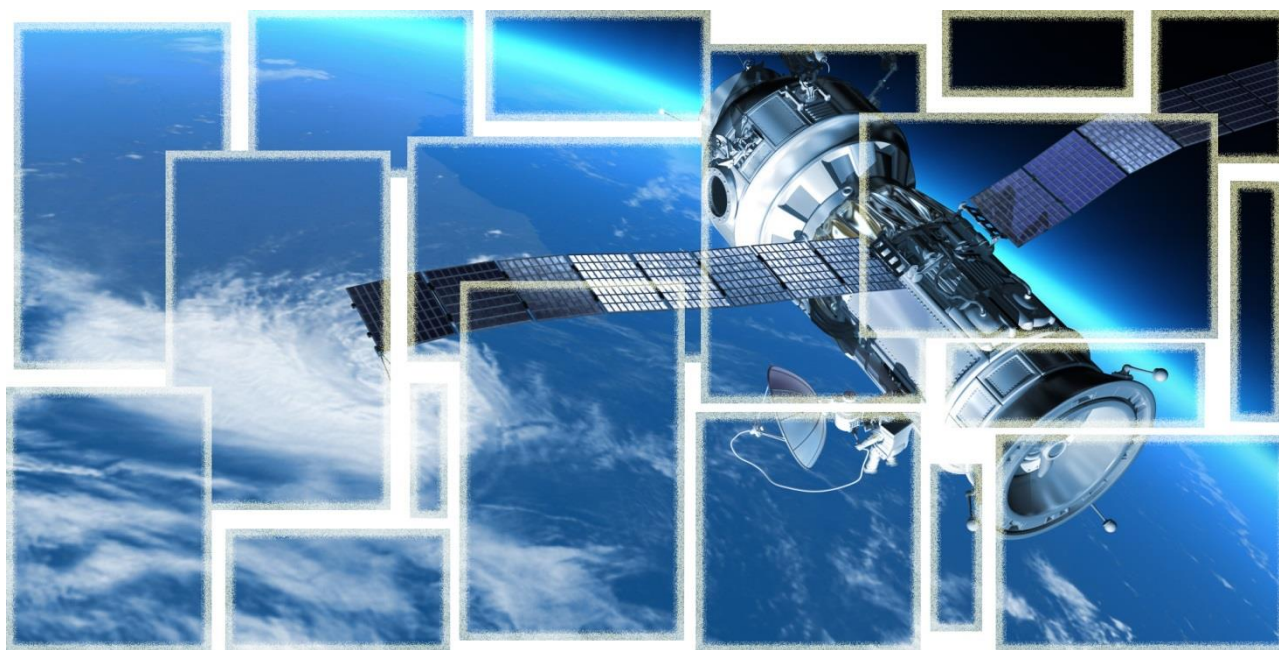


# Basilicata STS Catalogue

Product and Service Catalogue of the Basilicata Space Technology Sector





## PREFACE

### *English*

This Catalogue has been realized in the framework of NIBS project in order to provide an effective instrument for promoting applications based on Space Technologies developed by the University, the Research Centers and Enterprises of the Basilicata Region.

The catalogue encloses, for each available application, a sheet that contains the description of the service, the main application fields, the key characteristics and the contacts for more detailed information.

Taking into account that the most probable and effective way of research of services within the catalogue is by application field, these have been organized following the GMES4Region taxonomy, identifying 8 application main fields (R1-Management of Urban Areas, R2-Sustainable development and nature protection, R3-Regional and local planning, R4- Agriculture, Forestry and Fisheries, R5-Health, R6-Emergencies, R7-Infrastructure, Transport and Mobility, R8-Tourism).

At each application fields of the taxonomy has been associated a color to make the research of available application in a particular field easier.

## PREFAZIONE

### *Italiano*

Questo catalogo è stato realizzato nell'ambito del progetto NIBS al fine di fornire uno strumento efficace per promuovere le applicazioni basate su tecnologie spaziali sviluppate dalla Università, dai centri di Ricerca e dalle Imprese della Regione Basilicata.

Il catalogo contiene, per ogni applicazione disponibile, una scheda che riporta la descrizione del servizio, i principali campi di applicazione, le sue caratteristiche salienti ed i contatti per ulteriori e più dettagliate informazioni.

Considerando che il modo più frequente ed efficace di ricerca dei servizi nel catalogo è, probabilmente, per settore di applicazione, questi ultimi sono stati organizzati seguendo la tassonomia GMES4Region, che ne identifica 8 (R1-Gestione delle aree urbane, R2- Sviluppo sostenibile e protezione ambientale, R3- Pianificazione regionale e territoriale, R4- Agricoltura, silvicoltura e pesca, R5-Salute, R6- Emergenze, R7-Infrastrutture, Trasporti e Mobilità, R8-Turismo).

Allo scopo di rendere più immediata la ricerca di applicazioni nei campi individuati dalla tassonomia scelta, a ciascuno di esso è stato associato un colore.

## The GMES4Region Taxonomy

R1 Management of urban area	
r 1.1	Urban planning and management
r 1.2	Renewable energies
r 1.3	Urban Energy efficiency
r 1.4	Waste management
r 1.5	Water management
r 1.6	Ports and Harbours management
R2 Sustainable development and nature protection	
r 2.1	Renewable energies
r 2.2	Forest and green areas
r 2.3	Natural resources management
r 2.4	Urban Energy efficiency
r 2.5	Coastal Management
r 2.6	Protected areas management
r 2.7	Biodiversity and ecosystem wardship
R3 Regional and local planning	
r 3.1	Urban planning and management
r 3.2	Rural planning and management
R4 Agriculture, Forestry and Fisheries	
r 4.1	Soil moisture
r 4.2	Crop Classification and Monitoring
r 4.3	Agricultural Pollution Monitoring
r 4.4	Water Scarcity
r 4.5	Forest monitoring
r 4.6	Phytoplankton detection
R5 Health	
r 5.1	UV Exposure
r 5.2	Air quality and humidity
r 5.3	Water quality
R6 Emergencies	
r 6.1	Natural disaster management
r 6.2	Early Warning
r 6.3	Industrial risk management
r 6.4	Search and Rescue Operations
r 6.5	Maritime Surveillance
R7 Infrastructure, Transport and Mobility	
r 7.1	Transport and Network Management
r 7.2	Air quality /traffic management
r 7.3	Industrial risk management
r 7.4	Maritime Surveillance
R8 Tourism	
r 8.1	UV Exposure
r 8.2	Air Quality
r 8.3	Bathing Water Quality and Temperature

## Tassonomia GMES4Region

R1 Gestione delle aree urbane	
r 1.1	Gestione e pianificazione urbanistica
r 1.2	Energie rinnovabili
r 1.3	Efficienza energetica dei centri urbani
r 1.4	Gestione dei rifiuti
r 1.5	Gestione delle acque
r 1.6	Gestione dei porti e delle aree portuali
R2 Sviluppo sostenibile e protezione ambientale	
r 2.1	Energie rinnovabili
r 2.2	Foreste ed aree verdi
r 2.3	Gestione delle risorse naturali
r 2.4	Efficienza energetica dei centri urbani
r 2.5	Gestione delle Coste
r 2.6	Gestione delle aree protette
r 2.7	Tutela della biodiversità e degli ecosistemi
R3 Pianificazione Regionale e Territoriale	
r 3.1	Gestione e pianificazione urbanistica
r 3.2	Gestione e pianificazione delle aree rurali
R4 Agricoltura, silvicoltura e pesca	
r 4.1	Umidità dei suoli
r 4.2	Gestione e pianificazione delle colture
r 4.3	Monitoraggio inquinamento agricolo
r 4.4	Siccità
r 4.5	Monitoraggio foreste
r 4.6	Rilevamento fitoplancton
R5 Salute	
r 5.1	Esposizione ai raggi UV
r 5.2	Umidità e qualità dell'aria
r 5.3	Qualità dell'acqua
R6 Emergenze	
r 6.1	Gestione catastrofi naturali
r 6.2	Prima allerta
r 6.3	Gestione dei rischi industriali
r 6.4	Operazioni di ricerca e salvataggio
r 6.5	Sorveglianza Marittima
R7 Infrastrutture, Trasporti e Mobilità	
r 7.1	Gestione dei trasporti e delle reti
r 7.2	Qualità dell'aria/gestione del traffico
r 7.3	Gestione dei rischi industriali
r 7.4	Sorveglianza Marittima
R8 Turismo	
r 8.1	Esposizione ai raggi UV
r 8.2	Qualità dell'aria
r .8.3	Temperatura e qualità delle acque di balneazione

## BASILICATA STS PRODUCTS INDEX

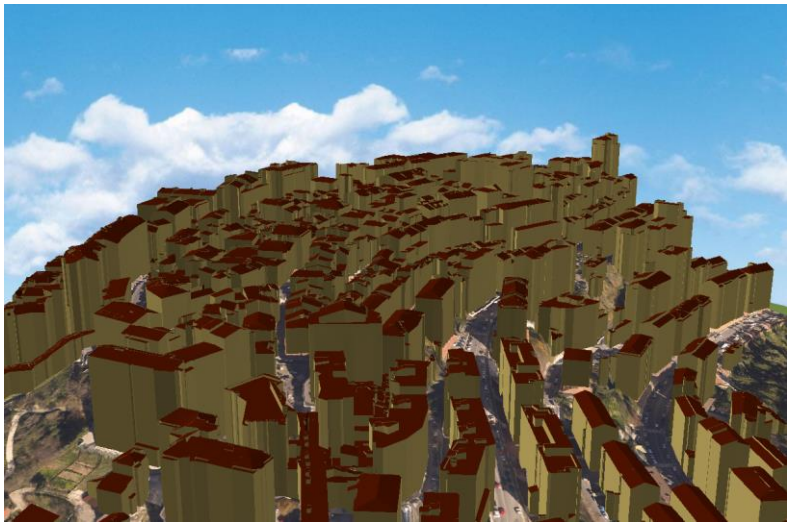
R1	ILLEGAL ACTIVITIES DETECTION .....	1
R1	INNOVAMBIENTE, TOWARDS A PAY AS YOU THROW SYSTEM.....	2
R1	R2 ENERGY EFFICIENCY .....	3
R1	R2 R3 R4 PYROGAS - ELECTRICAL AND THERMAL POWER .....	4
R1	R2 RENEWABLE SOURCES.....	5
R1	R2 URBAN IMPACT OF EXTREMES EVENTS .....	6
R1	R2 WATER RESOURCE MANAGEMENT .....	7
R1	R3 URBAN .....	8
R1	R3 URBAN AND TERRAIN MAPPING .....	9
R1	R6 R2 CULTURAL HERITAGE .....	10
R2	COASTAL MANAGEMENT.....	11
R2	PROTECTED AREAS MANAGEMENT .....	12
R2	SOLARCLOUD.....	13
R2	R1 RESOURCES .....	14
R2	R1 R3 ENVIRONMENTAL ASSESSMENT .....	15
R2	R3 LAND DEGRADATION AND SOIL SEALING MONITORING.....	16
R2	R4 COASTAL AND MARINE ECOSYSTEMS.....	17
R2	R4 DESERTIFICATION AND LAND DEGRADATION MONITORING .....	18
R2	R4 R5 R6 GEOSI FOR THE LAND MONITORING.....	19
R2	R4 R5 R6 ICT SOLUTIONS FOR THE ENVIRONMENTAL MONITORING .....	20
R2	R6 R4 R8 WATER QUALITY MONITORING.....	21
R2	R6 COASTAL MONITORING.....	22
R2	R6 FIRE TIMELY DETECTION .....	23
R2	R6 LAND DEGRADATION RISK MANAGEMENT .....	24
R2	R6 NATURAL RESOURCES STUDIES .....	25

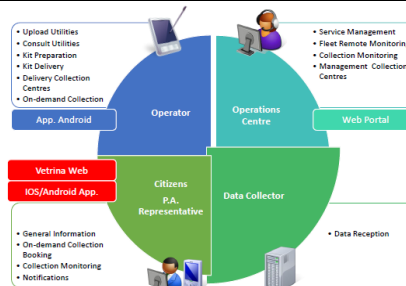
R2	R7	MARINE AND COASTAL MANAGEMENT .....	26		
R3	R1	R7	AIRPORTS .....	27	
R3	R4	PROSIT – SATELLITE PRODUCTS FOR VINEYARD .....	28		
R3	R5	URBAN ENVIRONMENT .....	29		
R4		AGRI-ENVIRONMENT MONITORING .....	30		
R4		CROP MONITORING.....	31		
R4		DROUGHT MONITORING .....	32		
R4		FORESTRY .....	33		
R4		PRECISION FARMING .....	34		
R4		PRECISION FARMING AND LAND USE .....	35		
R4		REMOTE SENSING FOR PRECISION AGRICULTURE.....	36		
R4		SUPPORT TO CAP (COMMON AGRICULTURAL POLICIES) POLICY SOLUTIONS.....	37		
R4	R2	LAND ASSESSMENT .....	38		
R4	R2	R1	R3	PRECISION MAPPING.....	39
R4	R2	R6	FOREST RISK MANAGEMENT .....	40	
R4	R6	EARLY STRESS DETECTION IN AGRICULTURAL AND NATURAL ECOSYSTEMS.....	41		
R4	R6	FIRE-SAT .....	42		
R4	R6	REMOTA - RST- BASED DETECTION AND MONITORING OF THERMAL ANOMALIES .....	43		
R5		FORECASTING AIR QUALITY PARAMETERS.....	44		
R5	R1	R8	WATER QUALITY ASSESSMENT .....	45	
R5	R2	R7	OIL SLICKS DETECTION AND WATER QUALITY ASSESSMENT .....	46	
R6		BORDER PROTECTION .....	47		
R6		DISASTER MANAGEMENT .....	48		
R6		DUST DETECTION AND MONITORING .....	49		
R6		EARLY WARNING MANAGEMENT .....	50		
R6		EARTHQUAKE DAMAGE ASSESSMENT .....	51		
R6		FLOODED AREAS DETECTION AND MONITORING .....	52		
R6		GROUND INSTABILITY MONITORING SERVICES.....	53		

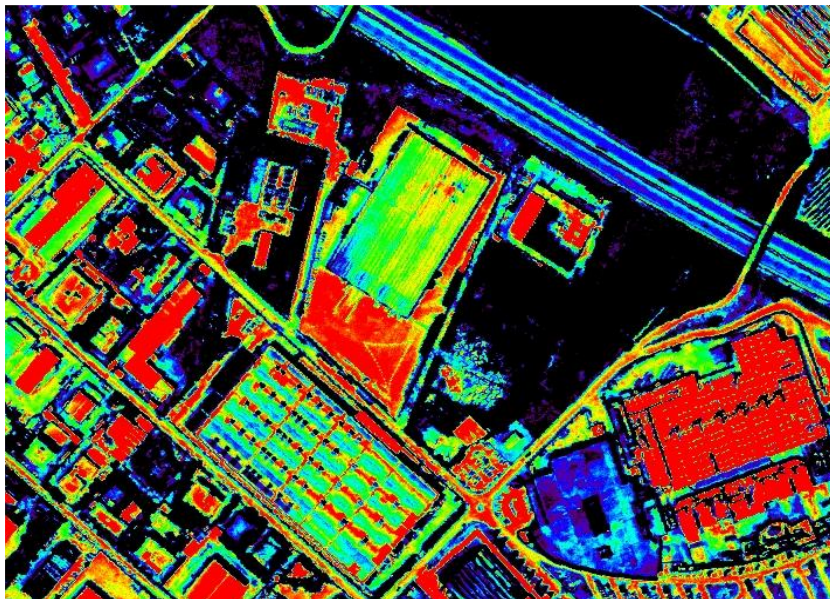
<b>R6</b>	SEA POLLUTION MONITORING.....	54
<b>R6</b>	SEISMIC AREAS MONITORING.....	55
<b>R6</b>	SEISMIC RISK AND LANDSLIDES RISK MANAGEMENT.....	56
<b>R6</b>	SOIL AND INFRASTRUCTURE DISPLACEMENTS MEASUREMENT .....	57
<b>R6</b>	TRANSPORT AND ENERGY INFRASTRUCTURE STABILITY MONITORING .....	58
<b>R6</b>	VOLCANIC ERUPTION MONITORING .....	59
<b>R6</b>	<b>R1</b> <b>R3</b> NATURAL RISK MANAGEMENT .....	60
<b>R6</b>	<b>R4</b> FLOOD RISK MONITORING .....	61
<b>R6</b>	<b>R5</b> ATMOSPHERIC AEROSOL INVESTIGATION .....	62
<b>R6</b>	<b>R5</b> <b>R8</b> <b>R7</b> CLIMATE CHANGE.....	63
<b>R6</b>	<b>R7</b> LAND MOVEMENT MONITORING .....	64
<b>R6</b>	<b>R7</b> OIL SPILL TIMELY DETECTION .....	65
<b>R6</b>	<b>R7</b> <b>R5</b> GAS FLARING EMISSION ESTIMATION.....	66
<b>R7</b>	AERO-THERMODYNAMIC DATABASE OF SPACE VEHICLES .....	67
<b>R7</b>	INNOVAMOBILITY, A FLEET MONITORING INFOMOBILITY SOLUTION.....	68
<b>R7</b>	MONITORING OF INFRASTRUCTURES .....	69
<b>R7</b>	OIL&GAS - PIPELINES .....	70
<b>R7</b>	RAILWAYS & ROADS .....	71
<b>R7</b>	TRANSPORT INFRASTRUCTURAL MANAGEMENT SYSTEM .....	72
<b>R7</b>	VESSEL DETECTION .....	73
<b>R7</b>	<b>R2</b> <b>R5</b> <b>R6</b> OIL SPILL.....	74







Short title of the service	R1 Illegal Activities Detection							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r1.1 Urban planning and management							
Short description of the service	Monitoring of urban areas to detect illegal and unauthorized activities by using a multi-sensor data acquired by airborne platform equipped with full waveform laser scanner, hyper-spectral sensors operating in VNIR and SWIR range, thermal camera and a high resolution digital camera.							
Geographic Coverage (Global, local, regional)	From local to regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Consortium for the Industrial Development of the Potenza Province.							
Possible Users	Public bodies operating in the land control and surveillance.							
Strengths	<ul style="list-style-type: none"><li>• High accuracy and precision of measures;</li><li>• quickly survey of huge areas;</li><li>• data capture acquired with difficulty on the ground;</li><li>• versatility of final products useful for various applications.</li></ul>							
Reference image of the service	 <p>3D City model for evaluation of the buildings volume</p>							
References methodology	Significant Project: Design of enlargement and re-zoning of the Tito Industrial Area (Contractor: Consortium for the Industrial Development of the Potenza Province).							
Service Status	Operational							
Contact	Annibale Guariglia							
phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net							

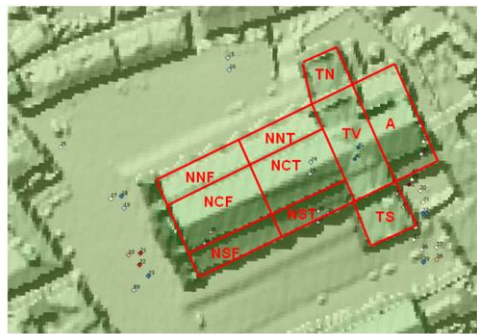
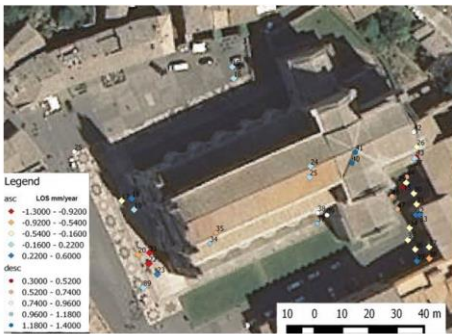
Short title of the service	R1 INNOVAMBIENTE, towards a Pay As You Throw system							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r1.4 Waste management							
Short description of the service	<p><b>Web-based Integrated Information System</b> that allows the computerization of the complete waste collection cycle. The system has been designed and developed taking into account D.M. 13/02/2014 (Minimum Environmental Criteria for Urban Waste Management Services) with the goal of making each aspect of Urban Collection management controllable and thus more efficient, also in a perspective of total interoperability with the software already in use by local administrations. It consists of 4 main modules:</p> <ul style="list-style-type: none"><li>• <b>Operations Centre:</b> web portal with functions for remote monitoring of the vehicle fleet, waste collection monitoring and management of Collection Centres;</li><li>• <b>Operator:</b> Android application with functions for the management of utilities, collection kits, on-demand waste collection and delivery to the Collection Centres;</li><li>• <b>Citizen:</b> Android/iOS/web application with functions to monitor waste collection, receive notifications, book on-demand waste collection and access general information on services;</li><li>• <b>Data Collector:</b> set of server-side applications appointed to the receipt and storage of data from mobile devices and vehicle fleets.</li></ul>							
Geographic Coverage (Global, local, regional)	From Local to Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Current Users	Waste collection companies; Municipal Administrations							
Possible Users								
Strengths	<ul style="list-style-type: none"><li>• Allows to monitor and optimize waste collection activities</li><li>• Simplifies and speeds up the various processes</li><li>• Consents a better control through a single ICT tool</li><li>• Consents the monitoring of waste collection at utility level</li><li>• It provides the possibility to enable incentive policies to increase the levels of recycling including the ability to assign scores and rewards to the end users</li><li>• It is interoperable with P.A. systems and in particular it provides a data base to arrive at a Pay As You Throw system</li></ul>							
Reference image of the service	 <p style="text-align: center;"><i>INNOVAMBIENTE main modules</i></p>							
Reference methodologies of the service	Latest generation GPS systems; State-of-the-art web-based platform; Google Maps; Android /iOS Mobile Apps for ground crew operators and citizens; RFID data acquisition during curbside and/or door to door collection (RFID tags, transponders, readers and antennas); Detailed Reporting functionalities (by reference period; by type of utility; by type of waste; by area; by collection team) in order to define a fair Pay As You Throw system for citizens.							
Service Status	Operational, on the market							
Contact	Massimo Veglia							
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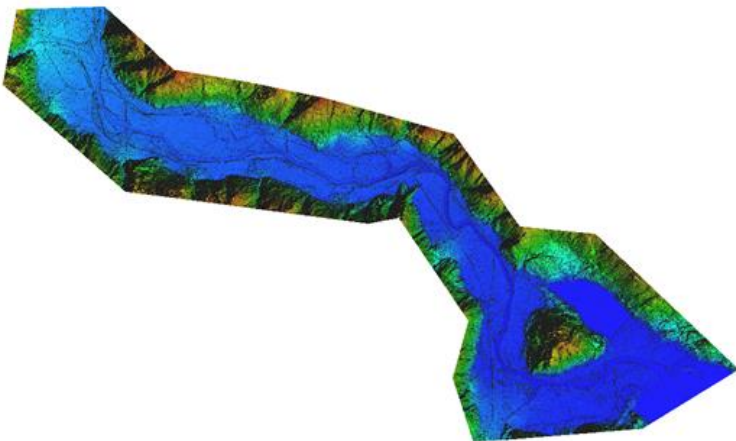
Short title of the service	R1 R2 Energy efficiency							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r1.2 Renewable energies r2.4 Urban energy efficiency							
Short description of the service	Using aerial IR data to monitor thermal efficiency of buildings							
Geographic Coverage <i>(Global, local, regional)</i>	Local							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users								
Possible Users	Local Authorities							
Strengths	High precision of thermal measurements, large spatial coverage							
Reference image of the service	 <p>Aerial Monitoring thermal efficiency of buildings</p>							
References methodology	Dar A. Roberts, Dale A. Quattrochi, Glynn C. Hulley, Simon J. Hook, Robert O. Green, Synergies between VSWIR and TIR data for the urban environment: An evaluation of the potential for the Hyperspectral Infrared Imager (HyspIRI) Decadal Survey mission, Remote Sensing of Environment, Volume 117, 15 February 2012, Pages 83-101 S. Pascucci, M. Daraio, A. Palombo, S. Pignatti, F.Santini, G. Laneve, TASI-600 high resolution airborne thermal data for accurate materials detection in urban scenarios. 33rd EARSeL 2013: 'Thermal Remote Sensing' session. 5-7 June 2013–Matera (Italy).							
Service Status	Research							
Contact	Stefano Pignatti							
Phone	(+39) 06 49934023							
e-mail	stefano.pignatti@imaa.cnr.it							

