



Coordinating and integrating state-of-the-art
Earth Observation Activities in the regions of
North Africa, Middle East and Balkans
and Developing Links with GEO related initiatives
toward GEOSS

GEO-CRADLE Dissemination Event | Bucharest

EO Projects in the Balkans



Igor Milosavljevic



Contents

1.



2.



LandSense

A Citizen Observatory and Innovation Marketplace
for Land Use and Land Cover Monitoring



Reinforcing CAP: peRsonalised sERVICES in support of the implementation of the Common Agricultural Policy

*INSO-1-2015: ICT-enabled open government
2016-2018*

1.



www.recap-h2020.eu



Common Agricultural Policy of the EU

- ***Cross compliance & Greening*** – environmental concerns are integrated as a condition for receiving direct payments
- **Agro-payment agencies** must intensively monitor, and incur high costs
- **Farmers** find regulations difficult to understand and apply

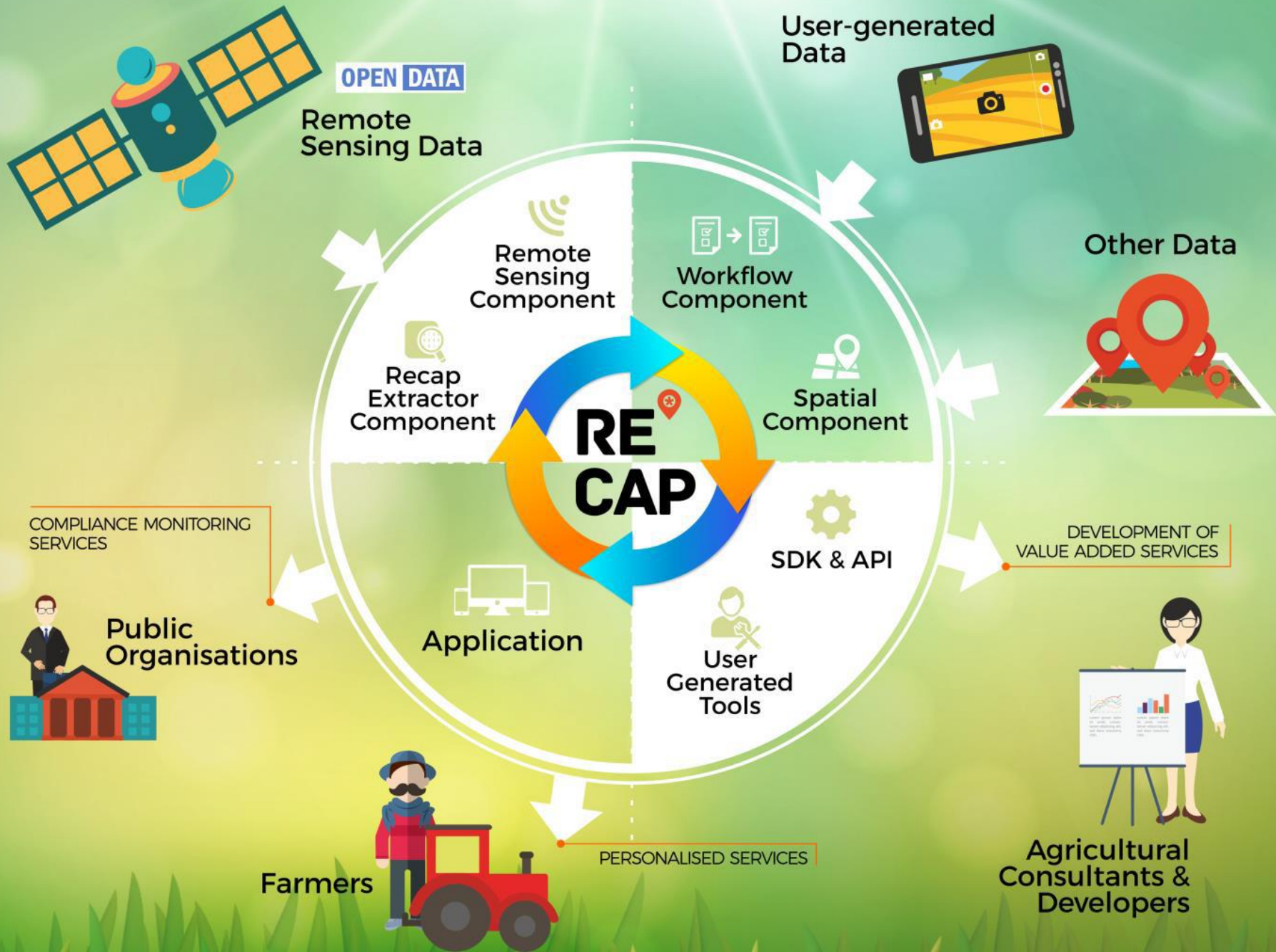


Objectives

Develop and test an ICT platform for delivery of public services that will enable improved CAP implementation

- Efficiency for **Paying Agencies**/inspectors
 - lower cost for field inspections
 - transparency
- Simplify for **farmers**
 - personalized services
 - early alerts for (non)/conformity
- Added value services from **agricultural consultants & developers**
 - access to open data
 - API/SDK





Partners & Pilot Locations



KPIs	Total
# of farmers testing RECAP	635
# of inspections with RECAP	305
# of spot checks with RECAP	115
Lower admin cost for payment agencies	>25%
