of the services platform and products to the involved champion users** along agreed demonstration cases with acceptance, standardization and dissemination strategy to generate a wider user community acceptance; Our demonstration concept foresees project integration of sector specific champion representatives for specifying, testing, attestation and adoption of applied test cases along a iterative development process.

**4. enviro-LENS will establish an open business model framework allowing integration of the technology but also incubation of new service providers along dedicated service level models,** with appropriate IPR and reseller agreements as well as cutting edge industry standards ensuring quality of services. This includes a location based Brokerage Service for citizens to contact specialised corporate law firms.

## enviro-LENS Services

Four functional groups of enviro-LENS services will be available through the enviro-LENS Portal.



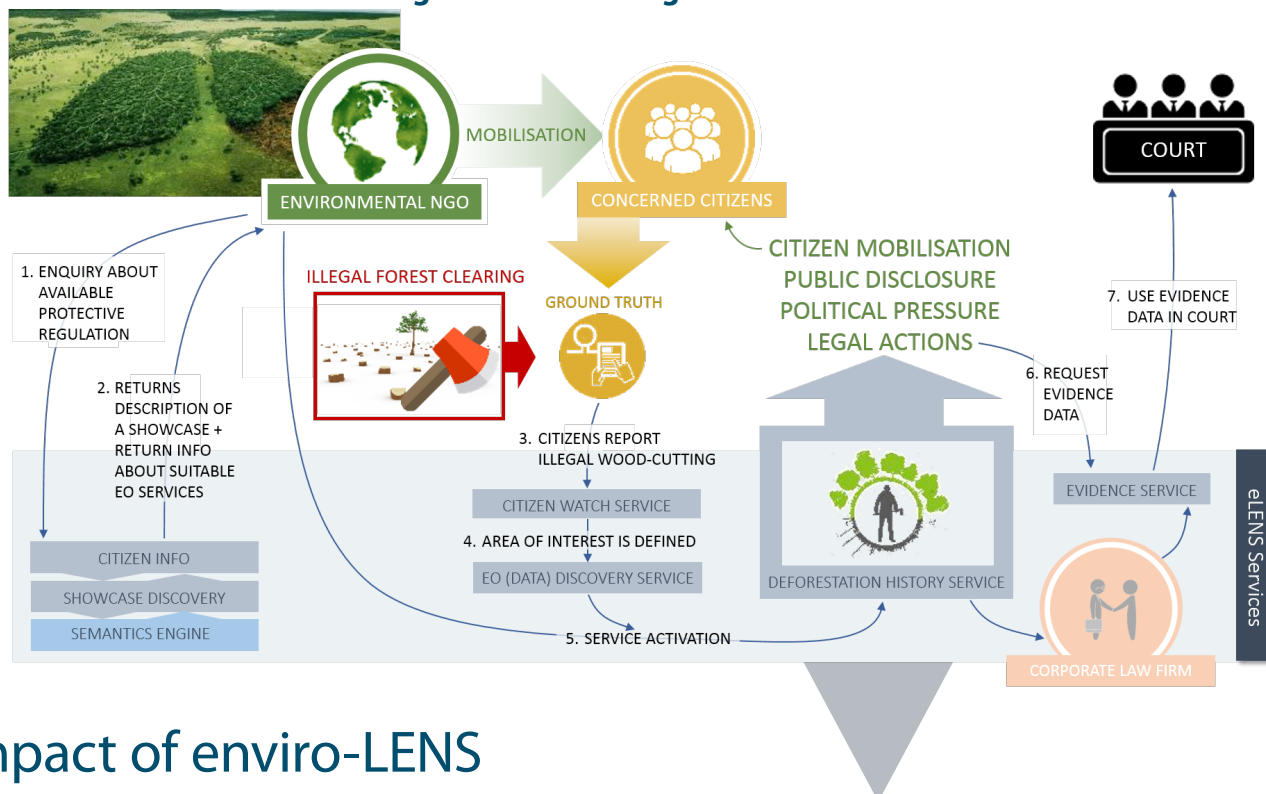
- ✓ **CORPORATE SERVICES** of different levels will be provided to enable integration of groups of enviro-LENS services into 3rd party front-offices to integrate complex domain-specific workflows.
- ✓ **LAW SERVICES** are meant to be used for law enforcement purposes, primarily being used by law-domain users, seeking law support for their particular environmental-enforcement problems. Brokerage services on the other hand bridge corporate law services with societal demands by providing thematic and location based contacts for engagement of legal services.
- ✓ **SOCIETY SERVICES** will be free-of-charge services meant to provide public information about possibilities when trying to enforce environmental violations.
- ✓ **EO SERVICES** will provide and upgrade EO services dedicated to solutions for environmental legislation applications.