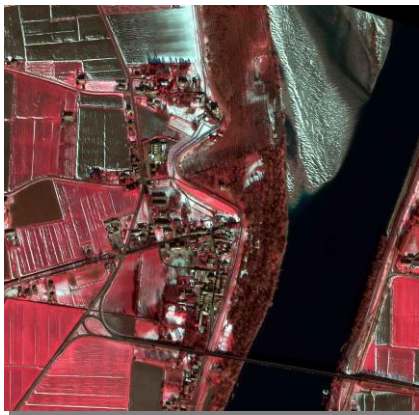
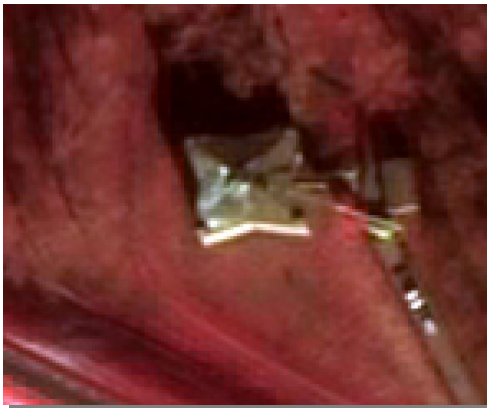
Short title of the service	R1 R2 R3 R4 PYROGAS - Electrical and thermal power							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r 1.2 Renewable energies r 1.4 Waste management r 2.2 Forest and green areas r 2.4 Urban Energy efficiency r 4.2 Crop Classification and Monitoring			r 1.3 Urban Energy efficiency r 2.1 Renewable energies r 2.3 Natural resources management r 2.6 Protected areas management r 4.5 Forest monitoring				
Short description of the service	CMD has developed a small size CHP plant, the CMD ECO20. It's a full automated plant for combined production of electric and thermal power, using syngas given by wooden biomasses gasification. Biomass is a strategic renewable source of energy, as it allows the distributed generation of electricity and / or thermal power, enhancing and safeguarding the woodland heritage of the areas where the plants are located.							
Geographic Coverage (Global, local, regional)	Contrary to common opinion, biomass CHP plants promotes healthy forest management, which in turn is the precondition for his health and safety. In Italy this new approach to the use of the wooden fuel is being expanded while for other European Union countries the use of wood to produce energy has become a tradition for several years now. CMD produces cogenerators biomass fed to meet this scenario.							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Current Users	Every citizen, society, company, organization can choice this new approach in self producing electric and thermal energy using wooden components as fuel, that's completely renewable by the season's cycle.							
Possible Users	Everyone can decide to produce energy for a citizen or local distribution grid, reusing the organic wooden dry waste for a low environmental impact system							
Strengths	It is evident that the use of wood brings several advantages: the cost of the raw material is 5 times lower than the normal fossil or mineral fuels; the wood is easy to find and easy to work with; it is not a hazardous material; it recycles a product often considered waste,the proper cleaning of the wood makes it healthy, lush and with less risk of fire; wood is not a food for man, no choice in agriculture activity is required (like for bio-oil and bio-ethanol) .Particular characteristic like low distances between fuel, plant and user, the particular kind of renewable source of energy harmonize the combined production of electric and thermal energy with low envirnomental impact, rational use of fuel source and energy.							
Reference image of the service	 CMD ECO20							
References methodology	The metodology and the process involved to produce gas is the gasification Gasification is a process that converts organic or fossil fuel based carbonaceous materials into carbon monoxide, hydrogen, natural gas and carbon dioxide. This is achieved by reacting the material at high temperatures (>700°C), without combustion, with a controlled amount of air (oxygen). The resulting gas mixture is called syngas (from synthesis gas or synthetic gas) or producer gas and is itself a fuel. The power derived from gasification and combustion of the resultant gas is considered to be a source							
Service Status	TRL 8							
Contact	Domenico Cirillo							
phone	(+ 39) 0823 42 40 55							
e-mail	domenico.cirillo@cmdengine.com							




Short title of the service	R1 R2 Renewable Sources							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r1.3 Urban Energy efficiency r2.4 Urban Energy efficiency r1.2 Renewable energies							
Short description of the service	Design and carrying out of plants of electrical production from renewable sources. Studying the proper exposition of the investigated areas for optimized feasibility studies in the renewable energy sector by means of laser scanner, digital camera, thermal camera and an anemometric total station ground based.							
Geographic Coverage <i>(Global, local, regional)</i>	From local to regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	LUCART S.P.A.							
Possible Users	Public Bodies or Private Enterprises.							
Strengths	Sound Partnership with ENEL; multidisciplinary approach, team of experts in the fields of civil, environmental, electrotechnical engineering, Earth Observation and legal system.							
Reference image of the service	<div></div> <p>Photovoltaic plant</p>							
References methodology	Significant projects: EPC (Engineering Procurement & Construction) of a photovoltaic system on the industrial factory Airtissue Srl-owned (group Lucart) of power equal to 982 kW in the Avigliano Municipality (PZ).							
Service Status	Operational							
Contact	Eugenio Viola							
Phone	(+39) 0971 56671							
e-mail	e.viola@geocart.net							

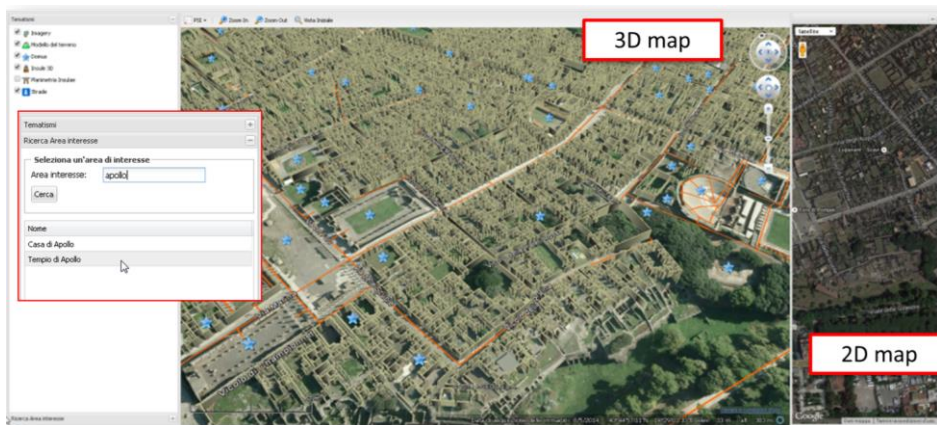
Short title of the service	R1 R2 Urban impact of extremes events							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r1.1-Urban planning and management r2.4-Urban Energy efficiency							
Short description of the service	Assessing the vulnerability distribution of the urban areas, cultural assets and critical infrastructures to extreme events linked to natural or anthropogenic factors (earthquake, landslides, heavy rainfall, fires, etc.) through active (SAR, LIDAR,...) and passive (multispectral reflective/emissive) multiplatform Remote Sensing techniques, to support their emergency response and mitigation/prevention activities							
Geographic Coverage <i>(Global, local, regional)</i>	Local, regional							
Spatial Resolution	0.5-2.5m	2.5-10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Current Users	Rome/ Avellino Municipalities							
Possible Users	P.A. and stakeholders at regional and local levels							
Strengths	<ul style="list-style-type: none"><li>• provide extensive and repetitive information on the selected areas;</li><li>• may represent the basis for designing and development of an effective GIS based DSS (Decision Support System);</li><li>• it is suitably customizable, depending on the user requirements.</li></ul>							
Reference image of the service	<div></div> <p>Cathedral of Orvieto: aerial orthophoto taken in 2012 (left) and LiDAR Digital Surface Model (DSM) with structural macroelement zonation (right). Envisat ascending and descending permanent scatterers PSs color indicates mean deformation speed in LOS direction.</p>							
References methodology	<ul style="list-style-type: none"><li>• Permanent scatterers PSDInSAR Interferometric processing of Envisat SAR acquisition series;</li><li>• Preprocessing and integration of EO (Earth Observation) derived geo-located information and others georeferenced layers within a GIS environment with a suite of functionalities, on purpose developed taking into account the specific user needs and application-driven requirements.</li></ul>							
Service Status	Pre-operational							
Contact	Flavio Borfecchia							
phone	(+39) 06 30483359							
e-mail	flavio.borfecchia@enea.it							


Short title of the service	R1 R2 Water Resource Management							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r1.5 Water Management r2.3 Natural resources management							
Short description of the service	Water resources assessment through the integration of a multi-sensor remote dataset.							
Geographic Coverage <i>(Global, local, regional)</i>	From local to regional							
Spatial Resolution	0.5-2.5m		2.5–10m		10-30 m		30-100 m	
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>	
Frequency of update	Several times a day		Daily		Weekly		Monthly	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Current Users	Basin Authority of Basilicata; Centre of Integrated Geomorphology for the Mediterranean Area (CGIAM); etc.							
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils); private companies (e.g. engineering or companies operating in the environmental sector).							
Strengths	High accuracy and precision of measures; quickly survey of huge areas; data capture acquired with difficulty on the ground; versatility of final products useful for various applications; precise definition of the river bed useful for hydrological application such as hydraulic simulations, flood mapping, risk management or for civil hydraulic engineering.							
Reference image of the service	 <p>Digital terrain model</p>							
References methodology	Significant Project: 1. Lidar Survey for accurate DTM and orthophoto of the Ionian coast (Basin Authority of Basilicata).							
Service Status	Operational							
Contact	Annibale Guariglia							
Phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net							


Short title of the service	R1 R3 Urban							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r1.1 Urban Planning and Management r3.1 Urban Planning and Management							
Short description of the service	High Resolution (HR) and Very High Resolution (VHR) Satellite Remote Sensing to monitoring hazard in anthropic areas (impervious, historic centers and cultural heritage).							
Geographic Coverage <i>(Global, local, regional)</i>	Local and Regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Regional and National Offices							
Possible Users	Regional and National Offices - Private Environment Agency							
Strengths	<ul style="list-style-type: none"><li>- Innovative Technology</li><li>- High accuracy of data and processing</li><li>- Low cost technology</li><li>- Multiscale image processing approach</li></ul>							
Reference image of the service	<div></div> <div><p><i>Pléiades satellite image of Rocca Possente - Italy (UNESCO heritage)</i></p><p><i>Pléiades satellite image of Stellata historic center - Italy</i></p></div>							
References methodology	Project - Validation of “Pléiades” Satellite data in the Bondeno area (Ferrara – Italy) <b>HAZARD ASSESSMENT AND CULTURAL HERITAGE IN AN ALLUVIAL PLAIN: MORPHOLOGICAL AND ANTHROPIC FEATURES</b>							
Service Status	Operational							
Contact	Elena Candigliota							
phone	(+39) 051 6098590							
e-mail	elena.candigliota@enea.it							




Short title of the service	R1 R3 Urban and Terrain Mapping							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r1.1 Urban planning and management r3.1 Urban planning and management							
Short description of the service	Remotely sensed data integration for urban planning studies, feasibility studies and for monitoring of building development. Processing of aerial photography in order to obtain a detailed city modeling for a three-dimensional visualization of the urban space.							
Geographic Coverage <i>(Global, local, regional)</i>	From local to regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Total SpA; Comune di Tito; Idroelettrica Lombarda S.r.l. ; etc.							
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils); private companies (e.g. engineering or construction companies)							
Strengths	High accuracy and precision of measures; quickly survey of huge areas; data capture acquired with difficulty on the ground; versatility of final products useful for various applications; enhancement of the understanding of built environment through the use of a 3D photorealistic city representation.							
Reference image of the service	<div></div> <p>City of Potenza: Oblique image</p>							
References methodology	Significant projects: Aerial survey by Laser Scanner RIEGL LMS-Q560, Thermal Camera DigiTHERM and Digital Camera DIGICAM H39 integrated in a platform called MAPPING and data processing. Province of Brescia (Contractor: Idroelettrica Lombarda S.r.l.)							
Service Status	Operational							
Contact	Annibale Guariglia							
Phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net							


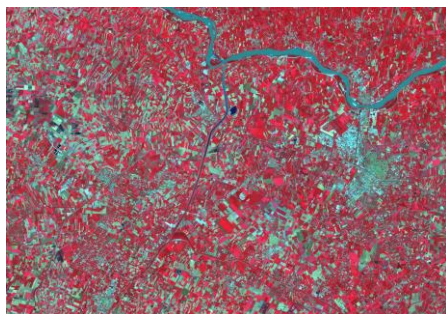
Short title of the service	R1 R6 R2 Cultural Heritage							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r1.1 Urban planning and management r2.6 Protected areas management r6.1 Natural Disaster management							
Short description of the product	Archaeological and cultural heritage sites have an economic and social incalculable value in every culture. These precious and fragile assets need to be preserved from degradation and at the same time, need a proper valorisation allowing population to access easily to them exploiting all the benefits deriving from the knowledge of our history.							
Geographic Coverage (Global, local, regional)	Local							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Italian Ministry for Cultural Heritage (MIBACT)							
Possible Users	UNESCO, Cultural Heritage managers and restorers							
Strengths	<ul style="list-style-type: none"><li>• DISPLACEMENT MONITORING for Cultural Heritage: Our solution enables the detection of slow movements and structural failures of historical buildings and structures and of terrain in the surrounding areas in their early stage and with millimetre precision, by adopting e-GEOS patented processing technology (PSP-IFSAR). Based on SAR satellite acquisitions the solution is completely NON INVASIVE and allows experts to early identify critical areas and to prioritize maintenance intervention.</li><li>• 2D/3D GIS-BASED WEB APPLICATION FOR CULTURAL HERITAGE: Web GIS user interface for cultural heritage site management. Flexible and user friendly, e-GEOS solution is able to integrate all data and information needed for the management of the site (e.g. cartography, archaeological data, meteorological data, on site sensors measurements and other kind of analysis measurement).</li></ul>							
Reference image of the service	 <p>2d/3d Gis-Based Web Application for Cultural Heritage</p>							
References methodology	<ul style="list-style-type: none"><li>• GIS-BASED WEB APPLICATION: based on open-source or most common proprietary technologies</li><li>• DISPLACEMENT MONITORING: satellite techniques, e-GEOS proprietary processing technology (PSP-IFSAR).</li></ul>							
Service Status	Operational							
Contact	Elena Francioni							
phone	(+39) 06 40693359							
e-mail	elena.francioni@e-geos.it							

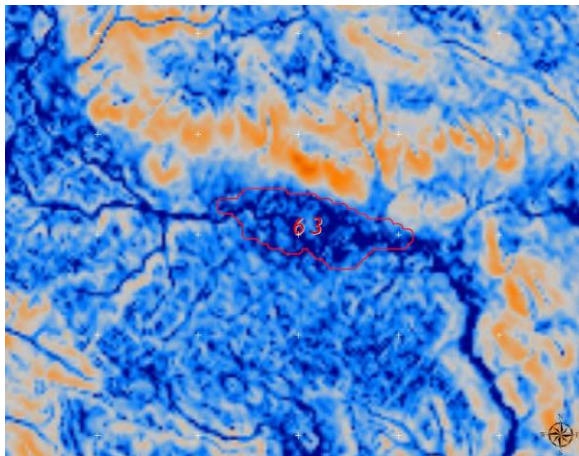
Short title of the service	R2 Coastal Management							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r2.5 Coastal management							
Short description of the service	Multi-sensor airborne platform (laser scanner, digital camera, two hyperspectral sensors operating VNIR and SWIR respectively and a thermal camera) data acquisition for coastal management and land use studies.							
Geographic Coverage (Global, local, regional)	From local to regional							
Spatial Resolution	0.5-2.5m		2.5–10m		10-30 m		30-100 m	
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Frequency of update	Several times a day		Day		Weekly		Monthly	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Current Users	Italian Space Agency; Polytechnic University of Bari; etc							
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils); private companies (e.g. engineering or construction companies).							
Strengths	<div><div><div>✓</div><div>High accuracy and precision of measures;</div></div><div><div>✓</div><div>quickly survey of huge areas;</div></div><div><div>✓</div><div>data capture acquired with difficulty on the ground;</div></div><div><div>✓</div><div>versatility of final products useful for various applications.</div></div></div>							
Reference image of the service	<div><div></div><div>Airborne hyper-spectral image of coastal stretch</div></div>							
References methodology	<div>Significant projects:</div> <div><div>1. Supply of aerial survey for achieving accurate DTMs, orthographic data processing with a scale of 1:2.000 and implementation of an Information System for Coastal Monitoring (SIMOC). Contractor: Polytechnic University of Bari.</div><div>2. Bathymetric surveys and cartographic data processing along Puglia Region Coast line (Contractor: Polytechnic University of Bari)</div></div>							
Service Status	Operational							
Contact	Mr. Annibale Guariglia							
phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net							

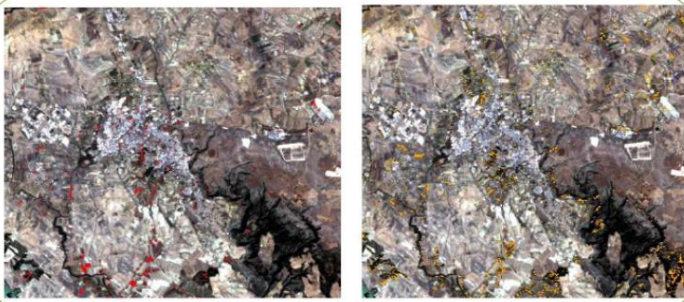
Short title of the service	R2 Protected Areas Management							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r2.6 Protected areas management							
Short description of the service	Protected areas management by means of remote sensing services through the use of a Multisensor Airborne platform (laser scanner, digital camera, two hyperspectral sensors operating VNIR and SWIR respectively and a thermal camera).							
Geographic Coverage <i>(Global, local, regional)</i>	From local to regional							
Spatial Resolution	0.5-2.5m		2.5–10m		10-30 m		30-100 m	
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Frequency of update	Several times a day		Daily		Weekly		Monthly	
	<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Current Users	Centre of Integrated Geomorphology for the Mediterranean Area (CGIAM); University of Rome “La Sapienza”							
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils).							
Strengths	High accuracy and precision of measures; quickly survey of huge areas; data capture acquired with difficulty on the ground; versatility of final products useful for various applications.							
Reference image of the service	<div></div> <p><i>Orthophoto draped onto a DTM of a protected volcanic island</i></p>							
References methodology	Significant projects: 1. Aerial survey by Laser Scanner of Stromboli Island (Contractor: University of Rome “La Sapienza”).							
Service Status	Operational							
Contact	Annibale Guariglia							
Phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net							



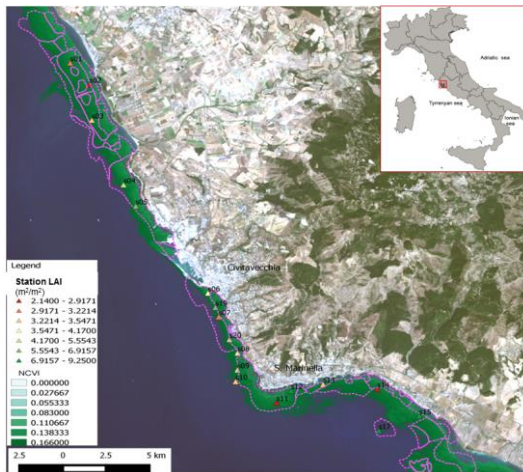
Short title of the service	R2 SolarCloud							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r2.3 Natural resource management							
Short description of the service	<p>Digimat is developing in collaboration with CNR, ImpresaAmbiente and Openet Technologies a platform based on SDI paradigm and oriented to management of facilities for solar energy production (SolarCloud platform). The platform will be interoperable with both remote sensing and on site sensing platform and is compliant with OGC standards.</p> <p>The SolarCloud aims to supply cloud services for the estimation and prediction of the primary source for the production of solar energy.</p> <p>In particular, following service will be supplied:</p> <ul style="list-style-type: none"><li>• Real-time monitoring of solar radiation and relative production of electric energy.</li><li>• Forecast of periods of low production, malfunctions diagnostic and alarms generation.</li><li>• Forecast of solar radiation and energy production on an hourly basis up to 72 hours.</li></ul> <p>The platform will be designed in order to allow the integration of new processors (software able to process spatial data in accordance of analysis models) that are co-localised with the platform or on remote sites compliant with OGC standard. This made the platform to be easily expandable to supply new monitoring and decision support services in monitoring energy facilities.</p> <p>The monitoring platform will be developed in the paradigm of smart cities using cloud methodology.</p>							
Geographic Coverage (Global, local, regional)	Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Current Users	The system is still in a test phase. User are scientist that developed the analysis model.							
Possible Users	Managing body of energy production facilities, energy manager of public institutions and companies, managing body of water systems, farms							
Strengths	<ul style="list-style-type: none"><li>✓ expandable (new services can be added)</li><li>✓ interoperable (compliant with INSPIRE recommendations and with OGC standard)</li></ul>							
Reference image of the service	 <p>Platform Logo</p>							
References methodology								
Service Status	Development phase.							
Contact	Angelo Donvito							
Phone	(+39) 3481331475							
e-mail	angelo.donvito@digimat.it							

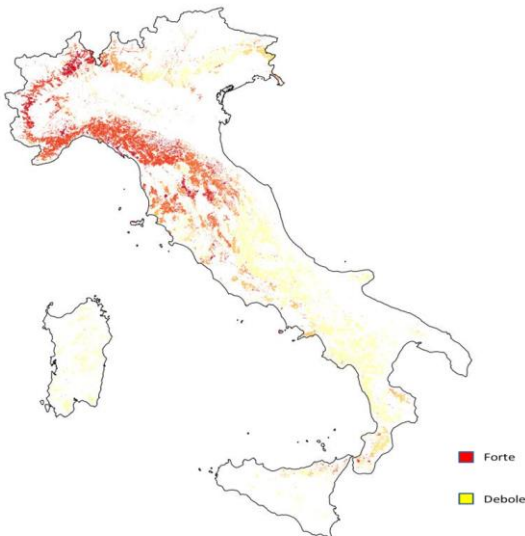
Short title of the service	R2 R1 Resources							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r 1.4 Waste management r 2.3 Natural Resources Management							
Short description of the service	High Resolution and Very High Resolution Satellite Remote Sensing (RS) to monitoring natural resources (water, hydrocarbon, quarries, mines) and landfills; to produce strategic information such as interpreted data, digital maps and analysis - on the availability and presence of sustainable, exploitable groundwater, hydrocarbon, mineral/rock material resources.							
Geographic Coverage <i>(Global, local, regional)</i>	Local and Regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Regional and National Offices							
Possible Users	Regional and National Offices - Private Company (oil, water, mine)							
Strengths	<ul style="list-style-type: none"><li>- New Satellite Sensor Technology - optical and radar</li><li>- High accuracy of data, processing and mapping</li><li>- Low cost technology</li><li>- Multiscale image processing approach</li><li>- DSS and RS integration data</li></ul>							
Reference image of the service	<div></div> <div><p><i>Landsat 8 image of Emilia-Romagna: alluvial plain and idrographic network</i></p><p><i>High resolution satellite image Pleiades of the Bondeno alluvial plain (Ferrara - Italy)</i></p></div>							
References methodology	Project - Validation of “Pleiades” Satellite data in the Bondeno area (Ferrara - Italy) <b>HAZARD ASSESSMENT AND CULTURAL HERITAGE IN AN ALLUVIAL PLAIN: MORPHOLOGICAL AND ANTHROPIC FEATURES</b>							
Service Status	Operational							
Contact	Francesco Immordino							
phone	(+39) 051 6098089							
e-mail	francesco.immordino@enea.it							


Short title of the service	R2 R1 R3 Environmental Assessment							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	☑	☑	☑	☐	☐	☐	☐	☐
Activity <i>(See legend page II)</i>	r2.3 Natural resources management r2.6 Protected areas management r1.1 Urban planning and management r3.1 Urban planning and management							
Short description of the service	Techniques of multi-sensor airborne or satellite data processing for environmental assessment, land and natural resources studies.							
Geographic Coverage <i>(Global, local, regional)</i>	From local to global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	☑	☑	☑	☑	☑			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	☐	☐	☐	☑	☑			
Current Users	Basilicata University; CTBTO - Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization; University “La Sapienza”, Rome; TSF S.p.A.; Sogin S.p.A.; etc.							
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils); private companies (e.g. engineering or construction companies).							
Strengths	High accuracy and precision of measures; quickly survey of huge areas; data capture acquired with difficulty on the ground; versatility of final products useful for various applications.							
Reference image of the service	<div></div> <p><i>Topographic Moisture Index</i></p>							
References methodology	Significant project: 1. Field research, both by helicopter and by ground check, of characterization of land use, geology and hydrogeology (Contractor: Sogin S.p.A).							
Service Status	Operational							
Contact	Annibale Guariglia							
Phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net							