Reduction of admin burden for farmers	>25%



PAYMENT AND CONTROL AGENCY
FOR GUIDANCE AND GUARANTEE COMMUNITY AIDS
(O.P.E.K.E.P.E.)



The project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 693171.



RECAP Web Platform



- Farm Profile
- CC Rules - Checklist
- My Documents
- Maps
- E-learning
- Inspection results
- Activities

Report a problem

Farm Profile

Dashboard > Farm Profile



Farmer Michael Robinson



								Participation in RDP measures							
Order	Block	Parcel	Crop	Direct payment area	Direct payment area (not paid)	EFA	VLC support	Natura2000	Organic farming	Natural constraints areas	Additional info	Certify	GMO	Land management law	Documents (Double declaration)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		1	224			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
2			225			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
3		4	611			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
4			522			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Total:															

Previous

Next

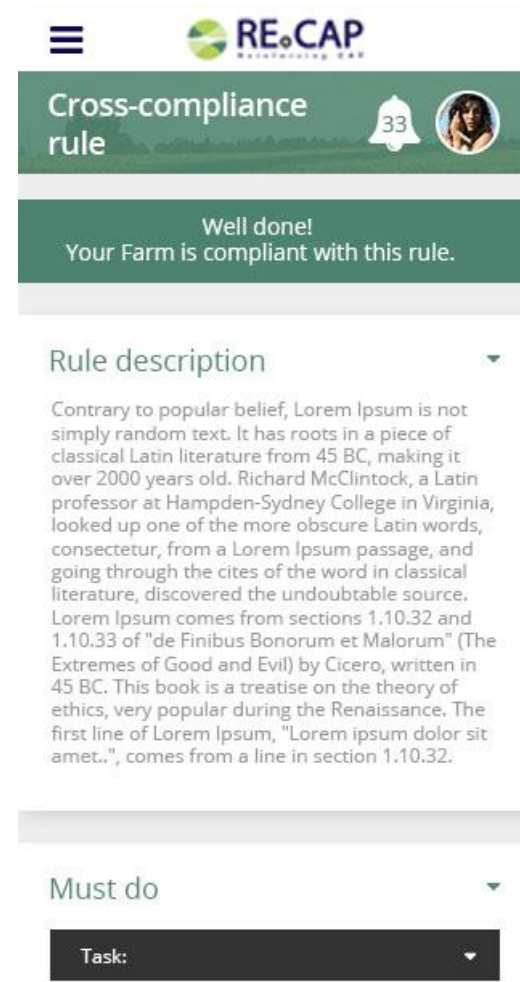
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RECAP Web Platform





LandSense:

A Citizen Observatory and Innovation Marketplace for Land Use and Land Change Monitoring

*SC5-17-2015: Demonstrating the concept of 'citizen observatories'
2016-2020*

2.



LandSense

A Citizen Observatory and Innovation Marketplace
for Land Use and Land Cover Monitoring

<http://www.landsense.eu>



Bringing together citizens and earth observation data to...