# Usage scenarios of enviro-LENS

Usage scenarios will be initially designed along the champion users requirements to demonstrate chaining of eLENS services, either by using eLENS Portal or as integrated part of customer's existing business processes. These could be application scenarios such as,

- ✓ Citizen initiatives with regard to air pollution violations
- ✓ Sea pollution monitoring and evidences for habitat impact
- ✓ Supporting common agriculture policy subsidiary control
- ✓ Evidences for illegal de-forestation
- ✓ Illegal waste dumping
- ✓ ...

## Usage Scenario - Illegal Deforestation



## Impact of enviro-LENS

- ✓ Creation of situational evidences through time, severances of violation and impact information
- ✓ EO data improves and enhances the capacity of national regulators, addressing their priorities through networks
- ✓ EO information improves transparency and public participation over environmental monitoring and enforcement
- ✓ Raise awareness among lawyers and administrators of environmental procedures about the range of applicable satellite-derived information solutions, their access and affordability for the establishment of hard fact evidences
- ✓ Specific solutions embeddable in the jurisdictional workflow practices and sufficient information on performances
- ✓ Simplify the complexity of the EO solutions through a smart wizard, speaking the language of the stakeholders & citizens
- ✓ Innovative semantic translation of legal definitions into geographical rules, allowing non-EO experts to receive situational evidences suitable to legal process requirements

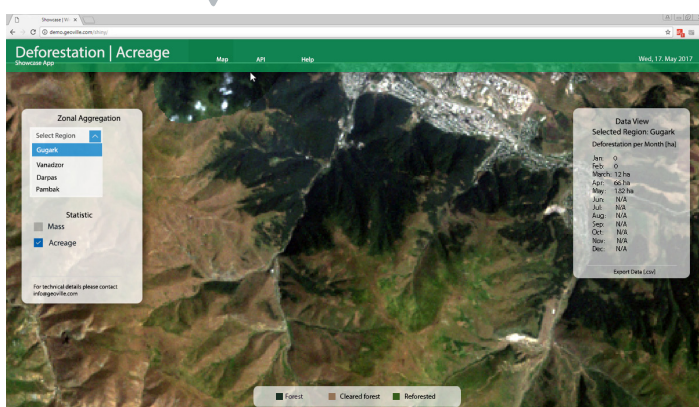


Fig. 1: Example for a web platform developed by GeoVille. GeoVille established a satellite based method for the detection of illegal deforestation.



## The enviro-LENS project team

The team includes space industry specialized business model experts with the expertise and strategic goal to develop a business model that is not only flexible to the customer level requirements but which shall enable self-driven growth through provision of a market place and franchise adoption of the environ-LENS setup to serve the environmental law enforcement market.

	<u>GeoVille Information Systems and Data Processing GmbH, Austria</u> Earth Observation Expert with special focus on Environment and Natural Resources
	<u>Sinergise, Slovenia</u> Geographic Information System Expert and Big Data Expert
	<u>Aristotle University of Thessaloniki, Greece</u> Scientific Expert on Rural & Surveying Engineering
	<u>Artificial Intelligence Laboratory, Slovenia</u> Expert in information technologies with emphasis on artificial intelligence
	<u>DLA PIPER</u> The leading global business law firm
	<u>International Union for Conservation of Nature</u> The world's largest and most diverse environmental network

## Copernicus Market Uptake

### European Commission Horizon 2020 Programme

Copernicus, the Union's Earth observation and monitoring programme started in 2014 and since then produced a wealth of data and information regarding the Earth sub-systems (land, atmosphere, oceans) and cross-cutting processes (climate change, emergency and security). Copernicus data and information are mainly made available on a free open and full basis. This is expected to unleash unique market opportunities. It is important to foster market development exploiting the added value of integration of EO observation technologies (both satellite, airborne and ground based) with positioning ones and ICT (enhancing new frontiers opened by web) across different market segments through the development of applications, and encourage their insertion into the market.

- Project Duration: 24 months
- Official start of the project: 1.12.2018
- Total budget: €2.523.918,75
- EU funding: €1.998.924,38

The outcome of this innovation project will be a commercial service platform, sustained by a production process capable to deliver to the user a product which is validated and accepted as a marketable product. Transnational collaboration has a key role to play in this context, as it enhances access to markets beyond the national borders, notably by enabling space application providers to absorb market-related tacit knowledge and know-how of their partners.



Application products will adopt open standards for data documentation, data models and services including data processing, visualization and cataloguing.

### Expected Impact:

- Sustainable supply chains for innovative EO value added products and services with demonstrated commercial value with targeted client communities. Complete integration, based on international standards, into the customer's existing business processes and processing chains;
- Enhance European industry's potential of market opportunities and establish leadership in the field, and to boost business activity;
- Lead to new services on the market, which are capable of generating turnover and thus create new jobs.