Short title of the service	R2 R3 Land degradation and soil sealing monitoring							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r2.3 Natural resources management r3.2 Rural planning and management							
Short description of the service	Satellite imagery for land degradation and soil consumption monitoring							
Geographic Coverage (Global, local, regional)	From Local to Global							
Spatial Resolution	0.5-2.5m		2.5–10m		10-30 m		30-100 m	
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Frequency of update	Several times a day		Daily		Weekly		Monthly	
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Current Users								
Possible Users	Local governments; Natural Parks; Natural resources managers; Land and urban managers							
Strengths	Maps reliability and accuracy							
Reference image of the service	<div><div><div><div></div><div>Highly negative anomalies: "critical areas"</div></div><div><div></div><div>Moderately negative anomalies: "fragile areas"</div></div></div><p>Land degradation phenomena by PCA analysis on Landsat satellite images (Matera and Rupestrian Churches Park)</p></div>							
References methodology	A. Lanorte, A. Aromando, F. De Santis and R. Lasaponara Investigating satellite SPOT VEGETATION multitemporal NDVI maps for land degradation monitoring in the Basilicata Region: Preliminary Results from the MITRA project. Proceedings of Earsel Symposium, 2013 Matera (Italy) Beniamino Murgante and Maria Danese. Urban Versus Rural: The Decrease of Agricultural Areas and the Development of Urban Zones Analyzed with spatial statistics. Int. J. Agric. Environ. Inform. Syst. 2 (2), 16							
Service Status	Pre-operational							
Contact	Antonio Lanorte							
Phone								
e-mail	alanorte@imaa.cnr.it							

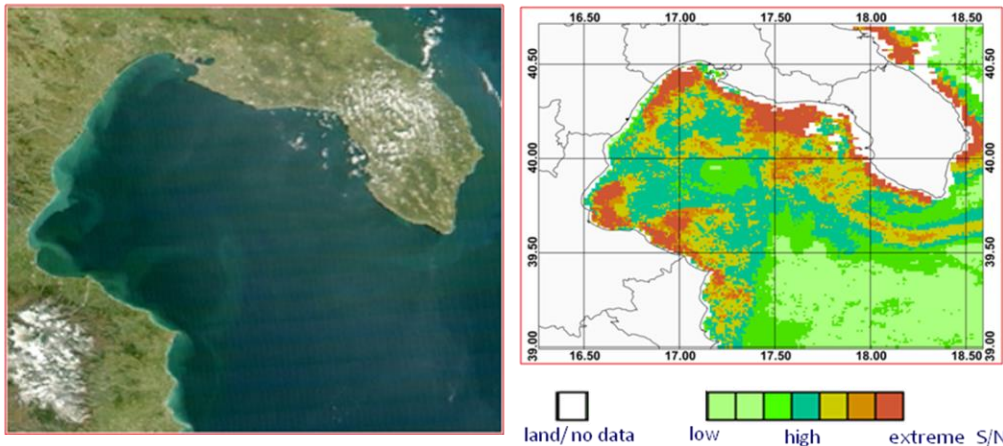


Short title of the service	R2 R4 Coastal and marine ecosystems							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r2.5 Coastal management r2.7 Biodiversity and ecosystems wardship r4.6 Phytoplankton detection							
Short description of the service	Development of integrated applications based on multi/hypespectral HR (High Resolution) data remotely sensed by satellite/airborne platforms for monitoring coastal shallow waters and marine ecosystems, in particular Posidonia Oceanica, using different spectral indices and devoted point calibration surveys including also proximal sensing and laboratory analysis advanced techniques.							
Geographic Coverage (Global, local, regional)	From local to regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Current Users	Local public bodies and management of marine protected areas,							
Possible Users	Stakeholders for biodiversity safeguard and mitigation of climate treats and anthropogenic impacts on marine ecosystems and coastal waters quality							
Strengths	<ul style="list-style-type: none"><li>• Easy acquisition of extensive and repetitive spatial information about the ecosystems status and health;</li><li>• Maps of extent and plant biophysical parameters;</li><li>• Maps of production assessments.</li></ul>							
Reference image of the service	 <p>In site measurements stations in the middle Tyrrhenian coast and corresponding measured Posidonia O. LAI in overlay to Landsat 8 OLI true color acquired on 12-08-2013. The NCVI1,2 distribution as green shades is reported in overlay to PO limits of the Habitat Directive 92/43/EEC (PO 2014 - violet) whose verification and validation is in progress.</p>							
References methodology	Advanced methods for atmospheric (Rayleigh and aerosol) correction of satellite multispectral data; Integration of multiplatform/multisensor data with in situ points calibration data for PO monitoring and mapping.							
Service Status	Pre-operational							
Contact	Dr. Flavio Borfecchia							
phone	(+39) 06 30484075							
e-mail	Flavio.borfecchia@enea.it							

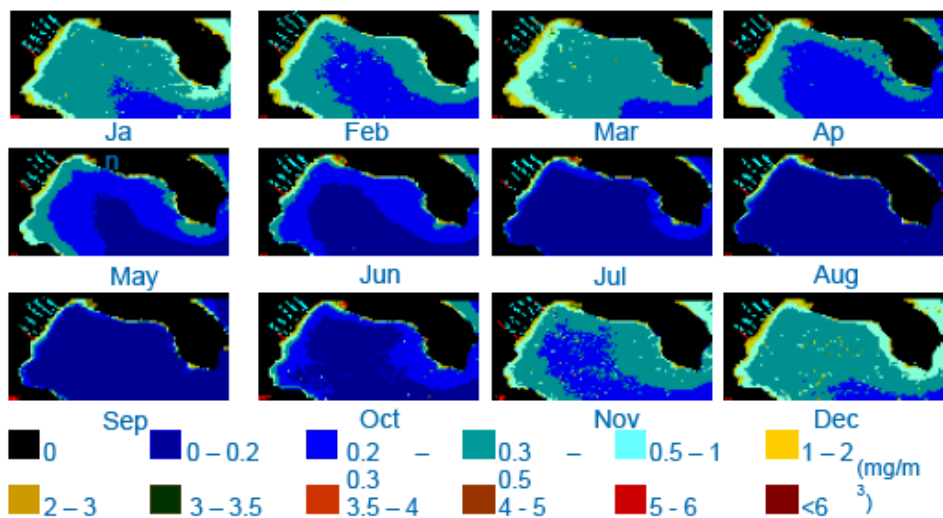
Short title of the service	<b>R2 R4 Desertification and Land degradation monitoring</b>							
General field of application <i>(See legend page II)</i>	R1 <input type="checkbox"/>	R2 <input checked="" type="checkbox"/>	R3 <input type="checkbox"/>	R4 <input checked="" type="checkbox"/>	R5 <input type="checkbox"/>	R6 <input type="checkbox"/>	R7 <input type="checkbox"/>	R8 <input type="checkbox"/>
Activity <i>(See legend page II)</i>	r2.3 Natural resources management r4.4 Drought r4.5 Forest monitoring							
Short description of the service	Distribution assessment of the productivity trend of vegetal ecosystems in semi-natural and agricultural areas from multi-temporal and multi-spectral satellites EO medium resolution decadal data, at national and regional scales, for monitoring desertification and land-degradation phenomena.							
Geographic Coverage <i>(Global, local, regional)</i>								
Spatial Resolution	0.5-2.5m <input type="checkbox"/>	2.5–10m <input type="checkbox"/>	10-30 m <input type="checkbox"/>	30-100 m <input checked="" type="checkbox"/>	100-1000m <input checked="" type="checkbox"/>			
Frequency of update	Several times a day <input type="checkbox"/>	Day <input type="checkbox"/>	Weekly <input checked="" type="checkbox"/>	Monthly <input checked="" type="checkbox"/>	Yearly <input type="checkbox"/>			
Current Users	National commissions involved in activities related to desertification and land degradation / national adaptation strategy to climate change.							
Possible Users	P.A. at regional and local levels							
Strengths	<ul style="list-style-type: none"><li>• Mutitemporal decadal monitoring capability able to capture the effective vegetation productivity trend as proxy of land degradation phenomena;</li><li>• Thematic products under form of georeferenced GIS-compatible layers to be exploited as basic information for DSS system</li></ul>							
Reference image of the service	 <p>National vegetation productivity decline during the years from 2000 to 2015 estimated using the MODIS NDVI composite series</p>							
References methodology	Acquisition and processing of composite medium/high resolution NDVI series, integration of results within a GIS environment with the development of customized procedures focused on individuation and characterization of land degradation phenomena							
Service Status	Pre-operational							
Contact	Dr. Maurizio Sciortino / Dr. Flavio Borfecchia							
phone	(+39) 06 30484213							
e-mail	maurizio.sciortino@enea.it							

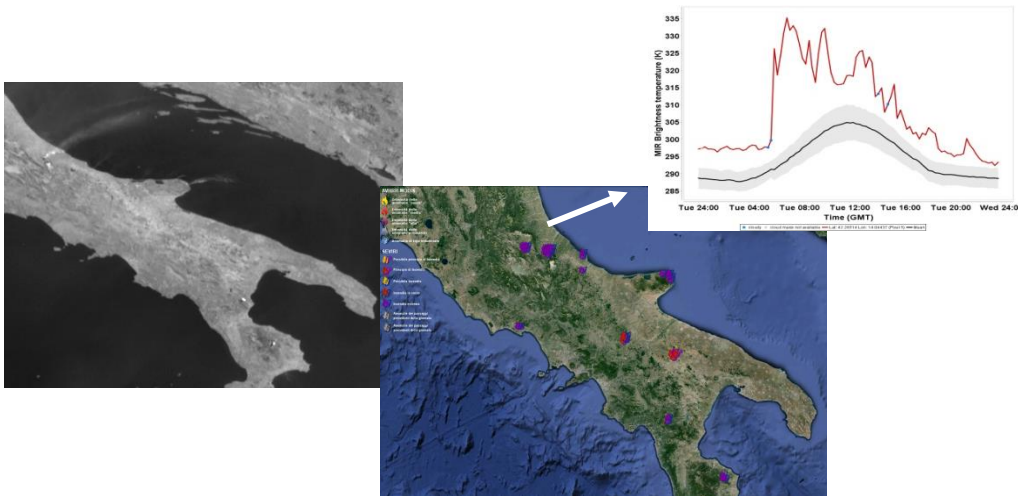
Short title of the service	R2 R4 R5 R6 GEOSI for the land monitoring							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r 2.5 Coastal Management r 2.6 Protected areas management r 2.7 Biodiversity and ecosystem wardship r 4.3 Agricultural Pollution Monitoring r 4.4 Water Scarcity r 4.5 Forest monitoring r 5.2 Air quality and humidity r 5.3 Water quality r 6.1 Natural disaster management r 6.2 Early Warning r 6.4 Search and Rescue Operations							
Short description of the service	Web GIS management system for SDIs. Data visualization and eleboration using a variety of OGC sources (WMS, WFS, WFS-T, WCS, WPS)							
Geographic Coverage <i>(Global, local, regional)</i>	From global to local							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Open source communities							
Possible Users	SDI operators, researchers, scientists, technical operators and simple users too							
Strengths	Compliant with OGC standards it is able to display and elaborate layers form different sources Advanced webgis widgets							
Reference image of the service	<div></div> <p>Scenario viewer of geoportal base map and layers</p>							
References methodology	OGC standards implementation through widgets customization							
Service Status	In continuous development							
Contact	Nazzareno Sileno							
phone	(+39) 0971 469356							
e-mail	nazzareno.sileno@grupposi.eu							


Short title of the service	R2 R4 R5 R6 ICT solutions for the environmental monitoring							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r2.3 Natural resource management r4.1 Soil moisture r4.5 Forest monitoring r5.3 Water quality r6.2 Early Warning							
Short description of the service	<p>Digimat is developing a platform based on SDI paradigm and is oriented to environmental monitor (both indoor and outdoor). The platform is interoperable with both remote sensing and on site sensing platform and is compliant with OGC standards.</p> <p>The ability to receive, catalogue and archive sensing data and more in general spatial data, allows the platform to be specialised in several and different services of monitoring and decision support in many fields such as: landslide monitoring; precision farm; energy, water management, air monitoring.</p> <p>The platform has been designed in order to allow the integration of new processors (software able to process spatial data in accordance of analysis models) that are co-localised with the platform or on remote sites compliant with OGC standard. This made the platform to be easily expandable to supply new monitoring and decision support services in many fields.</p> <p>The monitoring platform has been developed in the paradigm of smart cities using cloud methodology.</p>							
Geographic Coverage (Global, local, regional)	Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Current Users	The system is still in a test phase. User are scientist that developed the analysis model.							
Possible Users	Civil protection, public administration, managing body of energy production facilities, managing body of water systems, farms							
	<ul style="list-style-type: none"><li>expandable (new services can be added) interoperable (compliant with INSPIRE recommendations and with OGC standard)</li></ul>							
Reference image of the service	<div><p>Provider's Logo</p></div>							
References methodology								
Service Status	Testing phase							
Contact	Angelo Donvito							
Phone	(+39) 3481331475							
e-mail	angelo.donvito@digimat.it							

Short title of the service	<div><div>R2</div><div>R6</div><div>R4</div><div>R8</div></div> <b>Water Quality monitoring</b>							
<b>General field of application</b> <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Activity</b> <i>(See legend page II)</i>	r2.5 Coastal Management r6.5 Maritime Surveillance r4.6 Phytoplankton detection r8.3 Bathing Water Quality and Temperature							
<b>Short description of the service</b>	The company can provide a system for the coastal sea water quality status in term of bio optical parameters using data acquired by multispectral sensors							
<b>Geographic Coverage</b> <i>(Global, local, regional)</i>	From Local to Global							
<b>Spatial Resolution</b>	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
<b>Frequency of update</b>	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<b>Current Users</b>								
<b>Possible Users</b>	Maritime Surveillance Agencies, Planning government agencies, Environmental protection agencies							
<b>Strengths</b>	Synoptic and systematic controlled area, high rate of information for planning actions							
<b>Reference image of the service</b>	<div><div>MODIS RGB image, 05/02/2011, 12:30 GMT</div><div>Chl-A ALICE 05/02/2011, 12:30 GMT</div></div> <div></div> <div>MDIS RGB IMAGE 05/02/2011 12:30 GMT and Chl-A ALICE 05/02/2011 12:30 GMT</div>							
<b>References methodology</b>	Bernini, G., Ciancia, E., D’Andrea, S., Iacullo, S., Lacava, T., Liardo, S., Lucarini, D., Madonia, A., Mancini, M., Marcelli, M., Pacci, G., Palombo, A., Pascucci, S., Pergola, N., Piermttei, V., Pignatti, S., Santini, F., Tramutoli, V. (2014). CASI-1500 hyperspectral remote sensing data and in situ measurements within the IOSMOS project activities for coastal water bio-optical properties assessment. In Proceeding of the Fifth International Symposium: “Monitoring of Mediterranean coastal areas: problems and measurement techniques” (p. 10). Livorno (Italy) 17-18-19 June 2014.							
<b>Service Status</b>	Research							
<b>Contact</b>	Giuseppe Mazzeo							
<b>Phone</b>	(+39) 0971 205047							
<b>e-mail</b>	info@geospazioitalia.it							




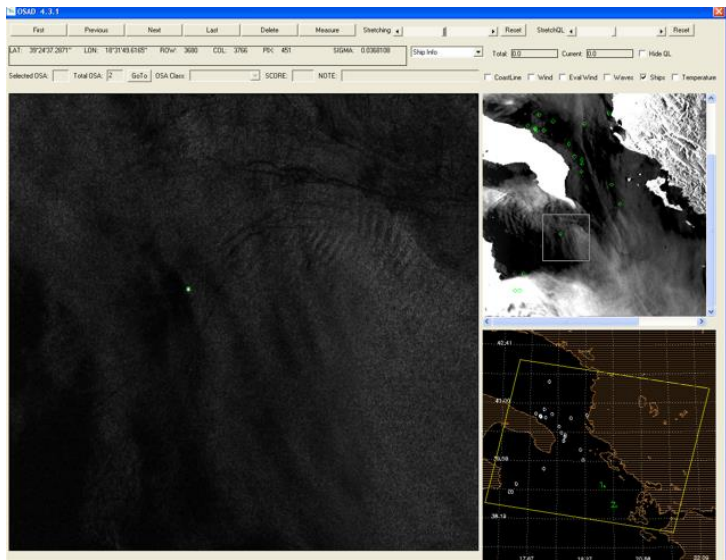
Short title of the service	R2 R6 Coastal Monitoring							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
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Activity <i>(See legend page II)</i>	r2.5 Coastal Management r6.5 Maritime Surveillance							
Short description of the service	Using satellite and airborne data for coastal, marine and inland water monitoring							
Geographic Coverage <i>(Global, local, regional)</i>	From Local to Global							
Spatial Resolution	0.5-2.5m		2.5–10m		10-30 m		30-100 m	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Frequency of update	Several times a day		Daily		Weekly		Monthly	
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Current Users								
Possible Users	LRAs ENvironmental agencies Touristic operators							
Strengths	High frequency of observation, timeliness							
Reference image of the service	<div></div> <p>Mean Temporal trend of Chlorophyll-a parameter derived by MODIS data on Ionian coast of Basilicata region for the 2003-2011 period.</p>							
References methodology	T. Lacava, et al., The IOSMOS project: a multi-disciplinary approach for Ionian Sea water quality monitoring. 6th Workshop on Remote Sensing of the Coastal Zone, (in press).							
Service Status	Research							
Contact	Teodosio Lacava							
Phone	(+39) 0971 427242							
e-mail	teodosio.lacava@imaa.cnr.it							



Short title of the service	<div><div>R2</div><div>R6</div>Fire timely detection</div>							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r2.2 Forest and green areas r6.2 Early Warning							
Short description of the service	Timely (within 15 min) fire detection (minimum size 50sqm) by satellite RST-FIRES product							
Geographic Coverage <i>(Global, local, regional)</i>	Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Current Users	National Civil Protection Services							
Possible Users	Different European Regions							
Strengths	Automatic, rapid identification and continuous monitoring of fires.							
Reference image of the service	<div></div> <p>From left to right: SEVIRI HRV channel showing smoke plumes (24/07/2007, 09:00 GMT), Google Earth® plug-in of fire early detection service, 15-minutes monitoring of the thermal signal in correspondence of a fire.</p>							
References methodology	G. Mazzeo, F. Marchese, C. Filizzola, N. Pergola,V. Tramutoli (2007). A Multitemporal Robust Satellite Technique (RST) for forest fire detection. In Proceedings of Multitemp 2007, Leuven, Belgio. DOI 10.1109/MULTITEMP.2007.4293060.							
Service Status	Operational							
Contact	Valerio Tramutoli							
Phone	(+39) 0971 205205							
e-mail	valerio.tramutoli@unibas.it							

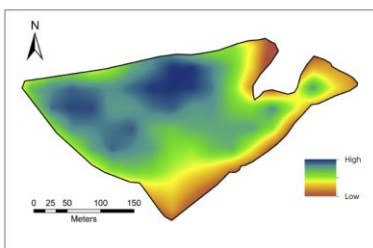
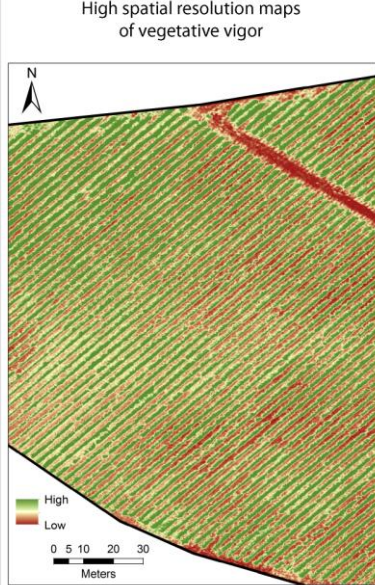
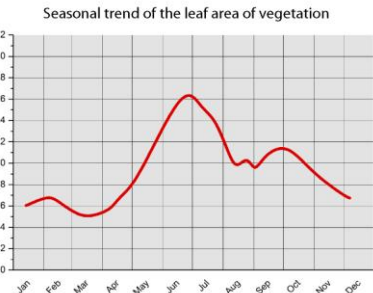
Short title of the service	R2 R6 Land Degradation Risk Management							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r2.5 Coastal Management r6.1 Natural disaster management							
Short description of the service	Techniques of SAR interferometry and multi-sensor airborne data acquisition for the land degradation risk management and for the promotion of adequate prevention measures for reducing disastrous environmental effects.							
Geographic Coverage <i>(Global, local, regional)</i>	From local to regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Basilicata University; Polytechnic University of Bari; River Basin Authorities; Centre of Integrated Geomorphology for the Mediterranean Area (CGIAM); etc.							
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils).							
Strengths	<ul style="list-style-type: none"><li>✓ High accuracy and precision of measures;</li><li>✓ quickly survey of huge areas;</li><li>✓ data capture acquired with difficulty on the ground;</li><li>✓ versatility of final products useful for various applications.</li></ul>							
Reference image of the service	<div></div> <p><i>Sequence of orthophoto for multi-temporal analysis of the coast evolution (2001- 2006 – 2008)</i></p>							
References methodology	Significant project: Bathymetric surveys and cartographic data processing along Puglia Region Coast line (Contractor: Polytec hnuc University of Bari).							
Service Status	Operational							
Contact	Annibale Guariglia							
phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net							



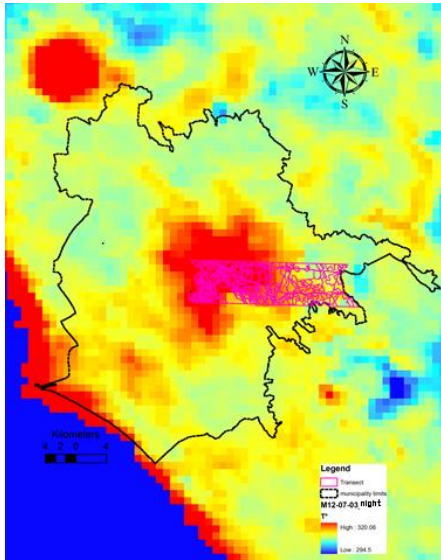
Short title of the service	R2 R6 Natural Resources Studies							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r2.2 Forest and green areas r2.3 Natural resources management r2.5 Coastal Management r2.6 Protected areas management							
Short description of the service	Environmental monitoring and natural resources studies (e.g. water run-off, coastline evolution, forest areas, etc.) through the integration of a multi-sensor remote dataset.							
Geographic Coverage <i>(Global, local, regional)</i>	From local to regional							
Spatial Resolution	0.5-2.5m		2.5–10m		10-30 m		30-100 m	
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Frequency of update	Several times a day		Daily		Weekly		Monthly	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Current Users	Idroelettrica Lombarda srl; ARPAB; CGIAM (Centre of Integrated Geomorphology for the Mediterranean Area); Basilicata River Basin Authority;							
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils); private companies (e.g. engineering companies).							
Strengths	High accuracy and precision of measures; quickly survey of huge areas; data capture acquired with difficulty on the ground; versatility of final products useful for various applications; precise definition of the river bed useful for hydrological application such as hydraulic simulations, flood mapping, risk management or for civil hydraulic engineering.							
Reference image of the service	<div></div> <p><i>Comparison of Orthophoto and Digital Terrain Model</i></p>							
References methodology	Significant projects: 1. Supply of IT products (DSM and DTM) and orthophoto maps detected with Lidar and hyperspectral technologies (Contractor: Forest Authority of Sardinia).							
Service Status	Operational							
Contact	Annibale Guariglia							
Phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net							