Create new knowledge about our planet

Innovate citizen-powered science for impact

Kickstart an EO-enabled crowdsourced economy

Support environmental decision making

LandSense

17 Partner Institutions

9 Countries

5 Research institutes, 5 SMEs, 3 NGOs,
3 Public Authorities, 1 Professional Network



September 2016 → August 2020



The University of
Nottingham



INOSENS



umweltbundesamt^U
ENVIRONMENT AGENCY AUSTRIA



FELIX STEINBEIS-
TRANSFERZENTRUM



UNIVERSITÄT
HEIDELBERG
ZUKUNFT
SEIT 1386





WAGENINGEN
UNIVERSITY & RESEARCH



UNIVERSITY
AMSTERDAM



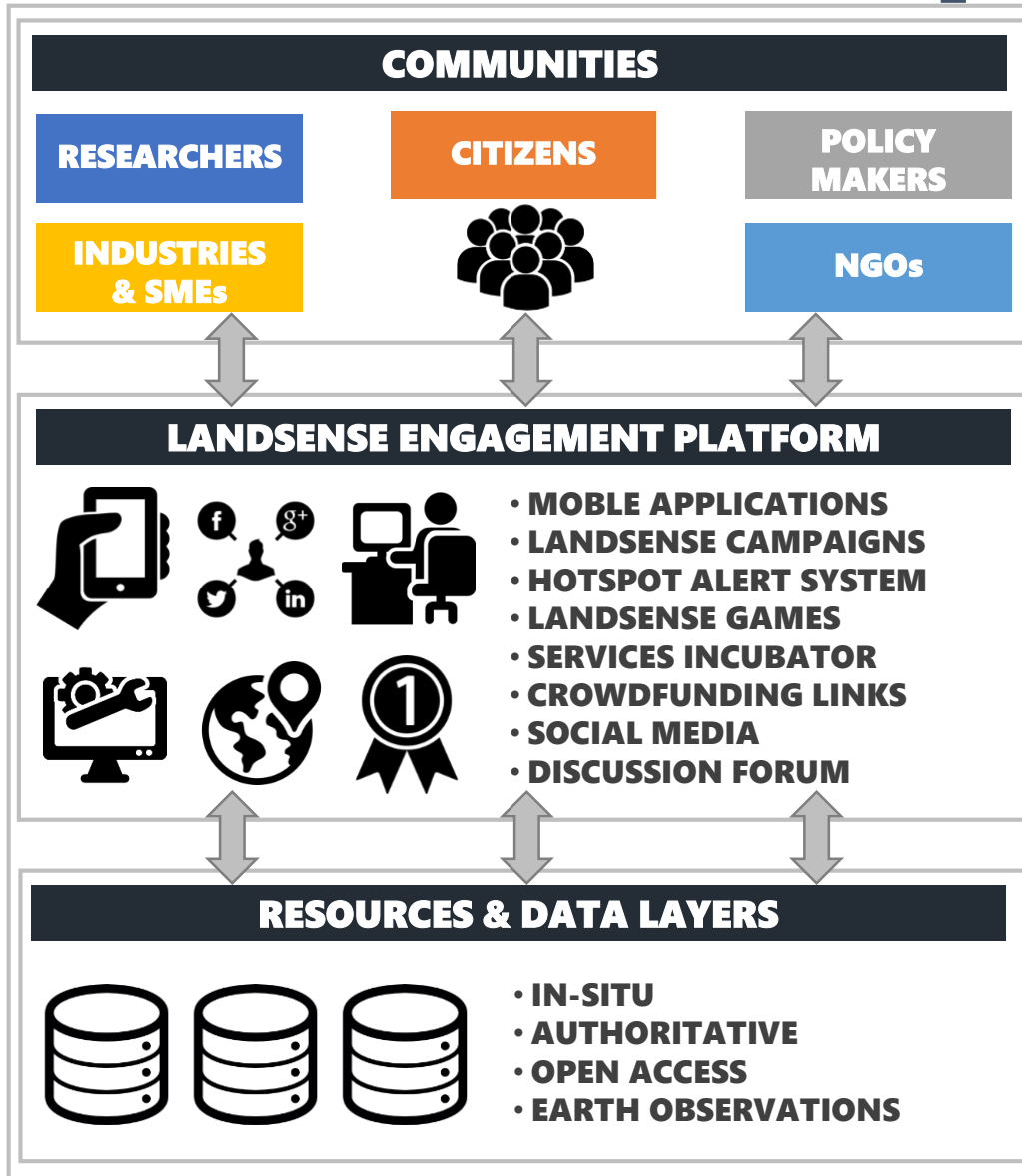
LandSense Objectives

-  **Assess** current practices, user requirements and barriers of present LULC technologies and illustrate the potential of in-situ citizen observatories
-  **Engage** key stakeholders in the LandSense platform, which facilitates the collection, integration, management, and contextualized presentation of LULC information

LandSense Objectives

- 3 Deliver** four innovative and scalable LULC services and implement a strategy detailing the sustainable exploitation of these technologies post-project
- 4 Demonstrate** the quality, confidence and added value of in-situ citizen-driven observations for improved LULC monitoring through demonstration cases across Europe and beyond

LandSense Concept



LANDSENSE SERVICES

**LANDSENSE
DEMONSTRATION CASES**

LandSense Services



LandSense Campaigner



Farmland Support



Change Detector



Quality Assurance & Control

Demo Cases



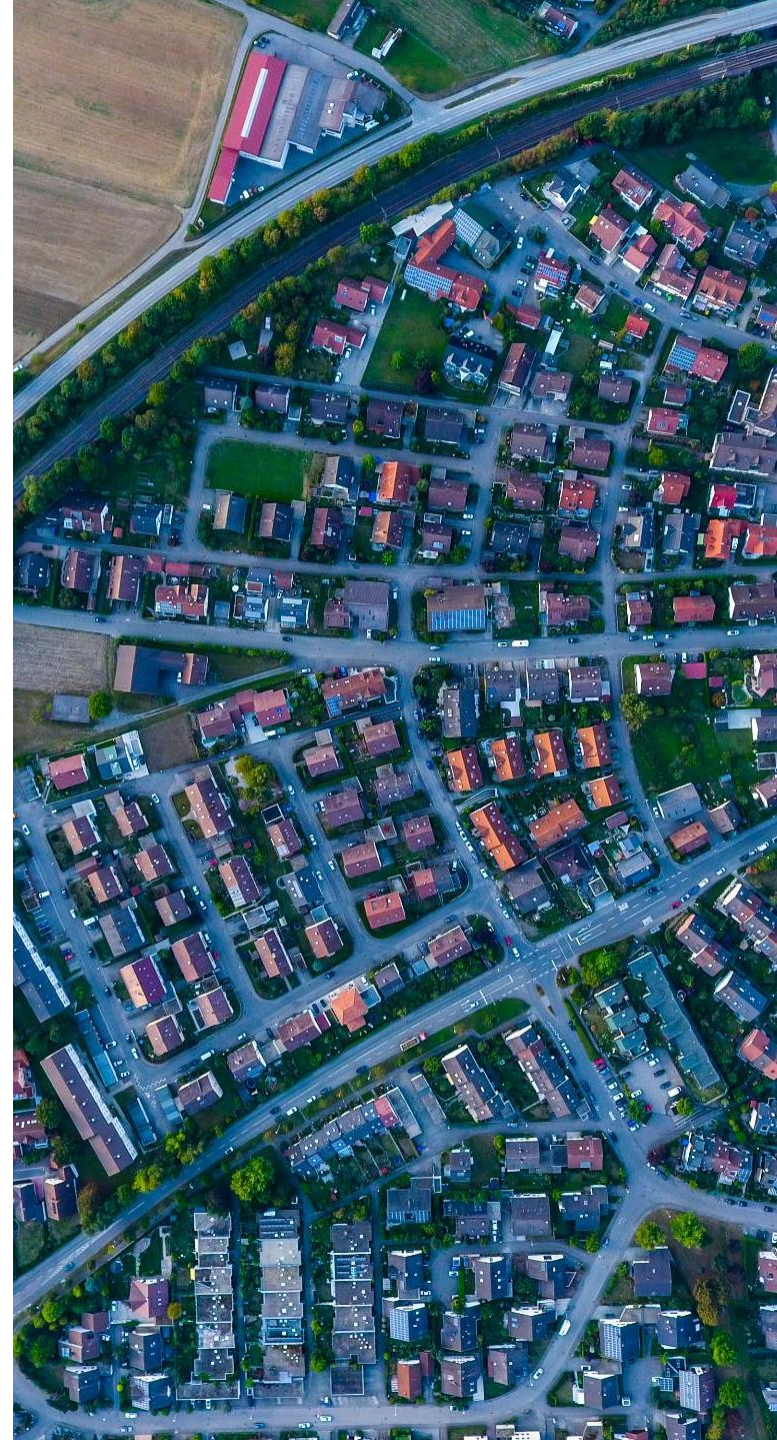
Urban & Rural Landscape Changes



Agricultural Land Use