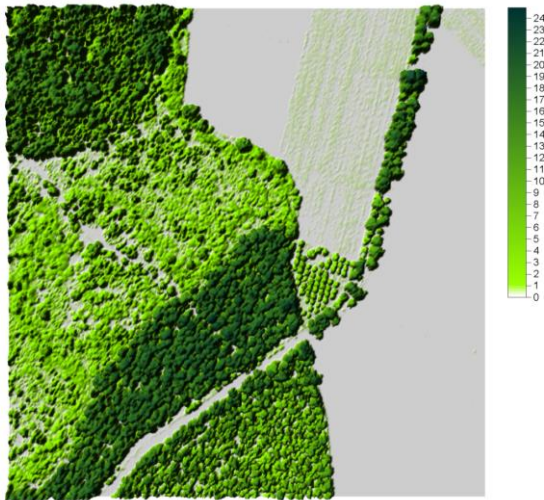
Short title of the service	R2 R7 Marine and coastal management								
General field of application (See legend page II)	R1 <input type="checkbox"/>	R2 <input checked="" type="checkbox"/>	R3 <input type="checkbox"/>	R4 <input type="checkbox"/>	R5 <input type="checkbox"/>	R6 <input type="checkbox"/>	R7 <input checked="" type="checkbox"/>	R8 <input type="checkbox"/>	
Activity (See legend page II)	r2.5 Coastal management r7.4 Maritime surveillance								
Short description of the service	Multi-mission SAR data processing and applications for land and maritime monitoring such as oil slick, coastal management, maritime weather conditions.								
Geographic Coverage (Global,local, regional)	From Local to Global								
Spatial Resolution	0.5-2.5m <input type="checkbox"/>		2.5–10m <input type="checkbox"/>		10-30 m <input checked="" type="checkbox"/>		30-100 m <input checked="" type="checkbox"/>		100-1000m <input type="checkbox"/>
Frequency of update	Several times a day <input type="checkbox"/>		Daily <input checked="" type="checkbox"/>		Weekly <input type="checkbox"/>		Monthly <input type="checkbox"/>		Yearly <input type="checkbox"/>
Current Users									
Possible Users									
Strengths									
Reference image of the service	<div></div> <p>Example of ship detection with SAR images</p>								
References methodology	Interoperable GMES Services for Environmental Risk Management in Marine and Coastal Areas of Europe (InterRisk) FP6 project;PRIMI (PROgetto pilota Inquinamento Marino da Idrocarburi) project, funded by Italian Space Agency; CoastSAT Feasibility Study - to define and analyze all the elements necessary to develop a system to monitor and manage coastal risks, integrating satellite data, in-situ data and numerical models; Advanced system to determine Marine Climate and Traffic Conditions in the Mediterranean basin using Remote Sensing images - development of an innovative Remote Sensing system to determine marine climate and traffic conditions in the Mediterranean basin based on full resolution and quicklook SAR images.								
Service Status	Prototype , know-how company.								
Contact	Andrea Di Pasquale								
Phone	(+39) 0835 307760								
e-mail	dipasquale@consorzio-innova.it								

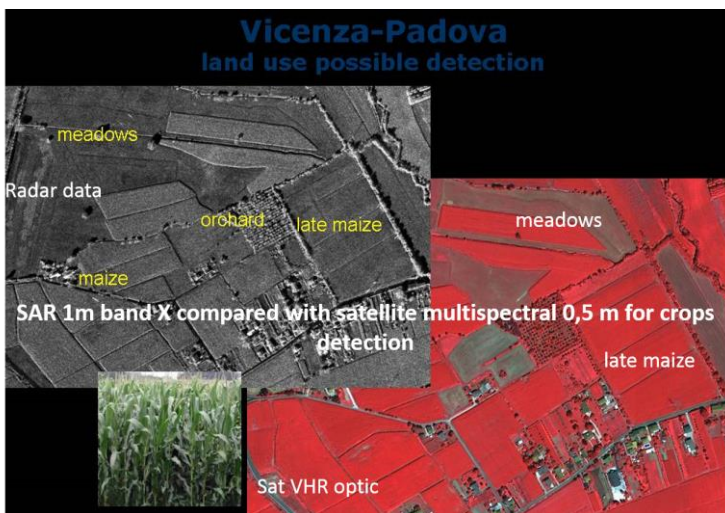
Short title of the service	R3 R1 R7 Airports							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
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Activity <i>(See legend page II)</i>	r1.1 Urban planning and management r3.1 Urban planning and management r7.1 Transport and network management							
Short description of the service	The product is composed of a series of three dimensional levels of information related to the airport and surrounding areas; it can be integrated with orthoimages and a digital terrain model. AMDB allows to manage on a geographical basis, within a GIS environment, the airport area, enabling the application management, analysis and modelling.							
Geographic Coverage <i>(Global, local, regional)</i>	Local							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Current Users	N/A							
Possible Users	Airlines Company, National aviation agency, Avionics system integrator, Airport information service management, Airports manager							
Strengths	<ul style="list-style-type: none"><li>• Expertise in photogrammetric workflow</li><li>• Worldwide capabilities</li><li>• Ground survey difficult and onerous</li><li>• High accuracy</li></ul>							
Reference image of the service	<div></div> <p>Detailed mapping of airports from aerial surveys</p>							
References methodology	<ul style="list-style-type: none"><li>• Stereoplotting</li><li>• Template matching</li></ul>							
Service Status	Catalog							
Contact	Gabriele Murchio							
phone	(+39) 06 40793538							
e-mail	gabriele.murchio@e-geos.it							

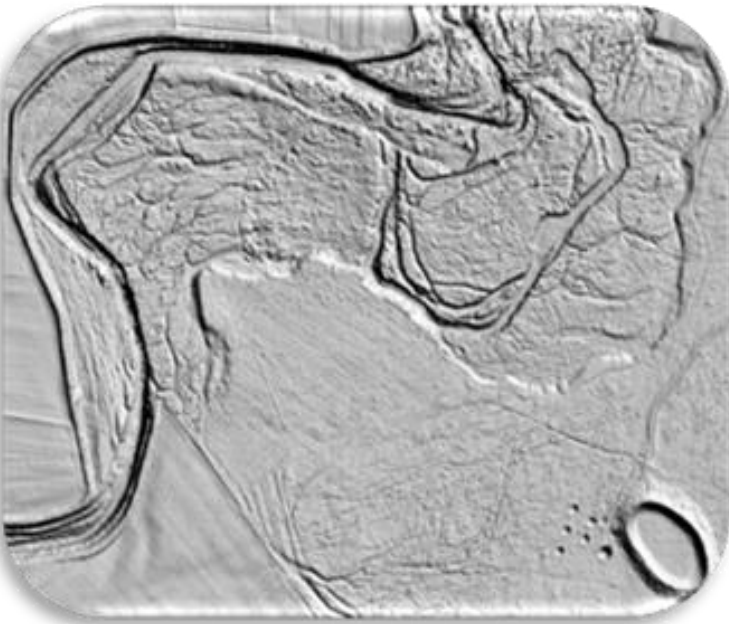
Short title of the service	R3 R4 Prosit – Satellite products for vineyard							
General field of application (See legend page II)	R1 <input type="checkbox"/>	R2 <input type="checkbox"/>	R3 <input checked="" type="checkbox"/>	R4 <input checked="" type="checkbox"/>	R5 <input type="checkbox"/>	R6 <input type="checkbox"/>	R7 <input type="checkbox"/>	R8 <input type="checkbox"/>
Activity (See legend page II)	r 3.2 Rural planning and management r 4.2 Crop Classification and Monitoring r 4.3 Agricultural Pollution Monitoring r 4.4 Water Scarcity r 4.5 Forest monitoring							
Short description of the service	The company can provide a system for real time monitoring of the vegetative status and anomalous variations of vineyard by using satellite data opportunely integrated with drone data.							
Geographic Coverage (Global, local, regional)	From Local to Global							
Spatial Resolution	0.5-2.5m <input checked="" type="checkbox"/>	2.5–10m <input checked="" type="checkbox"/>	10-30 m <input checked="" type="checkbox"/>	30-100 m <input checked="" type="checkbox"/>	100-1000m <input type="checkbox"/>			
Frequency of update	Several times a day <input checked="" type="checkbox"/>	Daily <input type="checkbox"/>	Weekly <input type="checkbox"/>	Monthly <input type="checkbox"/>	Yearly <input type="checkbox"/>			
Current Users								
Possible Users	Individual farmers, organizations and consortia of farmers, Agencies of Agriculture							
Strengths	Automatic and high temporal resolution system for monitoring the evolution of crops easily integrated into enterprise management systems							
Reference image of the service	<div><div><p>Map of vegetation water content</p></div><div><p>High spatial resolution maps of vegetative vigor</p></div><div><p>Seasonal trend of the leaf area of vegetation</p></div></div> <p>Examples of products automatically generated from satellite and drone data: prescription maps related to water content and vegetative vigor, seasonal trend of leaf area index</p>							
References methodology								
Service Status	Pre-operational							
Contact	Giuseppe Mazzeo							
Phone	(+39) 0971 205047							
e-mail	info@geospazioitalia.it							




Short title of the service	R3 R5 Urban environment							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r 3.1 Urban planning and management r 5.2 Air quality and humidity							
Short description of the service	Assessing the effects on the urban areas of natural (climate, heat waves, etc.) and anthropogenic ( energy consumption, air pollution, ...) impact factors through multiplatform Remote Sensing techniques coupled with suitable GIS-based (SVAT) modelling and in situ ground measurements campaigns in the perspective of mitigation/prevention activities and sustainable management support.							
Geographic Coverage (Global, local, regional)	Local, Regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Current Users	Rome Municipality							
Possible Users	P.A. and stakeholders at regional and local levels							
Strengths	<ul style="list-style-type: none"><li>• Repetitive monitoring capabilities;</li><li>• Support information for Urban environment and citizen’s health;</li><li>• Mapping of critical zones for prioritizing intervention of urban planners and in emergency</li></ul>							
Reference image of the service	<div></div> <p>MODIS LST map acquired on 12-7-2003 night ( 09.30 P. M.) over Rome municipality for studying the effects of HW/UHI phenomena</p>							
References methodology	Multispectral satellite/aircraft data at different spatio-temporal scales for supporting the characterization of urban fabric based on the object classification/data-mining methods. Satellite LST (Land Surface Temperature) maps and in situ measurements acquisition and processing for supporting the physically based calibration.							
Service Status	Pre-operational							
Contact	Dr. Flavio Borfecchia							
phone	(+39) 06 30486042							
e-mail	Flavio.borfecchia@enea.it							

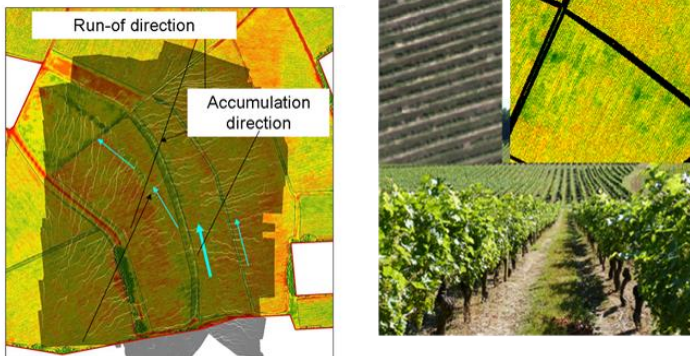
Short title of the service	R4 Agri-Environment Monitoring							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r4.2 Crop classification and monitoring							
Short description of the service	Crop disease and stress monitoring, illegal or undesired crops detection, land use measurement, environmental assessment, vegetation monitoring, land and natural resources studies through the use of a multi-sensor airborne platform (laser scanner, digital camera, two hyperspectral sensors operating VNIR and SWIR respectively and a thermal camera).							
Geographic Coverage <i>(Global, local, regional)</i>	From local to global							
Spatial Resolution	0.5-2.5m		2.5–10m		10-30 m		30-100 m	
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Frequency of update	Several times a day		Daily		Weekly		Monthly	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Current Users	Ministry of Health (Poland); SOGIN S.p.A.; BioAgromed; etc.							
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils).							
Strengths	High accuracy and precision of measures; quickly survey of huge areas; data capture acquired with difficulty on the ground; versatility of final products useful for various applications; hyperspectral data exploitation in order to calculate various index (e.g. Normalized Difference Vegetation Index, NDVI; Leaf Area Index, LAI) able to estimate quantity of biomass and measure photosynthetic activity.							
Reference image of the service	<div></div> <p>DSM derived by laser cloud points for trees classification</p>							
References methodology	Significant project: 1. Environmental monitoring for the vegetation classification through hyperspectral sensors installed on helicopter (Contractor: SINECO S.p.A.).							
Service Status	Operational on the market							
Contact	Annibale Guariglia							
Phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net							

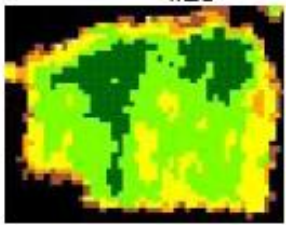

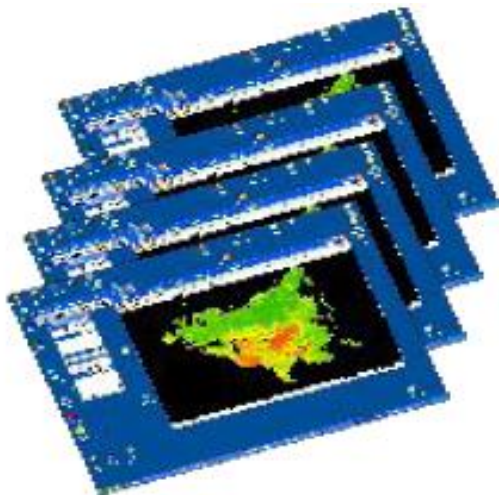
Short title of the service	R4 Crop Monitoring							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r4.2 Crop classification and monitoring							
Short description of the product	To correctly plan and evaluate any agronomic policy and food management, statistics and crop monitoring, at administrative level, appear as the first information necessity. Due to the periodical or annual cloud cover persistence, affecting several important worldwide agronomic, integrated EO data, both optical and SAR, can always provide the Administrations, Assurance companies or Farmer associations with the necessary synoptic, timing and homogenous information.							
Geographic Coverage <i>(Global, local, regional)</i>	Local, regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Agriculture Ministries; Regional Administrations							
Possible Users	Farmer Associations; Insurance Companies							
Strengths	<p>e-GEOS produced annual agronomic statistics for the main national/local crops, through “territory stratification maps”, extraction of suited agro samples, multi-temporal ground surveys, satellite data classification, periodic bulletins of results delivery.</p> <p>Agronomic production and yield estimation; production and single crop’s phenological phases monitoring.</p> <p>Crop growing monitoring for specific tailored zones, always taking into account different satellite availability, resolution and frequency.</p>							
Reference image of the service	<div><p>Crop detection from SAR and Optic VHR satellite imagery</p></div>							
References methodology	Land stratification mapping and sample extraction, multi-temporal satellite data processing, crop detection/classification and indexes extraction; ground surveys							
Service Status	Operational							
Contact	Fabio Volpe							
phone	(+39) 06 40793821							
e-mail	Fabio.volpe@e-geos.it							

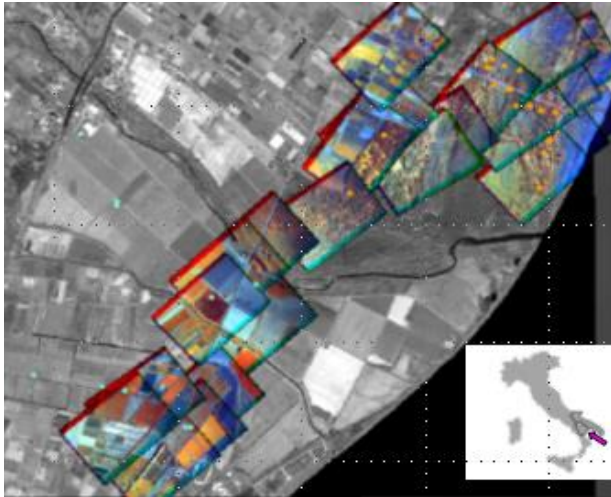
Short title of the service	R4 Drought Monitoring							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r4.4 Water scarcity							
Short description of the service	Arid areas monitoring and detection, water quantity and quality assessment by means of remote sensing data.							
Geographic Coverage <i>(Global, local, regional)</i>	From local to regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users								
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils).							
Strengths	High accuracy and precision of measures; quickly survey of huge areas; data capture acquired with difficulty on the ground; versatility of final products useful for various applications.							
Reference image of the service / product	<div></div> <p>DTM of a river area</p>							
References methodology								
Service Status	Pre-operational							
Contact	Annibale Guariglia							
Phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net							



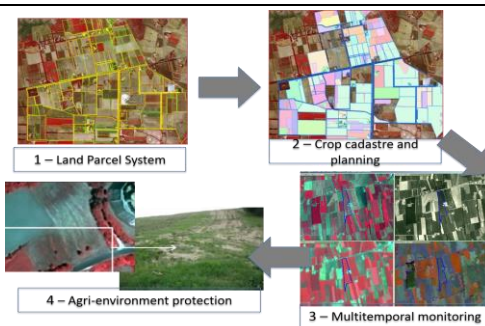
Short title of the service	R4 Forestry							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r4.5 Forest monitoring							
Short description of the service	Periodic Forest monitoring and inventories for updated and certified state of forest resources availability and changes, ecological and environmental conditions; forest social, energetic and carbon stock value, also for climate change effects mitigation.							
Geographic Coverage (Global, local, regional)	Global, regional, local							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	National and local forest authorities, forest owners, wood industry; Ministries of Environment							
Possible Users	International Organizations, Environmental and Climate Change mitigation Org; insurance companies							
Strengths	<ul style="list-style-type: none"><li>• Forest maps, monitoring (coppice structure, high forest) and changes;</li><li>• Forest damages by fire, pests and meteorological events;</li><li>• Forest inventories, density, volumes and carbon stock assessment;</li><li>• Eco-system indicators and trend analysis.</li></ul>							
Reference image of the service	<div><p>Forest Logging</p><p>Built up</p><p><b>Cosmo, H-image forest legal/illegal logging monitoring</b></p><p>Forest, Pastures and agricultural parcels detection</p><p>Illegal logging monitoring from SAR satellite images</p></div>							
References methodology	e-GEOS through a consolidated processing capability and managing in optical/SAR satellite/aerial data and ancillary information, can offer products/services through flexible solutions and web tools for specific requirements. COSMO SkyMed management by e-GEOS offers an assured multi-frequency monitoring capability worldwide.							
Service Status	Operational (also through GAF company)							
Contact	Livio Rossi							
phone	(+39) 06 40796132							
e-mail	Livio.rossi@e-geos.it							

Short title of the service	R4 Precision Farming							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r4.2 Crop classification and monitoring							
Short description of the product	Farmers and land managers need to balance productivity and quality with the environmental sustainability of the different productions, always dealing with the national regulations and rural development local measures. The scope is to save money, time and resources, offering, at the same time, products with higher quality and less impact. The used techniques involve all the sector players, from the seed producers to tractor manufacturers. Satellites and in general Earth Observation solutions are able to support both local and regional needs, allowing and speeding up precision farming procedures.							
Geographic Coverage (Global, local, regional)	Local, regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Current Users	Some Farmers Associations, Farms with high Income only							
Possible Users	Single farms both for permanent and annual cultivations; Ministries through Rural development measures							
Strengths	<ul style="list-style-type: none"><li>Multi-temporal detailed images on farm parcels acquisition and processing, collected by satellite or airplane;</li><li>Indexes extraction to support farmers in the correct management of the different land portions.</li><li>Geolocated mapping addresses, at sub-parcel level, the correct use of fertilizer and irrigation, via GPS on tractors, targeting the improving of crop quality and yield, while vice-versa decreasing the overall costs. The higher rate of benefit/costs produces a better balance of environmental land preservation, both for energy saving and climate change effects mitigation directives (e.g. Stanag 3596) but, at the same time, a full user need customization is necessary</li><li>Dissemination system to provide access to satellite data and value added products to a broader audience through the use of a GeoWeb-application delivery, operating, storing and integrating data for analysis and decision making process.</li></ul>							
Reference image of the service	<div></div> <p>Precision farming techniques for vineyards</p>							
References methodology	Very large scale data acquisition and GIS integration; climate and morphologic conditions put in relation to each single crop parcel or sub-parcel.							
Service Status	Pre- operational							
Contact	Fabio Volpe							
phone	(+39) 06 40793821							
e-mail	Fabio.volpe@e-geos.it							


Short title of the service	R4 Precision farming and land use							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r4.2 Crop classification and monitoring r4.5 Forest monitoring							
Short description of the service	Using satellite and airborne data for precision farming and land degradaton application							
Geographic Coverage (Global, local, regional)	From Local to Regional							
Spatial Resolution	0.5-2.5m		2.5–10m		10-30 m		30-100 m	
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Frequency of update	Several times a day		Daily		Weekly		Monthly	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Current Users								
Possible Users	Agriculture operators, Local agencies for agriculture, LRAs							
Strengths	Large area coverage in one shot, Availability of long time series of satellite imagery							
Reference image of the service	<div><div>LAI map from CHRIS-PROBA image 1.4 – 1.8 1.8 – 2 2 – 2.2 2.2 – 2.4 2.4 – 2.6</div></div> <div>Validation of historical NDVI GIMMS time series from AVHRR data for land degradation application</div> <div>Precision farming by using hyperspectral satellite imagery</div>							
References methodology	<p>F. Castaldi, R. Casa, A. Castrignanò, S. Pascucci, A. Palombo &amp; S. Pignatti. “Estimation of soil properties at the field scale from satellite data: a comparison between spatial and non-spatial techniques”. European Journal of Soil Science.</p> <p>S. Pascucci, R. Casa, C. Belviso, A. Palombo, S. Pignatti &amp; F. Castaldi. “Estimation of soil organic carbon from airborne hyperspectral thermal infrared data: a case study”. European Journal of Soil Science.</p> <p>Casa R, Castaldi F, Pascucci S, Basso B, Pignatti S (2013). “Geophysical and Hyperspectral Data Fusion Techniques for In-Field Estimation of Soil Properties”. Vadose Zone Journal 2013, pp. 1-10.</p>							
Service Status	Research							
Contact	Stefano Pignatti, Tiziana Simoniello							
Phone	(+39) 06 49934023, (+39) 0971 427256							
e-mail	stefano.pignatti@imaa.cnr.it, tiziana.simoniello@imaa.cnr.it							

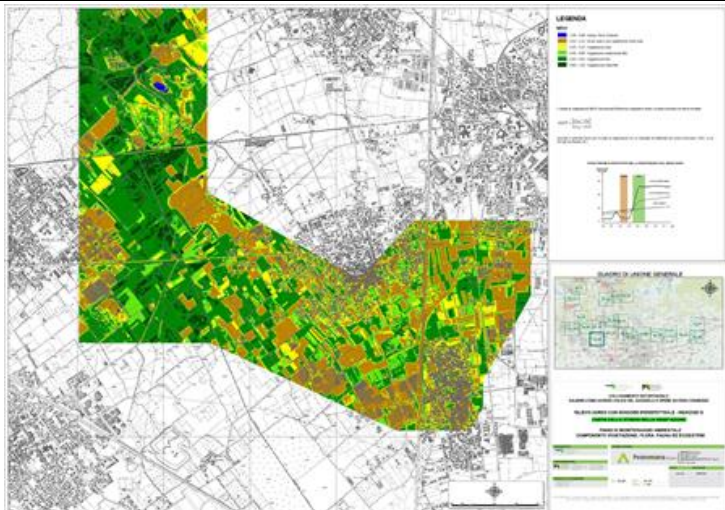
Short title of the service	R4 Remote sensing for precision agriculture							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r2.2 Forest and green areas r4.2 Crop classification and monitoring							
Short description of the service	Development of integrated applications based on multi/hyperspectral HR (High Resolution) data remotely sensed by satellite/airborne platforms for monitoring crops and plant stresses using different spectral indices and devoted site point calibration surveys including also proximal sensing and laboratory analysis advanced techniques.							
Geographic Coverage (Global, local, regional)	From local to regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Current Users	Pilot projects groups aiming at supporting the introduction of innovative precision agriculture practices for optimizing the water and fertilizers supply							
Possible Users	Stakeholders for mitigation of climate treats on agri-ecosystems and improving their productivity minimizing the environmental impacts							
Strengths	<ul style="list-style-type: none"><li>• Easy acquisition of extensive and repetitive spatial information about the crops status and health;</li><li>• Maps of plant stresses at field level;</li><li>• Maps of production assessments.</li></ul>							
Reference image of the service	<div></div> <p>Multispectral images of agricultural and semi-natural areas taken by ASPIS sensor on board of ultralight airborne platform on overlay of satellite frame (IKONOS) with indication of in situ points calibration measurements (blu-orange dots)</p>							
References methodology	Integration of multiplatform/multisensor data with in situ points calibration and integration of modelling step based on plant biophysical parameters.							
Service Status	Pre-operational							
Contact	Dr.ssa Domenica Masci/ Dr. Flavio Borfecchia							
phone	(+39) 06 30484075							
e-mail	domenica.masci@enea.it							

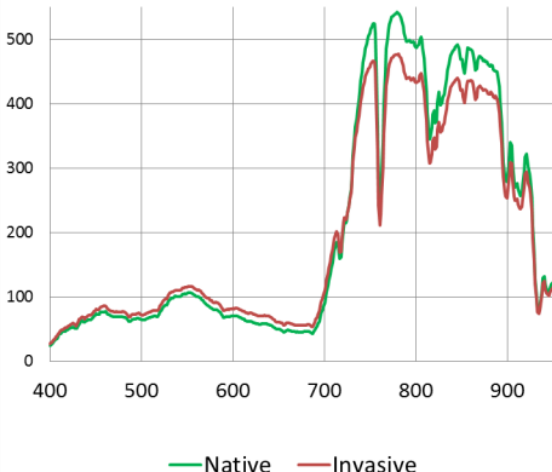


Short title of the service	R4 Support to CAP (Common Agricultural Policies) Policy solutions									
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Activity (See legend page II)	r4.2 Crop classification and monitoring									
Short description of the product	EU - European Union CAP funding provide continental farmers with specific annual subsidies; a complex IACS (Integrated Administrative Control System) must be implemented at national/regional level, integrating different geo-information items for a dynamic managing of cultivated surfaces, crops, type of environment protection measures applied, performing several geo-thematic analyse and inspections up to detailed scale. Leveraging on these systems, EU member states must perform mandatory operations for checking declared crops and farmers correct behavior, permitting EU officers the funding transferring to each EU country.									
Geographic Coverage (Global, local, regional)	Local, regional									
Spatial Resolution	0.5-2.5m		2.5–10m		10-30 m		30-100 m		100-1000m	
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	
Frequency of update	Several times a day		Day		Weekly		Monthly		Yearly	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Current Users	National/Regional Payment Agencies; Ministries;									
Possible Users	Insurance Companies; Environmental Agencies; Agricultural Associations;									
Strengths	<p>LPIS (land Parcel Identification Systems) management and updating for supporting subsidies aid-application, aiming at managing and monitoring the single farmer declarations compliance versus EU requirements. Solutions based on Earth Observation by airplane and satellite are applied. E-GEOS has developed open SW tools focused on agronomic land use at large scale (1:5.000/10,000) through interpretation expertise to complete a “wall to wall” 70 thematic classes mapping for Italy. e-GEOS has also developed interactive decision making tools, such as a Geo Data Warehouse system, which allows immediate simulation of agro-environmental changes when the local conditions vary, triggered both by natural and human constraints.</p> <p>e-GEOS provides Public Administrations with a complete compliance analysis for the Common Agricultural Policy declarations’ application. Single farm crops and related parcels are analyzed through multi-layer, multi-temporal and multi data. Processed EO data allows in addition local Good Agricultural Environmental Conditions and Rural development measures detection and evaluation. E-GEOS solutions, together with other partners, have been adopting for supervising each year the subsidies to more than one million three hundred thousand of farms.</p> <p>e-GEOS is able to realize a risk based selection of samples for parcel controls, a multitemporal and multi-source satellite selection, immediate processing for ortho-rectification and national GIS overlapping, ready to the requested analyses. Several agro-environmental conditions are verified, such as local pollutions, erosion, trees logging, traditional landscape elements protection, etc. to deal with EU policy.</p>									
Reference image of the service	<div></div> <p>EO Imagery for agricultural services</p>									
References methodology	Large scale GIS, yearly updated by aerial and satellite techniques and geomatic applications. Data Base and thematic registers improvements and maintenance;									
Service Status	Operational since 1992									
Contact	Fabio Volpe									
phone	(+39) 06 40796132									
e-mail	Fabio.volpe@e-geos.it									

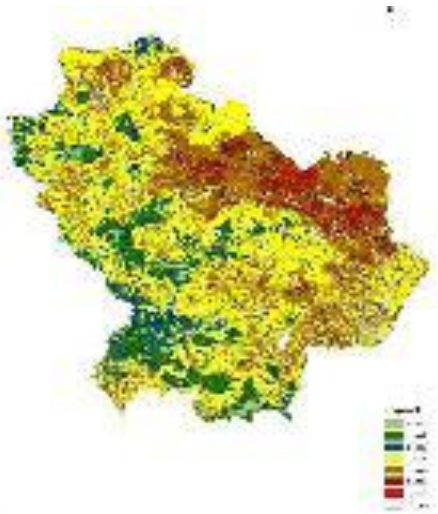


Short title of the service	R4 R2 Land Assessment								
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8	
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Activity (See legend page II)	r4.3 Agricultural pollution monitoring r2.3 Natural resources management								
Short description of the service	Remotely sensed data integration for land assessment and for intensive farming monitoring in order to check the vegetation growth, the water demand and the vegetation stress caused by weather conditions or anthropic impacts.								
Geographic Coverage (Global, local, regional)	From local to regional								
Spatial Resolution	0.5-2.5m		2.5–10m		10-30 m		30-100 m		100-1000m
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>
Frequency of update	Several times a day		Day		Weekly		Monthly		Yearly
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Current Users	Italian Space Agency; Sogin S.p.A.; etc.								
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils); private companies (e.g. engineering or construction companies).								
Strengths	<div><div><div>✓</div><div>High accuracy and precision of measures;</div></div><div><div>✓</div><div>quickly survey of huge areas;</div></div><div><div>✓</div><div>data capture acquired with difficulty on the ground;</div></div><div><div>✓</div><div>versatility of final products useful for various applications.</div></div></div>								
Reference image of the service	<div></div> <div>Aerial oblique high resolution image</div>								
References methodology	Significant Project: Verification of the land use, geology and hydrology characterization of 9 areas located in five Italian regions (Contractor: Sogin S.p.A.).								
Service Status	Operational								
Contact	Annibale Guariglia								
phone	(+39) 0971 56671								
e-mail	a.guariglia@geocart.net								

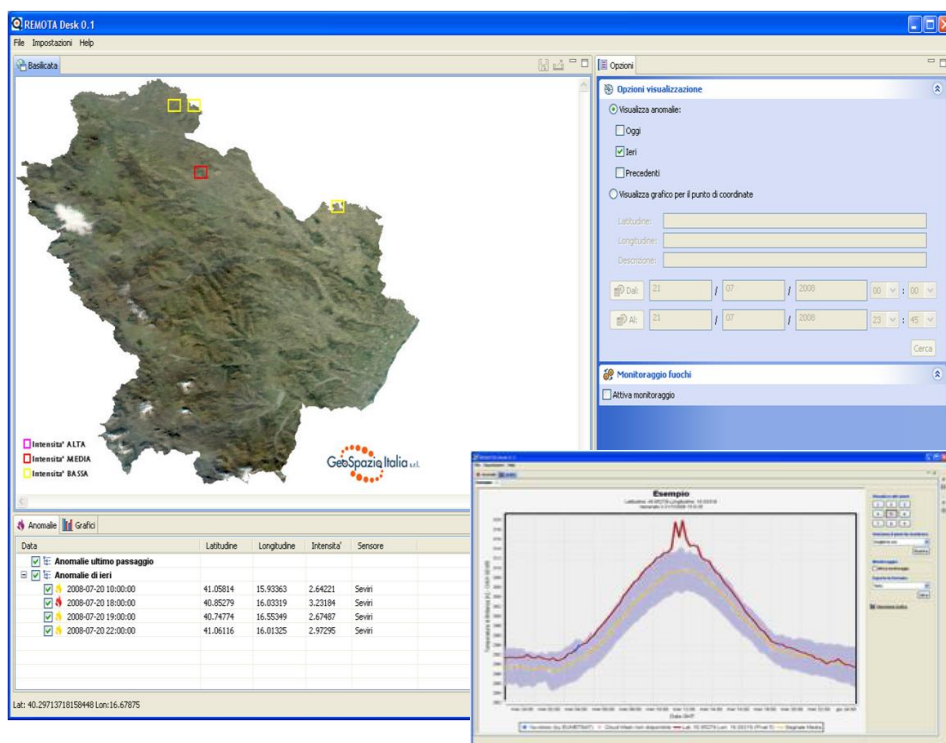
Short title of the service	R4 R2 R1 R3 Precision Mapping							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	☑	☑	☑	☑	☐	☐	☐	☐
Activity (See legend page II)	r4.2 Crop classification and monitoring r4.5 Forest monitoring r2.3 Natural resources management r1.1 Urban planning and management r3.1 Urban planning and management							
Short description of the service	Multi-sensor airborne platform (laser scanner, digital camera, two hyperspectral sensors operating VNIR and SWIR respectively and a thermal camera) data acquisition for fast generation of three dimensional models, for vegetation and land conditions detecting and for intensive farming and forests monitoring.							
Geographic Coverage (Global, local, regional)	From Local to Regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	☑	☑	☑	☑	☐			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	☐	☐	☐	☑	☑			
Current Users	National and regional Civil Protection; RFI; Sogin S.p.A. ; Sineco S.p.A. ; etc.							
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils); private companies (e.g. engineering or construction companies).							
Strengths	High accuracy and precision of measures; quickly survey of huge areas; data capture acquired with difficulty on the ground; versatility of final products useful for various applications; quick and efficient detection of vegetation changes and land condition; non-destructive method to detect and characterize soil properties.							
Reference image of the service	 <p>Sheet of NDVI Index</p>							
References methodology	Significant projects: 1. Environmental monitoring for the vegetation classification through hyperspectral sensors installed on helicopter (Contractor: SINECO S.p.A.).							
Service Status	Operational							
Contact	Annibale Guariglia							
Phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net							

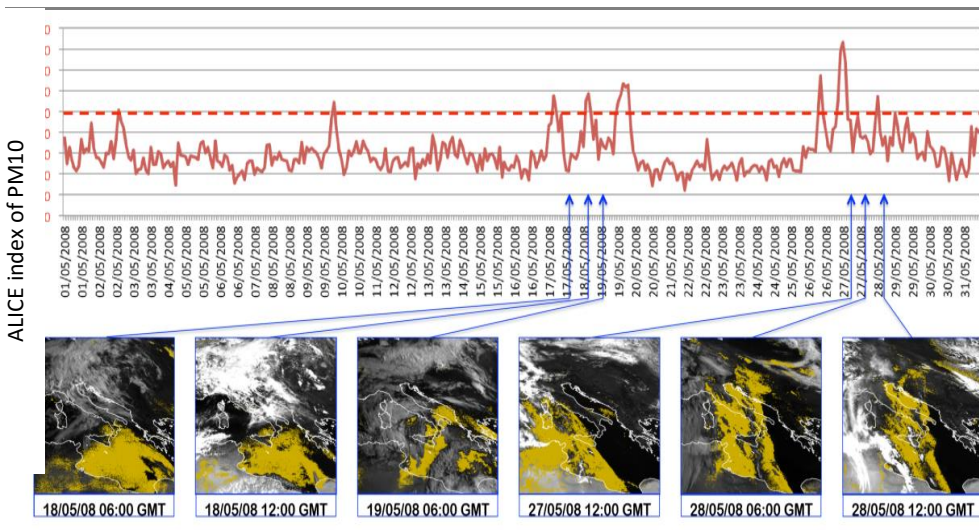
Short title of the service	R4 R2 R6 Forest Risk Management							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r4.5 Forest monitoring r2.2 Forest and green areas r2.6 Protected areas management							
Short description of the service	Environmental assessment, forest resources monitoring, forest types assessment, wildfires detection, land and natural resources studies, land cover and plant conditions analysis, through the use of a multi-sensor airborne platform (laser scanner, digital camera, two hyperspectral sensors operating VNIR and SWIR respectively and a thermal camera).							
Geographic Coverage <i>(Global, local, regional)</i>	From Local to Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Forest Authority of Sardinia; Polytechnic University of Bari; etc.							
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils);							
Strengths	High accuracy and precision of measures; quickly survey of huge areas; data capture acquired with difficulty on the ground; versatility of final products useful for various applications; hyperspectral data exploitation in order to calculate various index (e.g. Normalized Difference Vegetation Index, NDVI; Leaf Area Index, LAI) able to estimate quantity of biomass and measure. photosynthetic activity.							
Reference image of the service	<div><p>— Native — Invasive</p><p><i>Spectral signatures of different vegetation species.</i></p></div>							
References methodology	Significant projects: 1 Supply of IT products (DSM and DTM) and orthophoto maps detected with Lidar and hyperspectral technologies (Contractor: Forest Authority of Sardinia).							
Service Status	Operational							
Contact	Annibale Guariglia							
Phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net							

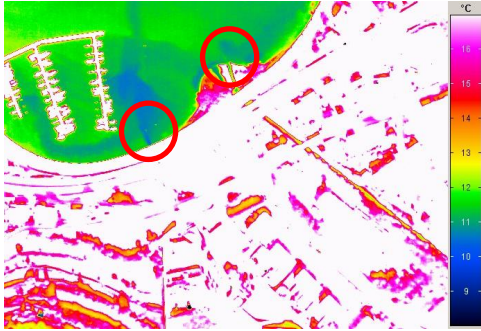

Short title of the service	R4 R6 Early stress detection in agricultural and natural ecosystems							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r4.2 Crop Classification and Monitoring r4.5 Forest monitoring r6.2 Early Warning							
Short description of the service	Multispectral and hyperspectral remote sensing techniques allow the early detection of vegetation stress, before the appearance of visible symptoms. Among different monitoring methods we use: direct monitoring methods with remote sensing indices, image classification methods, same-period comparing methods							
Geographic Coverage (Global, local, regional)	From Local to Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users								
Possible Users	Local governments; Natural Parks; Natural resources managers; Farmers							
Strengths	Maps reliability and accuracy							
Reference image of the service	<div>  <i>Accumulated Relative NDVI Decrement (ARND_index) obtained by MODIS images on a Southern Italy area to detect vegetation stress</i></div>							
References methodology	Luciano Telesca Rosa Lasaponara Antonio Lanorte Intra-annual dynamical persistent mechanisms in mediterranean ecosystems revealed SPOT-VEGETATION time series. Ecological Complexity 2008   5   2   151-156							
Service Status	Pre-operational service							
Contact	Antonio Lanorte							
Phone								
e-mail	alanorte@imaa.cnr.it							

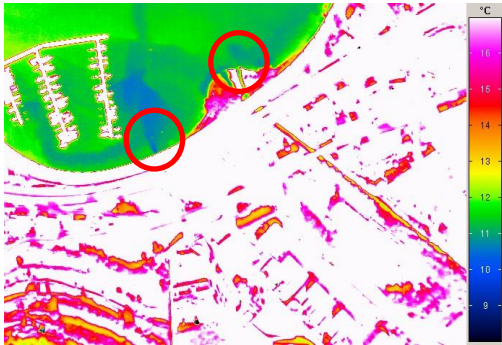

Short title of the service	R4 R6 FIRE-SAT							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r4.5 Forest monitoring r6.1 Natural disaster management r6.2 Early Warning							
Short description of the service	Management of satellite data for surface parameters monitoring with particular attention to fire risk assessment, spectral analysis and burned areas detection by using remote sensing data							
Geographic Coverage <i>(Global, local, regional)</i>	From Local to Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Regional Civil Protection (Basilicata-Italy)							
Possible Users	National Civil Protection; Natural Parks; Local municipalities; Natural resources managers ; Natural disaster managers							
Strengths	Maps reliability and accuracy							
Reference image of the service	 <p><i>Fire Danger Map of Basilicata region for August 2011, generated by integrating MODIS and LANDSAT satellite data.</i></p>							
References methodology	Lanorte, A; De Santis, F; Aromando, A; Lasaponara, R (2012). Low Cost Pre-Operative Fire Monitoring from Fire Danger to Severity Estimation Based on Satellite MODIS, Landsat and ASTER Data: The Experience of FIRE-SAT Project in the Basilicata Region (Italy). COMPUTATIONAL SCIENCE AND ITS APPLICATIONS - ICCSA 2012, PT III, 7335, 481-496.							
Service Status	Operational service							
Contact	Antonio Lanorte							
Phone								
e-mail	alanorte@imaa.cnr.it							



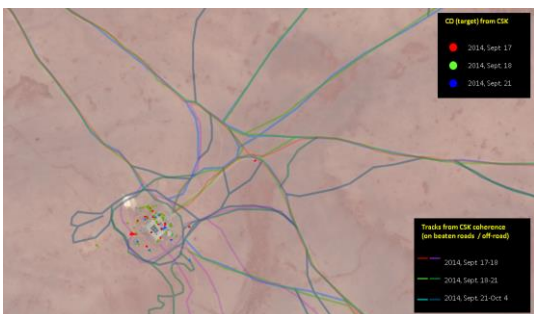
Short title of the service	<b>R4 R6 REMOTA - RST- based dEtection and MOnitoring of Thermal Anomalies</b>																																
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8																									
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																									
Activity (See legend page II)	r4.5 Forest monitoring r6.1 Natural disaster management																																
Short description of the service	The company has developed and assessed a system for the early detection of fires and their continuous monitoring in the space and in time, using satellite data at very high temporal resolution.																																
Geographic Coverage (Global, local, regional)	From Local to Global																																
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m																												
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																												
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly																												
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																												
Current Users																																	
Possible Users	Civil Protection Agencies, Forestry Services, Local Authorities, Fire-fighters																																
Strengths	Automatic detections and near-real time monitoring of territory, user friendly interface																																
Reference image of the service	<div><p>The screenshot displays the REMOTA Desktop 0.1 interface. The main window shows a 3D map of the Basilicata region with several yellow squares indicating detected fire anomalies. A legend on the left identifies the anomalies by intensity: ALTA (red), MEDIA (yellow), and BASSA (green). The bottom panel shows a table of detected anomalies with columns for Date, Latitude, Longitude, Intensity, and Sensor. An inset window shows a graph of the temperature anomaly over time for a specific location.</p><table border="1"><thead><tr><th>Data</th><th>Latitude</th><th>Longitude</th><th>Intensity</th><th>Sensore</th></tr></thead><tbody><tr><td>2008-07-20 18:00:00</td><td>41.05914</td><td>15.93363</td><td>2.64221</td><td>Seviri</td></tr><tr><td>2008-07-20 19:00:00</td><td>40.86279</td><td>16.03319</td><td>3.23194</td><td>Seviri</td></tr><tr><td>2008-07-20 19:00:00</td><td>40.74774</td><td>16.55349</td><td>2.67487</td><td>Seviri</td></tr><tr><td>2008-07-20 22:00:00</td><td>41.06116</td><td>16.01325</td><td>2.97295</td><td>Seviri</td></tr></tbody></table></div> <p>Control panel of the software REMOTA for the visualization of fires detected over the area of interest, in this case Basilicata region</p>								Data	Latitude	Longitude	Intensity	Sensore	2008-07-20 18:00:00	41.05914	15.93363	2.64221	Seviri	2008-07-20 19:00:00	40.86279	16.03319	3.23194	Seviri	2008-07-20 19:00:00	40.74774	16.55349	2.67487	Seviri	2008-07-20 22:00:00	41.06116	16.01325	2.97295	Seviri
Data	Latitude	Longitude	Intensity	Sensore																													
2008-07-20 18:00:00	41.05914	15.93363	2.64221	Seviri																													
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2008-07-20 19:00:00	40.74774	16.55349	2.67487	Seviri																													
2008-07-20 22:00:00	41.06116	16.01325	2.97295	Seviri																													
References methodology	G. Mazzeo, F. Marchese, C. Filizzola, N. Pergola, V. Tramutoli (2007). A Multi-Temporal Robust Satellite Technique (RST) for forest fire detection. In Proceedings of Multitemp 2007, Leuven, Belgio. DOI 10.1109/MULTITEMP.2007.4293060.																																
Service Status	Operative																																
Contact	Giuseppe Mazzeo																																
Phone	(+39) 0971 205047																																
e-mail	info@geospazioitalia.it																																

Short title of the service	R5 Forecasting air quality parameters							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r5.2 Air quality and humidity							
Short description of the service	Estimation of major atmospheric pollutant							
Geographic Coverage <i>(Global, local, regional)</i>	Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Current Users								
Possible Users	Civil Protection Authorities, Health Authority, Municipal Authorities, Local Environmental Authorities							
Strengths	Possibility of discriminating PM10 anomalies due to natural phenomena from anthropic factors.							
Reference image of the service	<div><div>ALICE index of PM10</div><div>Top: anomalies of PM10 (ground stations) on the basis of the ALICE index. Bottom: RST-based dust maps used to exclude PM10 anomalies due to dust in the atmosphere.</div></div>							
References methodology	N. Pergola, A. Falconieri, C. Filizzola, R. Femiano, F. Marchese, F. Sannazzaro, V. Tramutoli, E. Dimuro, M. Divietri, A. Maria Crisci, M. Lovallo, L. Mangiamiele, M. Vaccaro, A. Palma (2014). Airborne dust identification from space: a new, MSG/SEVIRI-based method for air quality assessment. 2014 EUMETSAT Meteorological Satellite Conference, 22-26 September 2014, Geneva, Switzerland.							
Service Status	Research							
Contact	Valerio Tramutoli							
Phone	(+39) 0971 205205							
e-mail	valerio.tramutoli@unibas.it							

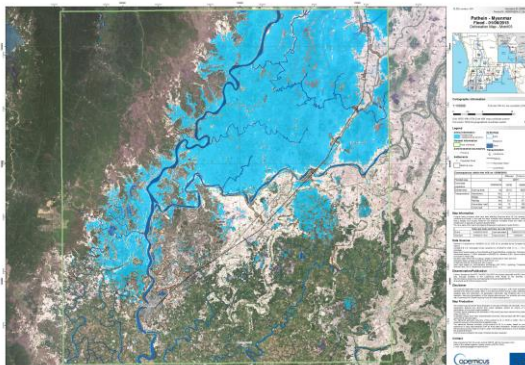
Short title of the service	R5 R1 R8 Water Quality Assessment							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Activity <i>(See legend page II)</i>	r5.3 Water quality r1.5 Water Management r8.3 Bathing water quality and temperature							
Short description of the service	1. Technical Assistance in the implementation of “acquis communautaire” within the scope of the directives regarding water quality. 2. Identification, characterization and geo-referencing of water dumping by means of remote sensing techniques or airborne sensors.							
Geographic Coverage <i>(Global, local, regional)</i>	Local							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Ministry of Health (Poland); River Basin Authorities; etc.							
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils); private companies (e.g. engineering companies operating in the environmental sector).							
Strengths	<ul style="list-style-type: none"><li>✓ Experience in technical and managerial assistance in European programs;</li><li>✓ high accuracy and precision of measures;</li><li>✓ quickly survey of huge areas;</li><li>✓ data capture acquired with difficulty on the ground;</li><li>✓ versatility of final products useful for various applications.</li></ul>							
Reference image of the service	<div></div> <p>Sea dumping identification</p>							
References methodology	Significant Projects: 1. Twinning project PL/2004/IB/EN/02 “Management System On Drinking Water Monitoring in Chief Sanitary Inspectorate” (Poland). 2. PROJECT TeRN 2: Technologies for Earth Observations And Natural Hazards – Second Phase (sub-task: “Development and integration of ground, airborne and satellite observation technologies for the monitoring of coastal ecosystems”), Research Project.							
Service Status								
Contact	Annibale Guariglia							
Phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net							

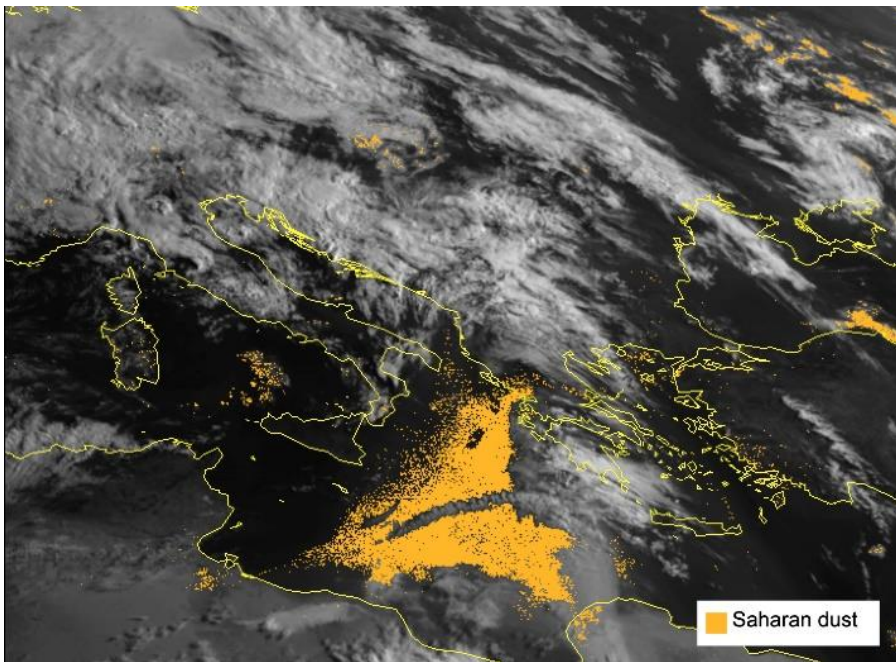
Short title of the service	R5 R2 R7 Oil Slicks Detection and Water Quality Assessment							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r5.3 Water quality r2.3 Natural resources management r7.4 Maritime surveillance							
Short description of the service	Oil slicks detection and water quality assessment by satellite and multi-sensor airborne data acquisition.							
Geographic Coverage <i>(Global, local, regional)</i>	From local to global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Meridiana Costruzioni Generali; etc.							
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils).							
Strengths	<ul style="list-style-type: none"><li>✓ High accuracy and precision of measures;</li><li>✓ quickly survey of huge areas;</li><li>✓ data capture acquired with difficulty on the ground;</li><li>✓ versatility of final products useful for various applications.</li></ul>							
Reference image of the service / product	<div></div> <p style="text-align: center;"><i>Sea dumping identification</i></p>							
References methodology	Significant project: PROJECT TeRN 2: Technologies for Earth Observations and Natural Hazards – Second Phase (sub-task: “Development and integration of ground, airborne and satellite observation technologies for the monitoring of coastal ecosystems”). Research Project.							
Service Status	Operational							
Contact	Annibale Guariglia							
phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net							

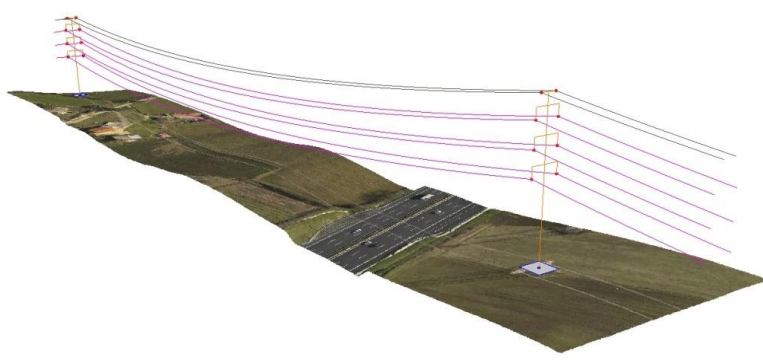




Short title of the service	<b>R6 Border protection</b>							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r6.4 Search & Rescue management							
Short description of the product	<p>The GEOStation for Defence is a turnkey solution provided by e-GEOS to carry out image intelligence (IMINT) tasks based on satellite imagery. It includes a system for all IMINT tasks, from information gathering to reporting, a complete technical support based on training and assisted operations aimed at enabling Defence and Security organizations to run autonomously their IMINT daily activities. It is a solution to derive technical, geographical and intelligence information through the interpretation and analysis of imagery and collateral material. It helps to:</p> <ul style="list-style-type: none"><li>- build situation awareness and produce actionable intelligence minimizing delays in processing, interpreting and disseminating to final customer</li><li>- detect and monitor in time human activities over key sites with reliable data collections and the suitable update frequency.</li></ul> <p>The GEOStation solution aids to access not-classified information and to integrate and cross-cue the information and imagery products derived from multi-sensor infrastructures and multi-temporal dataset.</p>							
Geographic Coverage <i>(Global, local, regional)</i>	Local / regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Current Users	Confidential							
Possible Users	MoD, International Agency (EUSC, OSCE, Nato, Frontex ...), National police for border control							
Strengths	<p>The system provided is modular and can be fully adapted to customer requests. Main sub-systems are:</p> <ul style="list-style-type: none"><li>• Data gathering infrastructure: from open source info analysis to multi-mission satellite data acquisition. Satellite missions considered include both Electro-Optical (EO) and Radar sensors, thus providing a huge capability in covering large areas and frequently monitoring target activity</li><li>• Information extraction architecture: for a full technical exploitation of data gathered with pre-defined processing workflows dedicated to the different tasks (e.g. land / maritime, tactical / strategic IMINT)</li><li>• Reporting system: developed in accordance to the international standard directives (e.g. Stanag 3596) but, at the same time, fully customizable according to user need</li><li>• Dissemination system: it aims to provide access to satellite data and value added products to a broader audience through the use of a GeoWeb-application delivery; moreover, it allows to operate, store and integrate data for analysis and decision making process. The proposed system is highly flexible, its architecture is based on a modular approach: it is expandable and suitable to collect and elaborate different sourced data.</li></ul>							
Reference image of the service	<div></div> <p><i>Coherence map to detect most used tracks in the desert</i></p>							
References methodology	Satellite data based technologies and applications, change detection techniques (EO, SAR-Amplitude and Coherence), digital surface modelling, road network extraction.							
Service Status	Operational							
Contact	Filippo Britti							
Phone								
e-mail	filippo.britti@e-geos.it							



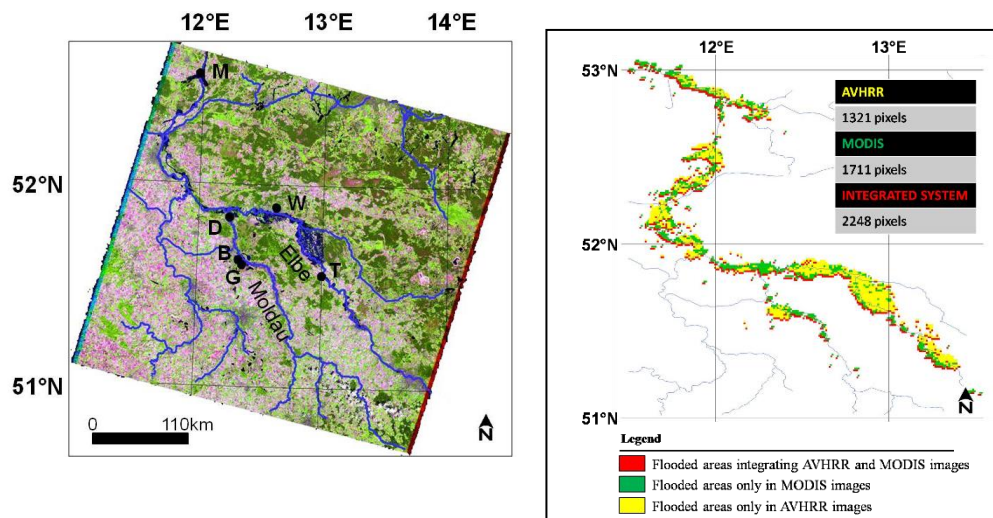
Short title of the service	R6 Disaster Management							
General field of application (See legend page II)	R1 <input type="checkbox"/>	R2 <input type="checkbox"/>	R3 <input type="checkbox"/>	R4 <input type="checkbox"/>	R5 <input type="checkbox"/>	R6 <input checked="" type="checkbox"/>	R7 <input type="checkbox"/>	R8 <input type="checkbox"/>
Activity (See legend page II)	r6.1 Natural disaster management							
Short description of the service	<p>e-GEOS Emergency Mapping Services: e-GEOS is recognized as a unique industrial provider capable to propose to the market a unique offering for on-demand geo-information services. At any time during the year, everywhere in the world, exploiting any available satellite sensor e-GEOS activates its service platform to react and satisfy near real time customers' requests for geo-information data and standard or customized maps.</p> <p>This activity is part of the e-GEOS role as coordinator of the Copernicus Emergency Service – Rapid Mapping, up to 2019.</p>							
Geographic Coverage (Global, local, regional)	Global, local, regional.							
Spatial Resolution	0.5-2.5m <input checked="" type="checkbox"/>	2.5–10m <input checked="" type="checkbox"/>	10-30 m <input checked="" type="checkbox"/>	30-100 m <input type="checkbox"/>	100-1000m <input type="checkbox"/>			
Frequency of update	Several times a day <input type="checkbox"/>	Day <input checked="" type="checkbox"/>	Weekly <input checked="" type="checkbox"/>	Monthly <input type="checkbox"/>	Yearly <input type="checkbox"/>			
Current Users	EU Member States Civil Protection Authorities, Humanitarian Aid operators (e.g. United Nations Agencies), International Financing Institutes (e.g. World Bank)							
Possible Users	Local Civil Protection and Civil Security authorities, disaster relief organizations (e.g. Red Cross).							
Strengths	<ul style="list-style-type: none"><li>• The Service provides maps of damage assessment and of pre-event situation based on satellite images, to support civil protection and humanitarian aid operators in their tasks related to the reaction to natural/man-made disasters.</li><li>• The main characteristic of the Service is the all-year-round 24/7 availability, the quick response time and the very fast map delivery time. After the reception of a service activation request, relevant optical and radar satellite resources are immediately tasked to acquire images of the affected area and post event damage assessment maps are delivered within few hours after the satellite acquisition.</li><li>• Main events for activations are volcanoes, earthquakes, floods, oil spills, fires, humanitarian crisis, border conflicts and any other event that requires rapid response.</li></ul>							
Reference image of the service	 <p><i>Flooding in Myanmar, Patheingyi area.</i></p>							
References methodology	Satellite techniques and applications.							
Service Status	Operational							
Contact	Domenico Grandoni							
phone	(+39) 06 40793089							
e-mail	Domenico.grandoni@e-geos.it							

Short title of the service	<b>R6 Dust detection and monitoring</b>							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r6.1 Natural Disaster management							
Short description of the service	Detection and monitoring of Saharan dust events using the RST-DUST algorithm, processing high temporal resolution satellite data.							
Geographic Coverage <i>(Global, local, regional)</i>	Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Current Users								
Possible Users	Civil Protection Authorities, Aviation Companies, VAACs							
Strengths	Accurate and timely identification of dust-affected areas							
Reference image of the service	<div></div> <p>SEVIRI visible image of May 13 2010 at 06:00 GMT showing in orange dusty pixels detected by the RST-DUST algorithm over the Mediterranean Sea</p>							
References methodology	Sannazzaro et al. (2014). Identification of dust outbreaks on infrared seviri data by using a Robust Satellite Technique (RST). Acta Astronautica, 93, 64-70							
Service Status	Research							
Contact	Valerio Tramutoli							
Phone	(+39) 0971 205205							
e-mail	valerio.tramutoli@unibas.it							


Short title of the service	R6 Early Warning Management							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r6.2 Early warning							
Short description of the service	Monitoring of engineering works and infrastructure networks (railways, roads, power lines, pipelines, etc...) in order to map the exact location and to check the quality level of services by using a multi-sensor airborne platform. Monitoring and aerial inspection of electric power lines and power stations in order to identify, in real time, the networks anomalies system through a system that integrates digital video shooting techniques with GPS satellite geo-referential techniques.							
Geographic Coverage (Global, local, regional)	From local to regional							
Spatial Resolution	0.5-2.5m		2.5–10m		10-30 m		30-100 m	
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>	
Frequency of update	Several times a day		Day		Weekly		Monthly	
	<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Current Users	TERNA SpA; ENEL SpA; etc.							
Possible Users	Public bodies or private companies operating in the management of engineering works and infrastructure networks (railways, roads, power lines, pipelines, etc...).							
Strengths	<ul style="list-style-type: none"><li>✓ High accuracy and precision of measures;</li><li>✓ quickly survey of huge areas;</li><li>✓ data capture acquired with difficulty on the ground;</li><li>✓ versatility of final products useful for various applications.</li></ul>							
Reference image of the service	 <p>Data output of aerial inspections of electrical powerlines</p>							
References methodology	Significant project: 1. Survey and laser data processing of the MT network falling within the DTR Valle D'Aosta. 2. PROJECT Tern 2: Technologies For Earth Observations And Natural Hazards – Second Phase (Task: “Development of methodologies and integration of technologies, even in remote and risk condition, for the check and the monitoring of technological networks and identification of innovative techniques for evaluating of seismic vulnerability and for their protection”), Research project.							
Service Status	Operational							
Contact	Annibale Guariglia, Eugenio Viola							
Phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net, e.viola@geocart.net							

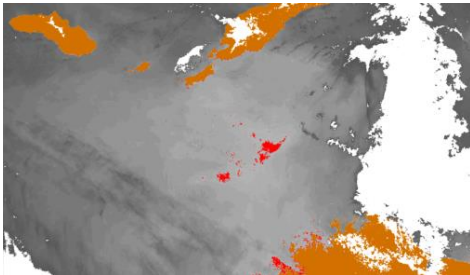

Short title of the service	R6 Earthquake damage assessment							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r6.1 Natural Disaster management							
Short description of the service	Post EQ Timely monitoring of affected areas and population movements							
Geographic Coverage <i>(Global, local, regional)</i>	Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Current Users								
Possible Users	Civil Protection Authorities							
Strengths	Rapid identification of changes induced by population movements after disastrous earthquakes							
Reference image of the service / product								
	Area affected by an earthquake (Nepal, 25/04/2015)							
Reference image of the service / product								
	Citizens camped in tents in more secure areas							
References methodology	V. Tramutoli (1998). Robust AVHRR Techniques (RAT) for Environmental Monitoring: theory and applications, in <i>Proceedings of SPIE</i> ,vol. 3496, pp. 101–113.							
Service Status	Research							
Contact	Valerio Tramutoli							
Phone	(+39) 0971 205205							
e-mail	valerio.tramutoli@unibas.it							

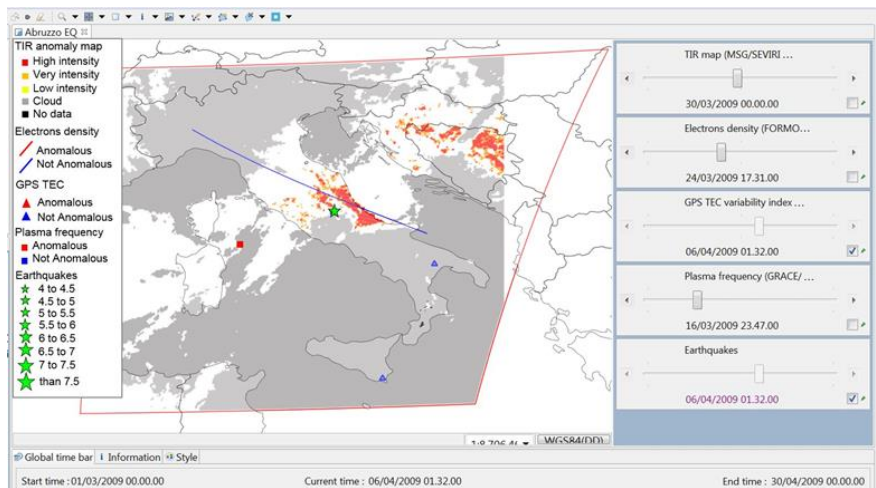


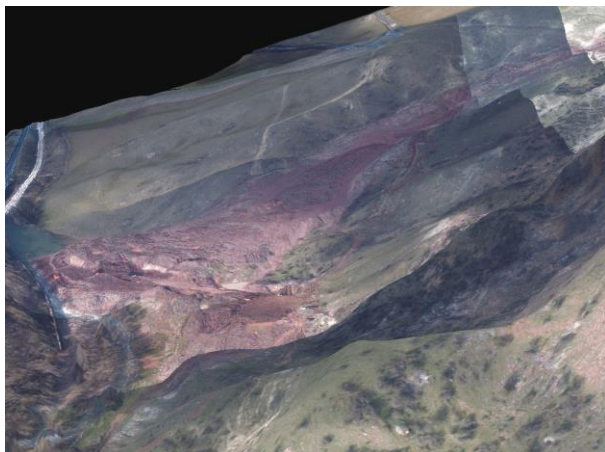
Short title of the service	<b>R6 Flooded areas detection and monitoring</b>							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r6.1 Natural Disaster management							
Short description of the service	Timely (within 3 hours) flood mapping (minimum size 10.000sqm) by satellite product RST-FLOOD							
Geographic Coverage <i>(Global, local, regional)</i>	Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Current Users								
Possible Users	Civil Protection Authorities, Ensurance Companies							
Strengths	High frequency of observation, timely detection							
Reference image of the service	<div></div> <p>Left: RGB (543) of the LANDSAT-7 ETM image of August 20, 2002, relative to the Elbe region, where flooded affected areas are highlighted in blue tones. Right: for the same area flood extent during August 16- 23, 2002 applying RST-FLOOD on AVHRR and MODIS data.</p>							
References methodology	M. Faruolo, Coviello, I., Lacava, T., Pergola, N. and Tramutoli, V., “A multi-sensor exportable approach for automatic flooded areas detection and monitoring by a composite satellite constellation”, IEEE TGRS, Vol (51-4-1), pp. 2136 – 2149, doi: 10.1109/TGRS.2012.2236336							
Service Status	Research							
Contact	Valerio Tramutoli							
Phone	(+39) 0971 205205							
e-mail	valerio.tramutoli@unibas.it							

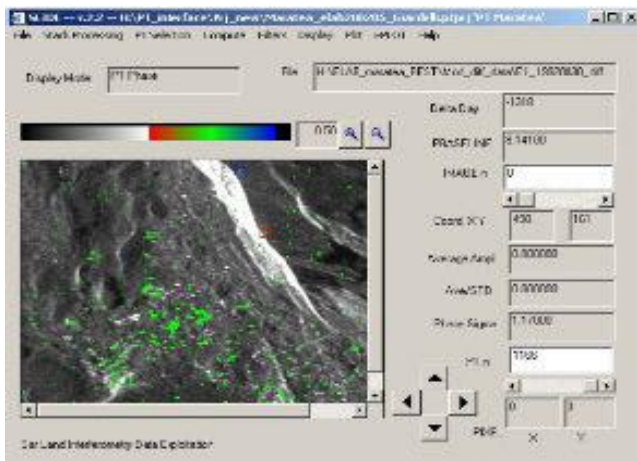


Short title of the service	R6 Ground instability monitoring services							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r6.1 Natural Disaster management							
Short description of the service	Land movement monitoring services, such as landslides, landslips and land subsistence, providing measurements of the morphological changes of the land both on a large scale using satellite data and on small-scale using ground-based radar.							
Geographic Coverage (Global, local, regional)	From Local to Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Current Users	Public administration, Oil&Gas Companies, Managing Authority of infrastructures (highways, water main, etc.)							
Possible Users	Regional and National Civil Protection, Superintendence of Cultural Heritage							
Strengths	Flexibility, Speed, Accuracy, Cheapness							
Reference image of the service	<div></div> <p>Example of Terrain displacement measurement</p>							
References methodology	Terrain displacement measurement of landslide and subsidence areas							
Service Status	Operational, on the market							
Contact	Andrea Di Pasquale							
Phone	(+39) 0835 307760							
e-mail	dipasquale@consorzio-innova.it							




Short title of the service	<b>R6</b> Sea pollution monitoring							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r6.3 Industrial risk management r6.5 Maritime surveillance							
Short description of the service	Timely (within 3 hours) oil spill presence detection (minimum size 1000sqm) by satellite product RST-OIL							
Geographic Coverage <i>(Global, local, regional)</i>	Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Current Users	Maritime Authorities, Oil companies							
Possible Users	Environmental protection agencies, national governments, Protected Marine Area authorities							
Strengths	High frequency of observation, timely and reliable detection							
Reference image of the service	<div></div> <div><input checked="" type="checkbox"/> LAND    <input type="checkbox"/> CLOUD    <input checked="" type="checkbox"/> RST-OIL</div> <p><i>On the left: MODIS RGB image of 24/09/2009 at 05:15 GMT related to oil spill accident occurred to the Montara platform; on the right: RST-OIL map for the same image</i></p>							
References methodology	Grimaldi, C. S. L., Casciello, D., Coviello, I., Lacava, T., Pergola, N., and Tramutoli, V.: An improved RST approach for timely alert and Near Real Time monitoring of oil spill disasters by using AVHRR data, Nat. Hazards Earth Syst. Sci., 11, 1281-1291, doi:10.5194/nhess-11-1281-2011, 2011							
Service Status	Pre-operational							
Contact	Valerio Tramutoli							
Phone	(+39) 0971 205205							
e-mail	valerio.tramutoli@unibas.it							

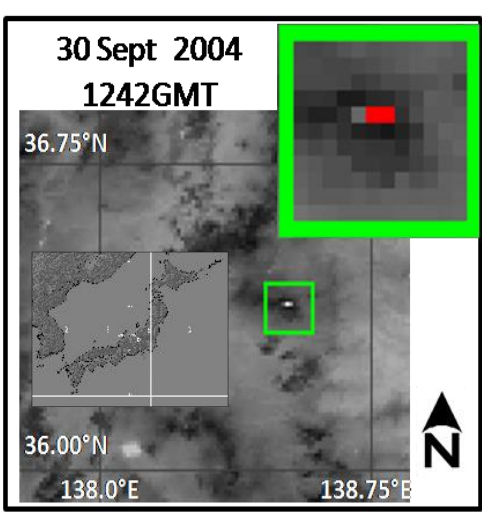
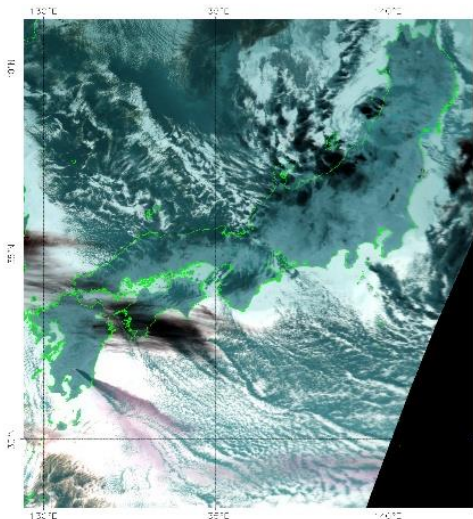
Short title of the service	R6 Seismic areas monitoring							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r6.2 Early Warning							
Short description of the service	Satellite observations/products (e.g. maps of thermal anomalies) to monitor possible precursor parameters in seismically active areas.							
Geographic Coverage (Global, local, regional)	Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a	Daily	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Current Users	Research Institutes							
Possible Users	Civil Protection Authorities							
Strengths	Robust identification of anomalous parameter changes; information easily integrable within early warning systems							
Reference image of the service	<div></div> <p>MSG-SEVIRI based TIR anomaly map of Italy (30/03/2009) before the Abruzzo Earthquake (06/04/2009). Different colors represent different intensity levels of the RETIRA Index.</p>							
References methodology	Tramutoli V, Cuomo V, Filizzola C, Pergola N, Pietrapertosa C. 2005: Assessing the potential of thermal infrared satellite surveys for monitoring seismically active areas: The case of Kocaeli (Izmit) earthquake, August 17 1999, Remote Sensing of Environment, 96, 409-426. Tramutoli V., Corrado R., Filizzola C., Genzano N., Lisi M. and Pergola N.; 2015: From visual comparison to Robust Satellite Techniques: 30 years of thermal infrared satellite data analyses for the study of earthquakes preparation phases. Boll di Geofis. Teor ed Appl, 56, n. 2, pp. 167-202.							
Service Status	Research							
Contact	Valerio Tramutoli							
Phone	(+39) 0971 205205							
e-mail	valerio.tramutoli@unibas.it							

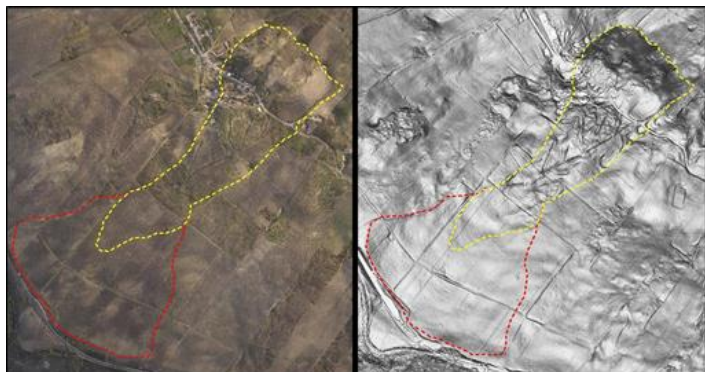
Short title of the service	R6 Seismic Risk and Landslides Risk Management							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r6.1 Natural disaster management							
Short description of the service	Earthquake damages assessments and natural risk management using remotely sensed data acquired through a multi-sensor airborne platform (laser scanner, digital camera, two hyperspectral sensors operating VNIR and SWIR respectively and a thermal camera) and satellite.							
Geographic Coverage (Global, local, regional)	Local							
Spatial Resolution	0.5-2.5m		2.5–10m		10-30 m		30-100 m	
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>	
Frequency of update	Several times a day		Day		Weekly		Monthly	
	<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Current Users	University of Basilicata; Basilicata Region; Centre of Integrated Geomorphology for the Mediterranean Area (CGIAM); etc.							
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils).							
Strengths	<ul style="list-style-type: none"><li>✓ Measurement of surface and infrastructures displacements with sub-centimeter precision using SAR data;</li><li>✓ high accuracy and precision of measures;</li><li>✓ quickly survey of huge areas;</li><li>✓ data capture acquired with difficulty on the ground;</li><li>✓ versatility of final products useful for various applications.</li></ul>							
Reference image of the service	 <p>Landslide 3D view with color orthophoto</p>							
References methodology	Significant project: 1. Aerial survey by scanning Laser Scanner and Digital Room Metric of the area interested by interventions of consolidation in Pietrapertosa and Laurenzana (Contractor: Basilicata Region).							
Service Status	Operational							
Contact	Annibale Guariglia, Angela Losurdo							
phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net, a.losurdo@geocart.net							

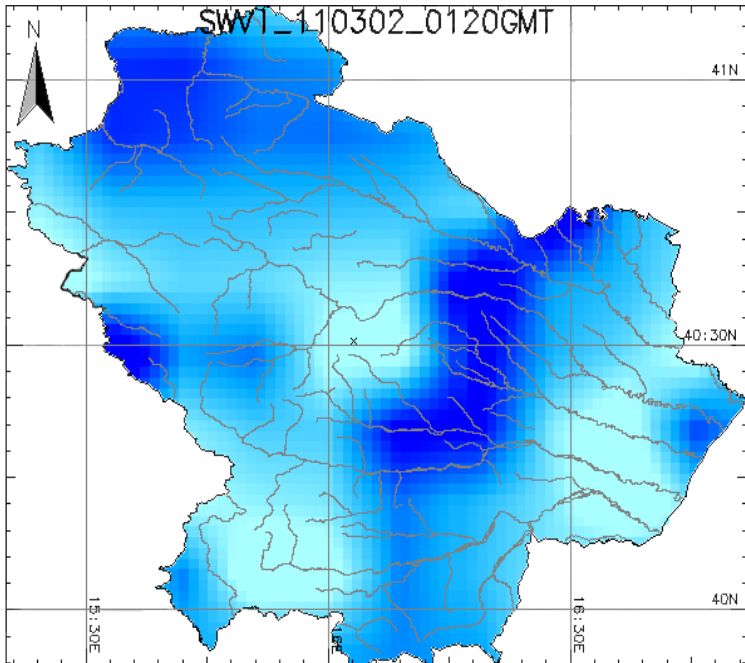
Short title of the service	<b>R6 Soil and Infrastructure displacements measurement</b>							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r6.1 Natural disaster management							
Short description of the service	Soil and infrastructures displacements measurement using techniques of SAR interferometry and environmental assessment through a multi-sensor airborne platform (full waveform laser scanner, digital camera, two hyperspectral sensors operating VNIR and SWIR respectively and a thermal camera) data acquisition.							
Geographic Coverage (Global, local, regional)	From local to global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Total S.p.A.; Centre of Integrated Geomorphology for the Mediterranean Area (CGIAM); Basilicata Region; Italian Space Agency;							
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils); private companies (e.g. engineering or construction companies).							
Strengths	<ul style="list-style-type: none"><li>✓ Measurement of surface and infrastructures displacements with sub-centimeter precision using SAR data;</li><li>✓ high accuracy and precision of measures;</li><li>✓ quickly survey of huge areas;</li><li>✓ data capture acquired with difficulty on the ground;</li><li>✓ versatility of final products useful for various applications.</li></ul>							
Reference image of the service	<div></div> <p>SLIDE (SarLandInterferometryDataExploitation) software for processing of satellite SAR data.</p>							
References methodology	Significant Project: Monitoring the displacements of artistic works and buildings in the old town centre of Rome (City of Rome).							
Service Status	Operational							
Contact	Annibale Guariglia, Angela Losurdo							
Phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net, a.losurdo@geocart.net							

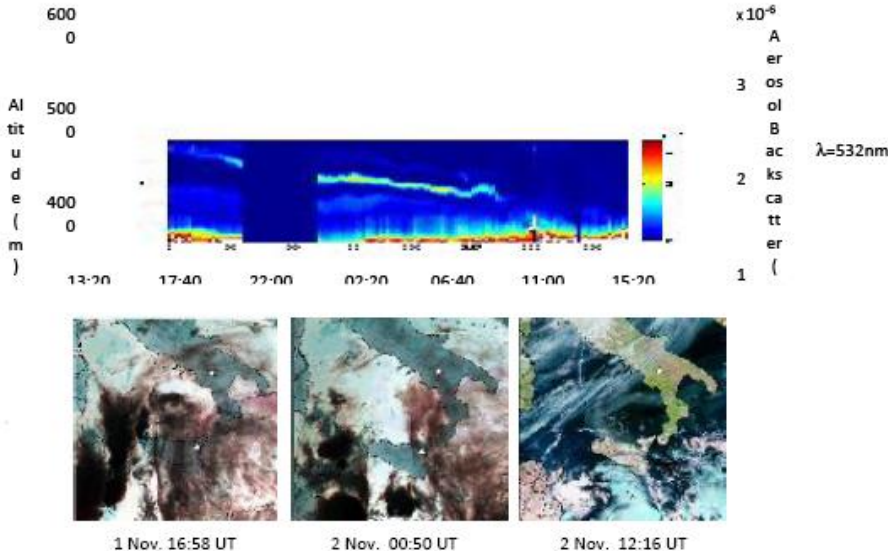


Short title of the service	R6 Transport and energy infrastructure stability monitoring							
General field of application (See legend page II)	R1 <input type="checkbox"/>	R2 <input type="checkbox"/>	R3 <input type="checkbox"/>	R4 <input type="checkbox"/>	R5 <input type="checkbox"/>	R6 <input checked="" type="checkbox"/>	R7 <input type="checkbox"/>	R8 <input type="checkbox"/>
Activity (See legend page II)	r6.3 Industrial risk management							
Short description of the service	Infrastructure stability monitoring services of railway lines, motorways, oil pipelines, gas pipelines.							
Geographic Coverage (Global, local, regional)	From Local to Global							
Spatial Resolution	0.5-2.5m <input checked="" type="checkbox"/>	2.5–10m <input type="checkbox"/>	10-30 m <input type="checkbox"/>	30-100 m <input type="checkbox"/>	100-1000m <input type="checkbox"/>			
Frequency of update	Several times a day <input checked="" type="checkbox"/>	Daily <input type="checkbox"/>	Weekly <input type="checkbox"/>	Monthly <input type="checkbox"/>	Yearly <input type="checkbox"/>			
Current Users	Public administration, Oil&Gas Companies, Managing Authority (highways, water main, etc.)							
Possible Users	Regional and National Civil Protection, Superintendence of Cultural Heritage							
Strengths	Flexibility, Speed, Accuracy, Cheapness							
Reference image of the service	<div></div> <p>Example of static and dynamic acceptance test of bridges</p>							
References methodology	Measurement of dam displacements; Static and dynamic acceptance test of bridges; Measurement of displacement and oscillation frequency following installation of Wind Turbines.							
Service Status	Operational, on the market							
Contact	Andrea Di Pasquale							
Phone	(+39) 0835 307760							
e-mail	dipasquale@consorzio-innova.it							

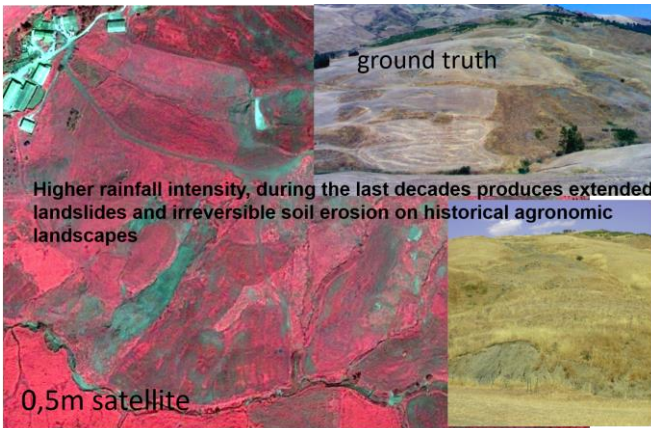
Short title of the service	<b>R6 Volcanic eruption monitoring</b>							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r6.1 Natural Disaster management							
Short description of the service	Identification and monitoring of thermal volcanic activity using RST-VOLC and timely ash cloud detection and tracking using RST-ASH							
Geographic Coverage <i>(Global, local, regional)</i>	Global							
Spatial Resolution	0.5-2.5m	2.5-10m	10-30 m	30-100 m	100-1000m			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Current Users								
Possible Users	Civil Protection Authorities, Aviation Companies, VAACs, Volcano Observatories							
Strengths	High trade-off between reliability/sensitivity of detection							
Reference image of the service	<div></div> <p>Left: AQUA-MODIS false colour of 26 January 2011 at 17.20 GMT showing an ash plume coming from Shinmoedake volcano and dispersing over Japan sea towards SE; Right: MODIS data of 30 September 2004 at 12:42 GMT showing a volcanic hot spot (magnified in red at the top of the image) over the Mt. Asama (Japan) Volcano</p>							
References methodology	Marchese et al. (2011). Assessment and Improvement of a Robust Satellite Technique for thermal monitoring of volcanoes. Remote Sensing of Environment, 115, 1556-1563; Pergola et al. (2004). Improving volcanic ash clouds detection by a robust satellite technique. Remote Sensing of Environment, 90(1), 1-22.							
Service Status	Pre-operational							
Contact	Valerio Tramutoli							
Phone	(+39) 0971 205205							
e-mail	valerio.tramutoli@unibas.it							

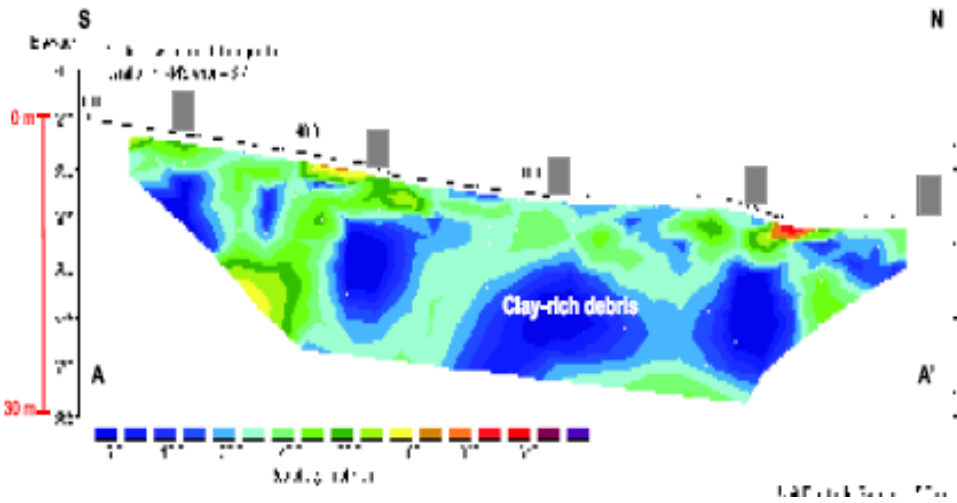
Short title of the service	R6 R1 R3 Natural Risk Management							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r6.1 Natural disaster management r1.1 Urban planning and management r3.1 Urban planning and management							
Short description of theservice	Techniques of SAR interferometry and multi-sensor airborne data acquisition for the natural risk monitoring and for the promotion of adequate prevention measures for reducing disastrous environmental effects.							
Geographic Coverage <i>(Global, local, regional)</i>	From Local to Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	CGIAM (Centre of Integrated Geomorphology for the Mediterranean Area); Basilicata Region; University “La Sapienza”, Rome; Italian Spatial Agency; Basilicata River Basin Authority; etc.							
Possible Users	Public institutions (e.g. Ministries, Regional, Provincial and Municipal Governments, River Basin Authorities, Regional Agencies of Environmental Protection, Civil Protection Authorities) and Research Institutions (e.g. Universities or National Research Councils).							
Strengths	High accuracy and precision of measures; quickly survey of huge areas; data capture acquired with difficulty on the ground; versatility of final products useful for various applications; monitoring of surface and infrastructures displacements with sub-centimeter precision.							
Reference image of the service	<div></div> <p>Landslide zoning using orthophoto and DTM extracted by laser data</p>							
References methodology	Significant projects: 1. Monitoring the displacements of the artistic works and buildings in the centre of Rome (Contractor: City of Rome). 2. Aerial Survey by means of Laser Scanner and Digital Camera of the area interested by consolidation works in Pietrapertosa and Laurenzana (Contractor: Basilicata Region).							
Service Status	Operational							
Contact	Annibale Guariglia							
Phone	(+39) 0971 56671							
e-mail	a.guariglia@geocart.net							

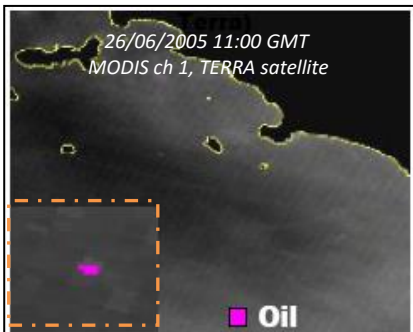
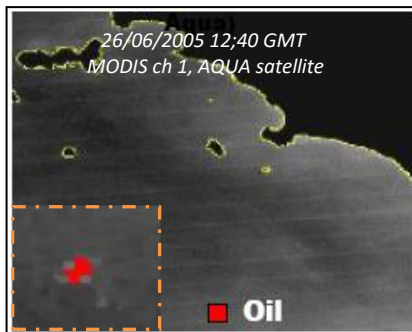

Short title of the service	<b>R6 R4 Flood risk monitoring</b>								
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Activity <i>(See legend page II)</i>	r6.1 Natural disaster management r4.1 Soil moisture								
Short description of the service	The company can provide a system for the detection of the areas showing extreme soil wetness conditions and hence flooded by exploiting satellite data acquired in the optical and microwave band.								
Geographic Coverage <i>(Global, local, regional)</i>	From Local to Global								
Spatial Resolution	0.5-2.5m		2.5–10m		10-30 m		30-100 m		100-1000m
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>
Frequency of update	Several times a day		Daily		Weekly		Monthly		Yearly
	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
Current Users									
Possible Users	Environmental protection agencies, Civil Protection Authorities, Insurance Companies								
Strengths	Synoptic and systematic controlled area, high frequency of observation								
Reference image of the service / product	<div><div><b>SWVI</b> <div><div>Clods</div><div>Dry</div><div>Moderately wet</div><div>Wet</div><div>Extremely wet</div></div></div></div> <p>AMSU - Soil Wetness Variation Index (SWVI) map of 3 March 2011 for Basilicata Region (South of Italy) area, after the heavy precipitation of the</p>								
References methodology	M. Faruolo, Coviello, I., Lacava, T., Pergola, N. and Tramutoli, V., “A multi-sensor exportable approach for automatic flooded areas detection and monitoring by a composite satellite constellation”, IEEE TGRS, Vol (51-4-1), pp. 2136 – 2149, doi: 10.1109/TGRS.2012.2236336								
Service Status	Research								
Contact	Giuseppe Mazzeo								
Phone	(+39) 0971 205047								
e-mail	info@geospazioitalia.it								

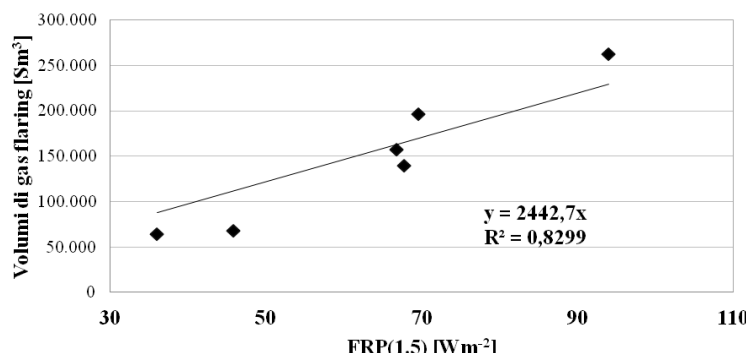
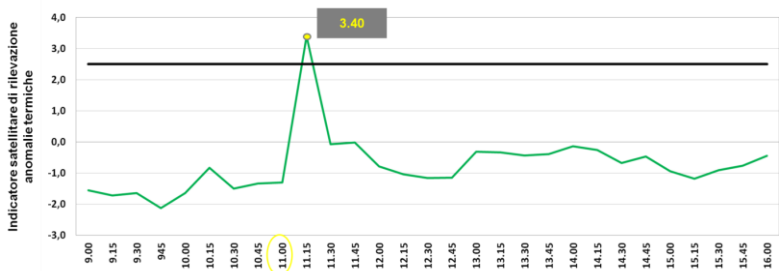
Short title of the service	R6 R5 Atmospheric aerosol investigation							
General field of application (See legend page II)	R1 <input type="checkbox"/>	R2 <input type="checkbox"/>	R3 <input type="checkbox"/>	R4 <input type="checkbox"/>	R5 <input checked="" type="checkbox"/>	R6 <input checked="" type="checkbox"/>	R7 <input type="checkbox"/>	R8 <input type="checkbox"/>
Activity (See legend page II)	r6.1 Natural disaster management r5.2 Air quality and humidity							
Short description of the service	In situ and ground based remote sensing techniques for atmospheric aerosol investigation and satellite data CAL/VAL							
Geographic Coverage (Global, local, regional)	From Local to Global							
Spatial Resolution	0.5-2.5m <input type="checkbox"/>	2.5–10m <input type="checkbox"/>	10-30 m <input type="checkbox"/>	30-100 m <input type="checkbox"/>	100-1000m <input checked="" type="checkbox"/>			
Frequency of update	Several times a day <input type="checkbox"/>	Daily <input checked="" type="checkbox"/>	Weekly <input checked="" type="checkbox"/>	Monthly <input type="checkbox"/>	Yearly <input type="checkbox"/>			
Current Users								
Possible Users	LRAs, Aviation agencies and companies, national authorities							
Strengths	High vertical resolution and accuracy, large area coverage and timeliness							
Reference image of the service	<div><p><i>Etna 2002 eruption</i></p><p>Potenza, 1 November, 13:20 UT – 2 November, 22:00 UT</p><p>Integrated use of a ground-based lidar system and satellite imagery to detect and monitor volcanic ash cloud: the case of Mt. Etna 2002 eruption.</p></div>							
References methodology	Pappalardo et al., 2004, <i>Raman lidar observations of aerosol emitted during the 2002 Etna eruption</i> . Geophysical Research Letters, 31, L05120. Pergola et al., 2004, <i>Automated detection of thermal features of active volcanoes by means of Infrared AVHRR records</i> . Remote Sensing of Environment, Volume 93, Issue 3, pp. 311-327.							
Service Status	Research/Pre-operational							
Contact	Gelsomina Pappalardo, Nicola Pergola							
Phone	(+39) 0971 427265, (+39) 0971 427268							
e-mail	gelsomina.pappalardo@imaa.cnr.it, nicola.pergola@imaa.cnr.it							

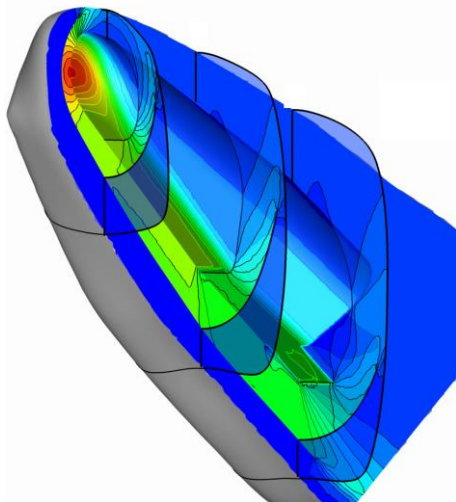


Short title of the service	R6 R5 R8 R7 Climate Change							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Activity <i>(See legend page II)</i>	r5.3 Water quality r6.1 Natural disaster management r7.3 Industrial risk management r8.2 Air quality							
Short description of the service	The theme of Climate Change, after the COP21 Paris Conference, is now recognized as critical for the future of the human beings. Water resources quality and availability are under pressure due to the effects of global warming. Forest areas, that play a fundamental role for greenhouse gas emissions mitigation, are at risk for droughts, fires and deforestation. A synoptic monitoring by Earth Observation provides the necessary land changes analysis and related indicators for supporting the new policies.							
Geographic Coverage <i>(Global, local, regional)</i>	Global, regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	EEA, DG Clima, DG Envi, DG Agri; worldwide Ministries of Environment; NGOs;							
Possible Users	Public and private Associations and Pressure Entities worldwide.							
Strengths	<ul style="list-style-type: none"><li>• Monitoring of excessive water consumption, especially for agriculture irrigation;</li><li>• Identification of illegal or unauthorized withdrawals from rivers and lakes;</li><li>• Assessment of pollution loads from industry and illegal discharges;</li><li>• Water availability (Balance) information at rivers basin scale;</li><li>• Early detection of incoming phases drought</li><li>• Monitoring the status of forests, fires and the deforestation/degradation</li></ul>							
Reference image of the service	<div></div> <p>Landslide and erosion from EO satellite imagery</p>							
References methodology	Satellite and airborne Earth observation as a key technology for the climate change monitoring, mitigation of effects and adaptation. The solution Integrates land cover/use maps from satellites imagery, agricultural estimates, GIS data, 3-dimensional Digital Terrain Models, weather information. Moreover, radar interferometry data may assess subsidence phenomena due to excessive withdrawals from ground waters.							
Service Status	Operational							
Contact	Pierluigi Adami							
Phone								
e-mail	Pierluigi.adami@e-geos.it							

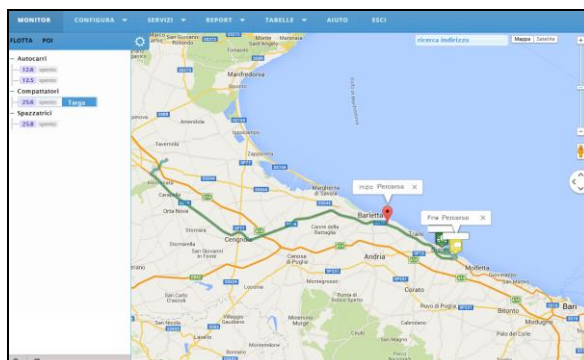
Short title of the service	<div><div>R6</div><div>R7</div>Land movement monitoring</div>							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r6.1 Natural disaster management r7.1 Transport network management							
Short description of the service	Geophysical and EO techniques development and application for land movement detection and monitoring							
Geographic Coverage <i>(Global, local, regional)</i>	Local							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users								
Possible Users	Civil protection, LRAs							
Strengths	High accuracy in characterization of sub-soil							
Reference image of the service	<div><p>Electrical Resistivity Tomography surveys for investigating ground deformation: the case study of Satriano di Lucania (Potenza, Italy)</p></div>							
References methodology	Perrone A., Lapenna V., Piscitelli S. (2014). Electrical resistivity tomography technique for landslide investigation: A review. Earth-Science Reviews 135, 65–82.							
Service Status	Research							
Contact	Angela Perrone							
Phone	(+39) 0971 427282							
e-mail	angela.perrone@imaa.cnr.it							


Short title of the service	R6 R7 Oil spill timely detection							
General field of application (See legend page II)	R1 <input type="checkbox"/>	R2 <input type="checkbox"/>	R3 <input type="checkbox"/>	R4 <input type="checkbox"/>	R5 <input type="checkbox"/>	R6 <input checked="" type="checkbox"/>	R7 <input checked="" type="checkbox"/>	R8 <input type="checkbox"/>
Activity (See legend page II)	r6.5 Maritime surveillance r7.4 Maritime surveillance							
Short description of the service	The company can provide a system for the timely detection of oil spill based on the integration of visible (only during daytime) and thermal data (both daytime and night times conditions), acquired by polar and geostationary platforms.							
Geographic Coverage (Global, local, regional)	From Local to Global							
Spatial Resolution	0.5-2.5m <input type="checkbox"/>	2.5-10m <input type="checkbox"/>	10-30 m <input type="checkbox"/>	30-100 m <input type="checkbox"/>	100-1000m <input checked="" type="checkbox"/>			
Frequency of update	Several times a day <input checked="" type="checkbox"/>	Daily <input type="checkbox"/>	Weekly <input type="checkbox"/>	Monthly <input type="checkbox"/>	Yearly <input type="checkbox"/>			
Current Users								
Possible Users	Environmental protection agencies, Oil Companies, Maritime Authorities							
Strengths	High frequency of observation, reliable detection							
Reference image of the service	<div><div><div>26/06/2005 11:00 GMT MODIS ch 1, TERRA satellite</div></div><div><div>26/06/2005 12:40 GMT MODIS ch 1, AQUA satellite</div></div><div></div></div> <p>Top: maps of illegal spills detected in the Tyrrhenian Sea, on two consecutive MODIS images Bottom: high resolution image (from Google Earth) of the detected illicit vessel discharge</p>							
References methodology	Grimaldi, C. S. L., Casciello, D., Coviello, I., Lacava, T., Pergola, N., and Tramutoli, V.: An improved RST approach for timely alert and Near Real Time monitoring of oil spill disasters by using AVHRR data, Nat. Hazards Earth Syst. Sci., 11, 1281-1291, doi:10.5194/nhess-11-1281-2011,2011							
Service Status	Pre-operational							
Contact	Giuseppe Mazzeo							
Phone	(+39) 0971 205047							
e-mail	info@geospazioitalia.it							

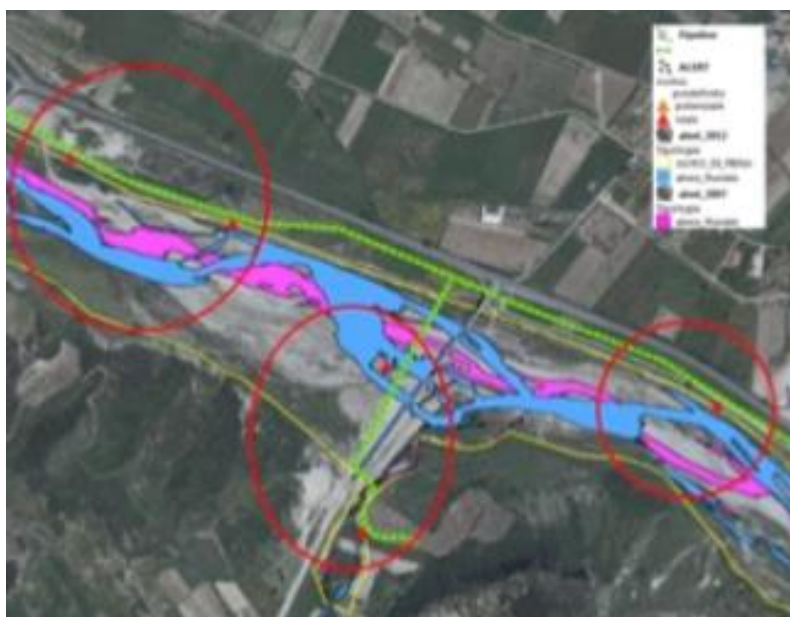
Short title of the service	<div><div>R6</div><div>R7</div><div>R5</div></div> Gas flaring emission estimation							
General field of application <i>(See legend page II)</i>	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Activity <i>(See legend page II)</i>	r5.2 Industrial risk management r6.3 Industrial risk management r7.3 Industrial risk management							
Short description of the service	Using satellite and in situ data for gas flaring volumes estimation for a single plant as well as for real time detection of thermal anomalies due to emergency conditions							
Geographic Coverage <i>(Global, local, regional...)</i>	From Local to Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Current Users								
Possible Users	Environmental protection agencies, national governments							
Strengths	Continuous and systematic information on gas flaring phenomenon; Independent information on data not provided by countries or oil companies							
Reference image of the service / product	<div><p>Regression model based on MODIS data to estimate gas flaring volume emissions;</p><p>Temporal trend of thermal signal for the Val d'Agri Oil Center plant, derived by SEVIRI image of January 13, 2014.</p></div>							
References methodology	Faruolo, M., Coviello, I., Filizzola, C., Lacava, T., Pergola, N., Tramutoli, V. <i>A satellite-based analysis of the Val d'Agri (South of Italy) Oil Center gas flaring emissions</i> . Nat. Hazards Earth Syst. Science, 14, 2783-2793, 2014.							
Service Status	Research							
Contact	Nicola Pergola							
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e-mail	nicola.pergola@imaa.cnr.it							


Short title of the service	R7 Aero-thermodynamic database of space vehicles							
General field of application (See legend page II)	R1 <input type="checkbox"/>	R2 <input type="checkbox"/>	R3 <input type="checkbox"/>	R4 <input type="checkbox"/>	R5 <input type="checkbox"/>	R6 <input type="checkbox"/>	R7 <input checked="" type="checkbox"/>	R8 <input type="checkbox"/>
Activity (See legend page II)	r7.1 Transport and Network Management							
Short description of the service	Computational aero-thermodynamics allows to simulate the forces and the thermal loads that are exerted on a space vehicle re-entering planetary atmospheres. The aero-thermodynamic database of the vehicle is build up by simulating several flight conditions along its re-entry trajectory.							
Geographic Coverage (Global, local, regional)	Does not apply							
Spatial Resolution	0.5-2.5m <input type="checkbox"/>	2.5–10m <input type="checkbox"/>	10-30 m <input type="checkbox"/>	30-100 m <input type="checkbox"/>	100-1000m <input type="checkbox"/>			
Frequency of update	Several times a day <input type="checkbox"/>	Day <input type="checkbox"/>	Weekly <input type="checkbox"/>	Monthly <input type="checkbox"/>	Yearly <input type="checkbox"/>			
Current Users	CRAS – Centro Ricerca Aerospaziale Sapienza <a href="http://websrv.ing.uniroma1.it/">http://websrv.ing.uniroma1.it/</a>							
Possible Users	Agenzia Spaziale Italiana, European Space Agency							
Strengths	Computer simulations are considerably cheaper than wind tunnel testing and allow to cover a wide range of flight conditions along the re-entry trajectory of the vehicle							
Reference image of the service	 <p>Illustration 1: Simulated pressure field around ESA's IXV re-entry vehicle</p>							
References methodology	M. Onofri, R. Paciorri, D. Cardillo, M. Grottadaurea, A. Bonfiglioli (2011) Numerical Simulations of flows past IXV re-entry vehicle at CRAS In: 3rd International ARA days, 2011, May 2-4, Arcachon, FR.							
Service Status	Operational							
Contact	Aldo Bonfiglioli							
phone	(+390971205203 +393293178364							
e-mail	aldo.bonfiglioli@unibas.it							



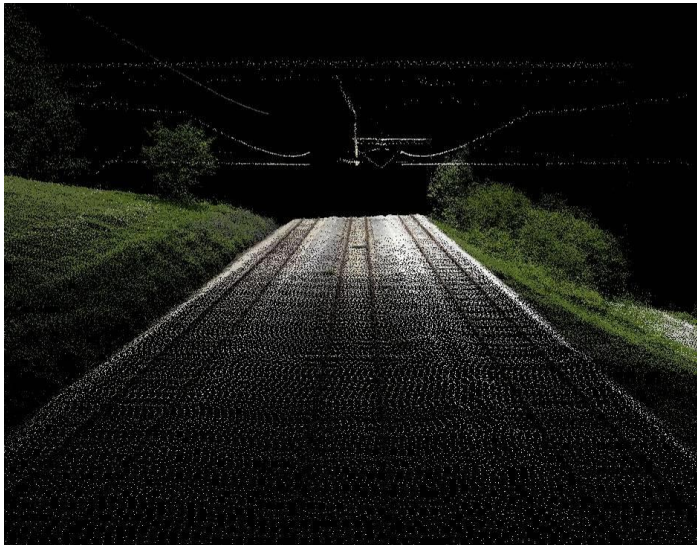
Short title of the service	R7 INNOVAMOBILITY, a fleet monitoring infomobility solution							
General field of application (See legend page II)	R1 <input type="checkbox"/>	R2 <input type="checkbox"/>	R3 <input type="checkbox"/>	R4 <input type="checkbox"/>	R5 <input type="checkbox"/>	R6 <input type="checkbox"/>	R7 <input checked="" type="checkbox"/>	R8 <input type="checkbox"/>
Activity (See legend page II)	r7.1 Transport network management							
Short description of the service	<p>INNOVAMOBILITY is a Web-based integrated information system designed and developed in order to optimize fleet monitoring.</p> <p>It consists of 3 main modules:</p> <ul style="list-style-type: none"><li>• <b>Operations Centre:</b> web portal with advanced fleet monitoring functionalities;</li><li>• <b>Operator:</b> Android application with features of sending alerts with geotagged photos;</li><li>• <b>Data Collector:</b> set of server-side applications appointed to the receipt and storage of data from mobile devices and vehicle fleets.</li></ul> <p>Latest generation GPS systems allow real-time monitoring, locating a vehicle and monitoring its route as well as key information regarding the vehicle's operation and activities;</p> <ul style="list-style-type: none"><li>○ vehicle status (on/off, speed, location)</li><li>○ daily or historical routes,</li><li>○ stops with engine on/off,</li><li>○ visited POI;</li><li>○ fuel level.</li></ul> <p>The data is accessible through the Innovamobility website, guaranteeing the monitoring and management of the company's vehicle fleet and activities.</p>							
Geographic Coverage (Global, local, regional)	From Local to Global							
Spatial Resolution	0.5-2.5m <input checked="" type="checkbox"/>	2.5–10m <input type="checkbox"/>	10-30 m <input type="checkbox"/>	30-100 m <input type="checkbox"/>	100-1000m <input type="checkbox"/>			
Frequency of update	Several times a day <input checked="" type="checkbox"/>	Daily <input type="checkbox"/>	Weekly <input type="checkbox"/>	Monthly <input type="checkbox"/>	Yearly <input type="checkbox"/>			
Current Users	Companies specialized in logistics, Public and Private Transport, Safety, Citizen sectors.							
Possible Users								
Strengths	Flexibility, Speed, Accuracy, Cost-effectiveness, Ease of use, Multi-access platform.							
Reference image of the service	 <p>INNOVAMOBILITY – View of vehicle's route with trip start/finish</p>							
Reference methodologies	Fleet management of Transport and Logistics companies; Latest generation GPS systems; State-of-the-art web-based platform; Google Maps; Android /iOS Mobile Apps; Detailed Reporting functionalities (tachograph, total distance covered; Temperature control monitoring (pharmaceutical); Organ Transplant Monitoring.							
Service Status	Operational, on the market							
Contact	Massimo Veglia							
Phone	(+39) 3460327851							
e-mail	veglia@consorzio-innova.it							

Short title of the service	R7 Monitoring of infrastructures							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r7.3 Industrial risk management							
Short description of the service	Static and dynamic monitoring as well as non-destructive monitoring of infrastructures such as: bridges, viaducts, buildings, churches and any other infrastructure of particular artistic value, industrial infrastructures and wind farms.							
Geographic Coverage (Global, local, regional)	From Local to Global							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Daily	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Current Users	Public administration, Oil&Gas Companies, Managing Authority (highways, water main, etc.)							
Possible Users	Regional and National Civil Protection, Superintendence of Cultural Heritage							
Strengths	Flexibility, Speed, Accuracy, Cheapness							
Reference image of the service	 <p>Example of vibration measurement of a bell tower</p>							
References methodology	Assessment of building degradation and structural health; Vibration measurement of a bell tower.							
Service Status	Operational, on the market							
Contact	Andrea Di Pasquale							
Phone	(+39) 0835 307760							
e-mail	dipasquale@consorzio-innova.it							

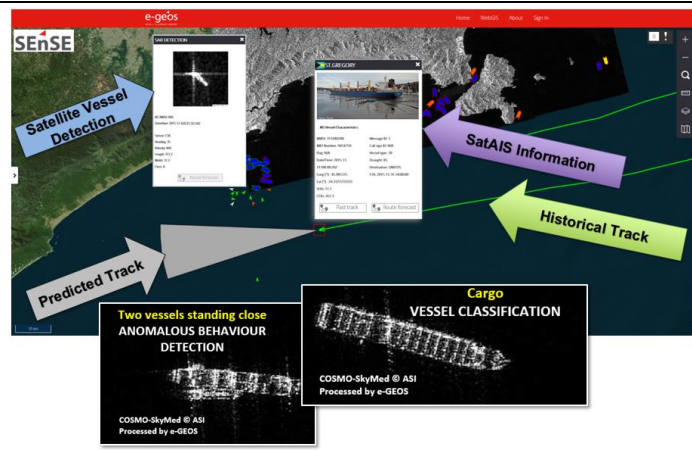
Short title of the service	R7 Oil&Gas - Pipelines							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r7.1 Transport and Network management.							
Short description of the service	We offer a change detection service along pipelines, mapping changes on a specific buffer zone, to identify possible new or growing critical situations, such as: roads, excavations, buildings, consistent leakages, wet zones, new cultivation types, vegetation anomalies or encroachment.							
Geographic Coverage (Global, local, regional)	Local, regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Confidential							
Possible Users	Oil & GAS Companies, Territory Management Agencies							
Strengths	<ul style="list-style-type: none"><li>Fast access to the highest resolution data available from satellite and airborne.</li><li>Easy data access through secure WebGIS.</li></ul>							
Reference image of the service	 <p>Pipelines and Infrastructure monitoring</p>							
References methodology	<ul style="list-style-type: none"><li>Fast access to the highest resolution data available from satellite and airborne: the service is based on the analysis of high resolution multitemporal ortho imagery data sets.</li><li>Easy data access through secure webGIS: we offer the possibility to integrate customer's ancillary information, and, by detecting several information without direct survey, our service provides a reduction of overall costs; in addition, a customized web service for product delivery is available, with easier and more efficient information sharing at client's premises.</li></ul>							
Service Status	Operational							
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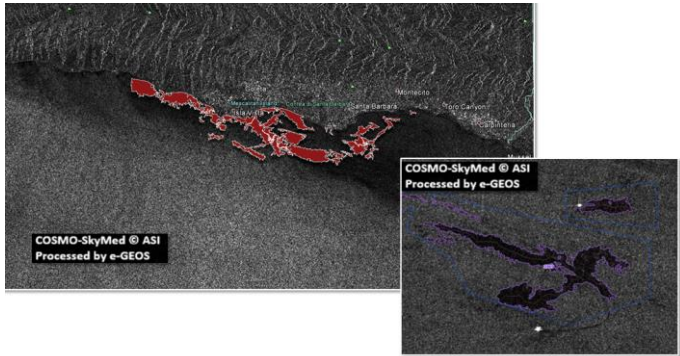
Short title of the service	R7 Railways & Roads							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r7.1 Transport and Network management.							
Short description of the service	Transport Entities need to use Remote Sensing, GIS and advanced technology to monitor safety and security, both of railway and highways/roads. The solution is based on the provision of data and services through the use on remote sensing data. In fact, remote sensing imageries allow to monitor transportation systems, providing several types of information that can be managed through GIS base platforms. Remote Sensing and derived products support planning, construction and operations phases.							
Geographic Coverage (Global, local, regional)	Local, regional.							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a	Day	Weekly	Monthly	Yearly			
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Rete Ferroviaria Italiana (RFI) (GIS web application), Russian Railways (Displacement Monitoring), ANAS (GIS Interface and Noise Monitoring),							
Possible Users	Railways and Roads managers, Civil engineering companies							
Strengths	<ul style="list-style-type: none"><li>• ORTHOIMAGES AND DEM: orthoimages and Digital Elevation Models allow a full digital description of an area.</li><li>• GIS-BASED WEB APPLICATION: Web GIS user interface for infrastructure management, User-friendly, fully tailored and integrated into the customer systems</li><li>• DISPLACEMENT MONITORING: our solution enables the detection of slow movements occurring along and close to the infrastructures. This solution allows to collect displacement measures over points scattered on the territory, with a density that, in urban areas, can exceed 20,000 points per squared kilometre.</li><li>• NOISE MONITORING: our solution provides noise estimation along the linear infrastructure extended to a strip up to 1 kilometre wide centred on the infrastructure.</li></ul>							
Reference image of the service	<div></div> <p style="text-align: center;">Displacement Monitoring</p>							
References methodology	<ul style="list-style-type: none"><li>• ORTOIMAGES AND DEM: aerial or satellite techniques.</li><li>• GIS-BASED WEB APPLICATION: based on open-source or most common proprietary echnologies</li><li>• DISPLACEMENT MONITORING: satellite techniques, e-GEOS proprietary processing technology (PSP-IFSAR).</li><li>• NOISE MONITORING: noise maps are generated starting from a detailed 3D reconstruction based on the processing of satellite data; noise point measures along the infrastructures are then spatialized through specialized software.</li></ul>							
Service Status	Operational							
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Short title of the service	R7 Transport Infrastructural Management System							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r7.1 Transport network management.							
Short description of the service	Advanced data processing, also in near real time, of transport infrastructural networks using a multi-sensor airborne platform integrating a full waveform laser scanner, a system of hyper-spectral sensors (VNIR, SWIR), a thermal camera and one or more high resolution digital cameras (one oriented downward and the others in oblique forwards). for developing, updating and maintaining of the transport information system.							
Geographic Coverage (Global, local, regional)	From local to global							
Spatial Resolution	0.5-2.5m		2.5–10m		10-30 m		30-100 m	
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Frequency of update	Several times a day		Day		Weekly		Monthly	
	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	
Current Users	Italferr S.p.A.							
Possible Users	Public bodies or private companies operating in railways and roads networks management or construction.							
Strengths	<ul style="list-style-type: none"><li>✓ High accuracy and precision of measures;</li><li>✓ quickly survey of huge areas;</li><li>✓ data capture acquired with difficulty on the ground;</li><li>✓ versatility of final products useful for various applications.</li></ul>							
Reference image of the service	 <p>High resolution aerial image of railways corridor</p>							
References methodology	Significant Project: Aerial “LiDAR” (Light Detection and Ranging) location survey of major infrastructure objects of Serbian Railways within the project “Implementation of a System for Analysis of Track Condition in Serbia” (Contractor: Italferr S.p.A.).							
Service Status	Operational							
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Short title of the service	<b>R7 Vessel detection</b>							
General field of application <i>(See legend page II)</i>	R1 <input type="checkbox"/>	R2 <input type="checkbox"/>	R3 <input type="checkbox"/>	R4 <input type="checkbox"/>	R5 <input type="checkbox"/>	R6 <input type="checkbox"/>	R7 <input checked="" type="checkbox"/>	R8 <input type="checkbox"/>
Activity <i>(See legend page II)</i>	r7.4 Maritime Surveillance r7.1 Transport and Network management							
Short description of the service	Vessel detection: maritime traffic monitoring for surveillance and security applications, thanks to the integration of vessels detection by satellite data (SAR and optical) and vessels identification data. The service relies on a multi-mission (different SAR and optical satellite missions) and multi-platform (shore based, satellite and aerial systems) approach. On a User perspective, the service allows the surveillance operational costs optimization, allowing the monitoring of very wide areas in a short time, without personnel and assets displacement or maintenance costs.							
Geographic Coverage <i>(Global, local, regional)</i>	Global, local, regional							
Spatial Resolution	0.5-2.5m <input checked="" type="checkbox"/>	2.5–10m <input checked="" type="checkbox"/>	10-30 m <input checked="" type="checkbox"/>	30-100 m <input checked="" type="checkbox"/>	100-1000m <input type="checkbox"/>			
Frequency of update	Several times a day <input checked="" type="checkbox"/>	Day <input checked="" type="checkbox"/>	Weekly <input checked="" type="checkbox"/>	Monthly <input checked="" type="checkbox"/>	Yearly <input checked="" type="checkbox"/>			
Current Users	Institutional Users (maritime authorities) and privately held companies (Oil&Gas, shipping).							
Possible Users	Insurance Companies							
Strengths	<ul style="list-style-type: none"><li>• Widely validated service</li><li>• 24/7 all year round operations</li><li>• NRT capability worldwide</li><li>• Information Completeness and Flexibility</li></ul>							
Reference image of the service	 <p style="text-align: center;">Vessel detection</p>							
References methodology	<ul style="list-style-type: none"><li>• e-GEOS <b>SEnSE</b> (Smart Eyes on the SEas) Maritime Platform - Near Real Time Target detection tool: Our proprietary tool integrates Satellite data with ancillary data to deliver integrated vessels detection reports.</li><li>• Maritime Situation Awareness products delivered in NRT (i.e. within 30 minutes from the satellite sensing time).</li><li>• COSMO-SkyMed – particularly thanks to the COSMO-SkyMed SAR satellites constellation, e-GEOS service offers reliable and very frequent (on a daily basis) data acquisitions worldwide, regardless of cloud coverage/solar illumination conditions.</li><li>• WebGIS User interface: all information are also easily accessible through an innovative and secure OGC compliant WebGIS interface.</li></ul>							
Service Status	Operational							
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Short title of the service	R7 R2 R5 R6 Oil Spill							
General field of application (See legend page II)	R1	R2	R3	R4	R5	R6	R7	R8
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Activity (See legend page II)	r2.5 Coastal Management r2.6 Protected Areas Management r5.3 Water Quality r6.1 Natural Disaster Management r6.5 Maritime Surveillance r7.4 Maritime Surveillance							
Short description of the service	Oil Spill detection: the service provides information on oil substances detected at sea, by integrating satellite-derived data and ancillary information, such as met-ocean data. E-GEOS service chain also extracts from SAR satellite data essential information on wind fields, which are provided along with the reports in order to support the oil spill drifting analysis. This service is provided for: <ul style="list-style-type: none"><li>Man-made oil discharges at sea detection, including the vessel detection information to identify potential polluters</li><li>Disaster events monitoring, such as incidents occurring to oil rigs and/or vessels</li><li>Natural seepage detection (natural oil release from the seabed)</li></ul>							
Geographic Coverage (Global, local, regional)	Global, local, regional							
Spatial Resolution	0.5-2.5m	2.5–10m	10-30 m	30-100 m	100-1000m			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Frequency of update	Several times a day	Day	Weekly	Monthly	Yearly			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Current Users	Institutional Users (maritime authorities) and privately held companies (Oil&Gas, shipping).							
Possible Users	Insurance Companies							
Strengths	<ul style="list-style-type: none"><li>Widely validated service</li><li>24/7 all year round operations</li><li>NRT capability worldwide</li><li>Information Completeness and Flexibility</li></ul>							
Reference image of the service	<div></div> <p><i>Oil Spill detection</i></p>							
References methodology	<ul style="list-style-type: none"><li>e-GEOS <b>SEnSE</b> (Smart Eyes on the <b>SE</b>as) Maritime Platform - Near Real Time Oil Spill detection tool: Our proprietary tool integrates Satellite data with ancillary data to deliver integrated oil spill and (where required) vessels detection reports.</li><li>Oil Spill detection integrated products delivered in NRT (i.e. within 30 minutes from the satellite sensing time).</li><li>COSMO-SkyMed – particularly thanks to the COSMO-SkyMed SAR satellites constellation, e-GEOS service offers reliable and very frequent (on a daily basis) data acquisitions worldwide, regardless of cloud coverage/solar illumination conditions.</li><li>WebGIS User interface: all information are also easily accessible through an innovative and secure OGC compliant WebGIS interface.</li></ul>							
Service Status	Operational							
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## PROVIDER INDEX

	<b>CMD</b> p. 4
	<b>CNR-IMAA</b> p. 3, 16, 22, 35, 62, 64, 66
	<b>Consortio INNOVA</b> p. 2, 26, 68
	<b>DIAN SRL</b> p. 53, 58, 69
	<b>DIGIMAT</b> p. 13, 20
	<b>e-Geos</b> p. 10, 27, 31, 33, 34, 37, 47, 48, 63, 70, 71, 73, 74
	<b>ENEA</b> p. 6, 8, 14, 17, 18, 29, 36
	<b>GEOCART S.P.A.</b> p. 1, 5, 7, 9, 11, 12, 15, 24, 25, 30, 32, 38, 39, 40, 45, 46, 50, 56, 57, 60, 72
	<b>GEOSPazio ITALIA SRL</b> p. 21, 28, 43, 61, 65
	<b>GSI</b> p. 19
	<b>MEOGEO</b> p. 41, 42
	<b>UNIBAS-SI</b> p. 23, 44, 49, 51, 52, 54, 55, 59, 67

## PROVIDER INFO

**CMD:** <http://www.cmdengine.com>

**CNR-IMAA:** <http://www.imaa.cnr.it>

**Consortio INNOVA:** <http://www.consortio-innova.com>

**DIAN SRL:** <http://www.dianalysis.eu>

**DIGIMAT:** <http://www.digimat.it>

**e-Geos:** <http://www.e-geos.it>

**ENEA:** <http://www.enea.it>

**GEOCART S.P.A.:** <http://www.geocartspa.it>

**GEOSPazio ITALIA SRL:** <http://www.geospazioitalia.it>

**GSI:** <http://www.grupposi.eu/>

**MEOGEO:** <http://www.meogeo.it/>

**UNIBAS-SI:** <http://ingegneria.unibas.it>

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