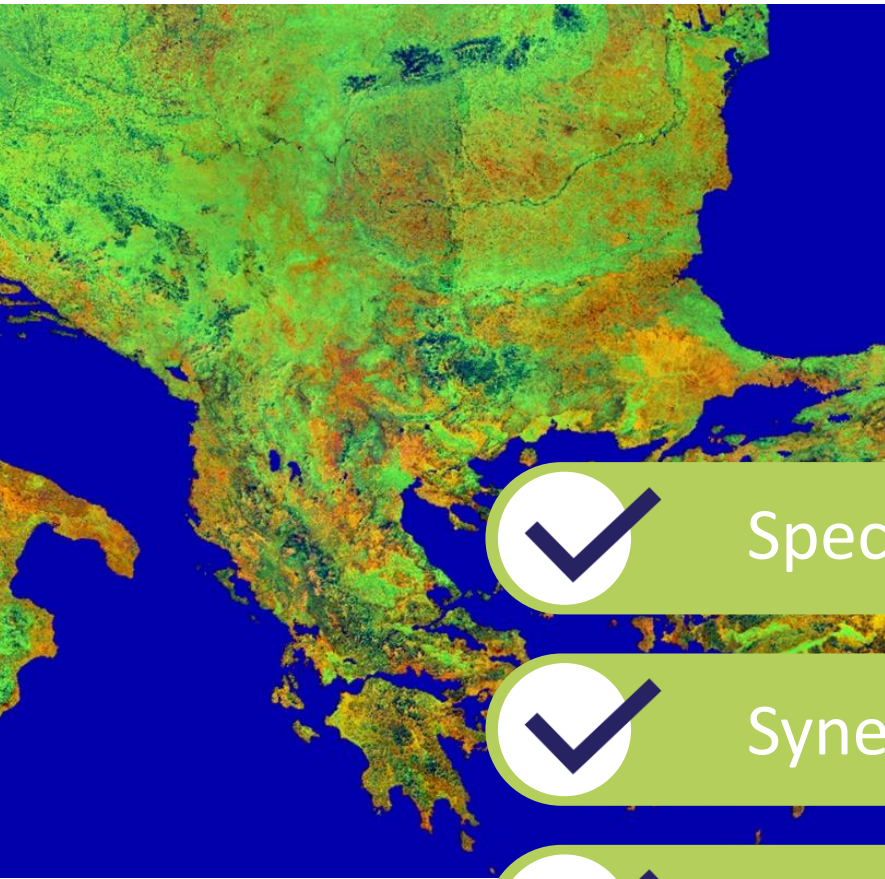


Habitat & Forest Monitoring





Recipe for success



Specialized in a strategic sector



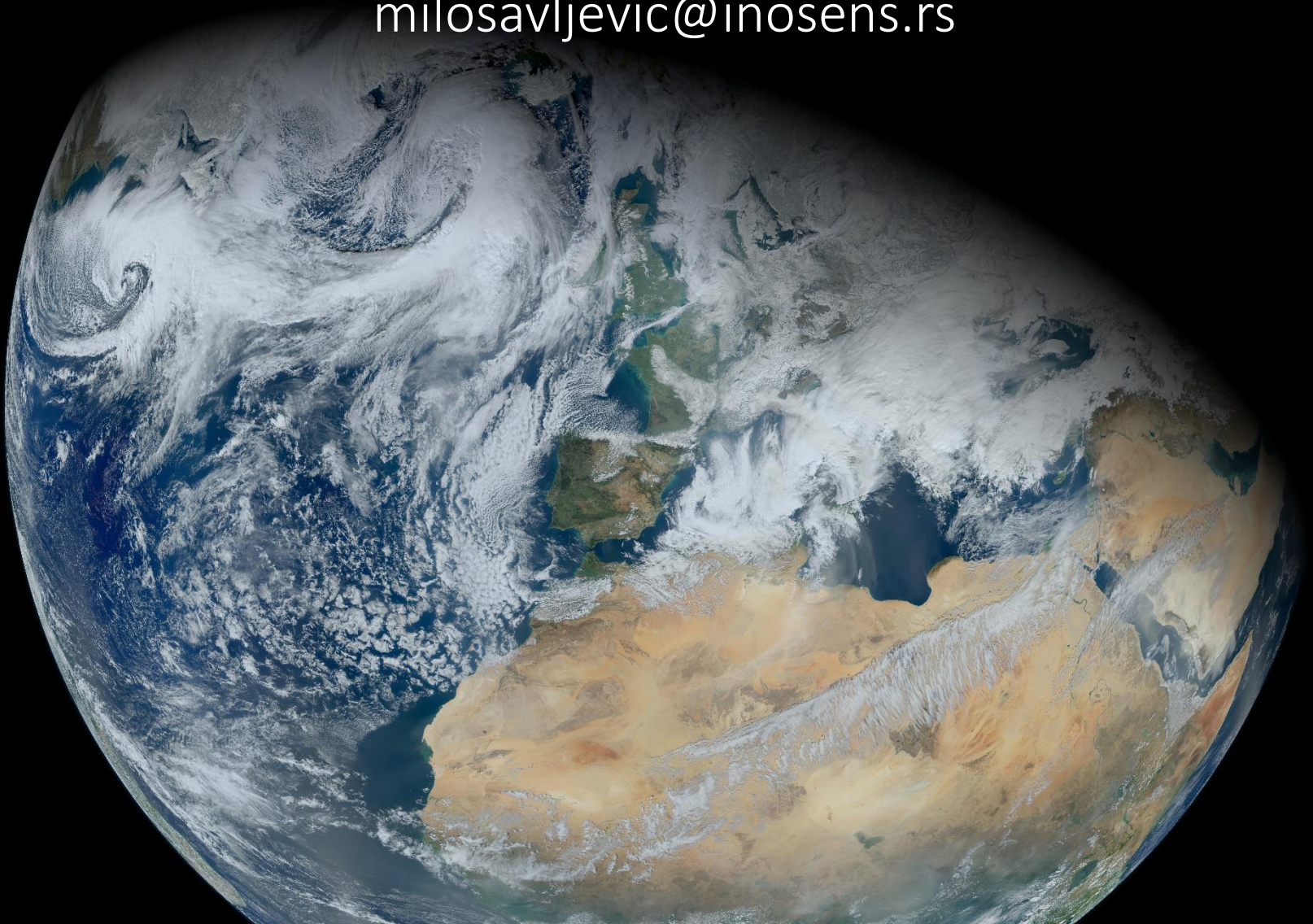
Synergistic partnerships



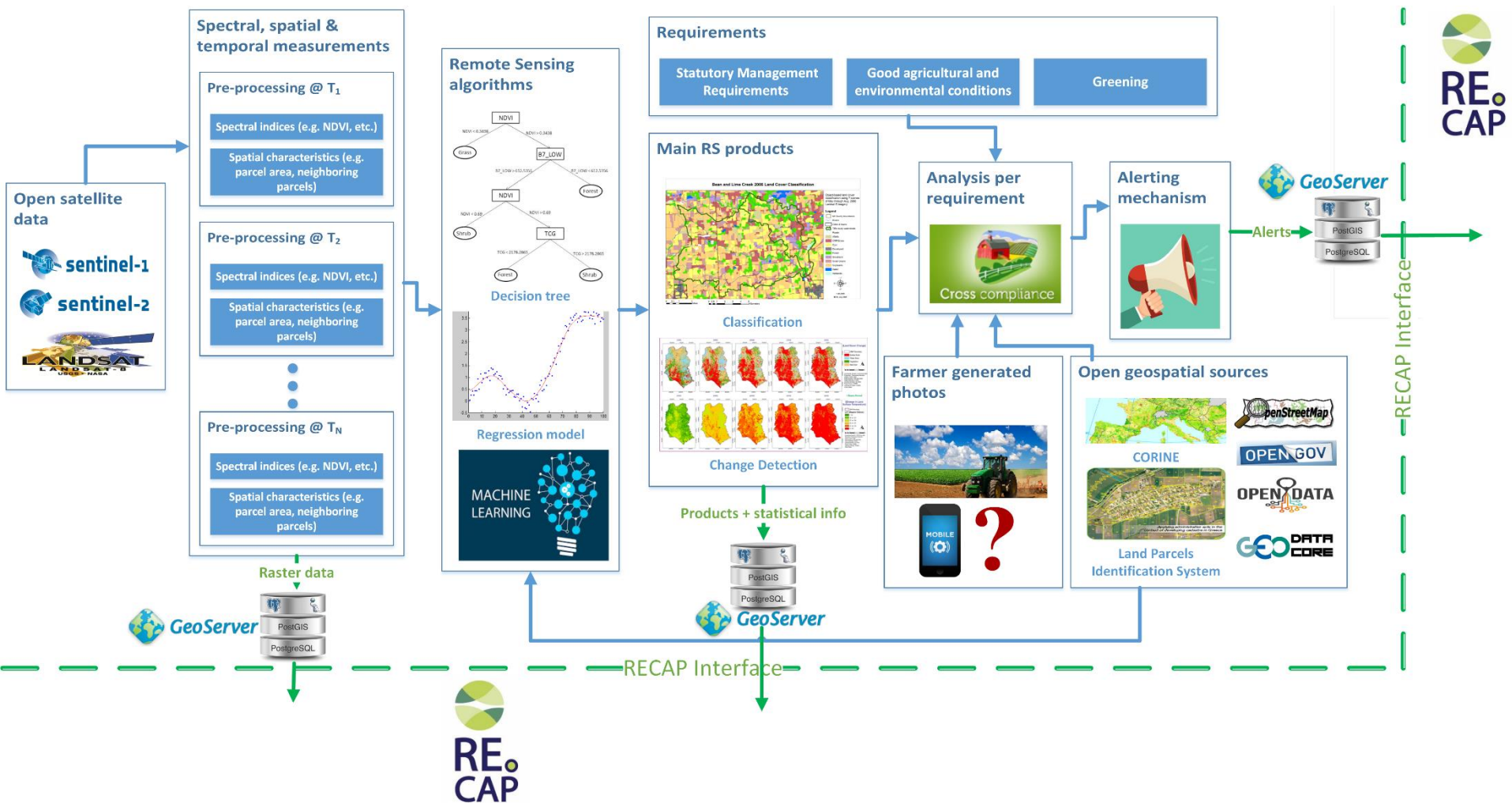
Focus on value & impact

Thank you

milosavljevic@inosens.rs



Remote Sensing Component



Expected Impacts



Transparency/trust



Cost-effective support tool



Improved CAP implementation



The project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 693171.

What are the objectives of the project?

Overall Objective

to develop and pilot test a platform for the delivery of public services that will enable the improved implementation of the CAP

- to simplify CAP administrative procedures
- to support farmers to better comply with CAP requirements
- to increase the transparency of cross compliance monitoring procedures
- to enable the reuse of data by agricultural consultants and developers for delivering their own added value services for farmers




Possible areas to be checked via open RS data

Ranked priority areas to be checked via open satellite data (e.g. S-1 & S-2)

Soil/Carbon: Soil Organic matter	Crop residue burning restrictions (may not burn crop residues unless there is a plant health reason)	GAEC 6
Biodiversity: Crop Diversity	Diversification of crops	Greening 1
Soil/Carbon: Grassland	Maintenance of permanent grassland	Greening 2
Soil/Carbon: Soil cover	Maintain soil cover (unless agronomic justification)	GAEC4
Water: Nitrates	Area treated with N	SMR1
Water: Abstraction	Permits required for irrigation	GAEC2
Biodiversity: Habitats	Maintenance of semi-natural habitats	SMR2, SMR3
Landscape Features	Protecting scheduled ancient monuments	GAEC7
Water: Nitrates	Must inform of new slurry installation construction	SMR1
Water: Buffer Strips	Location of watercourses	GAEC1



RECAP Web Platform



RECAP
Reinforcing CAP

[Farm Profile](#)
[CC Rules - Checklist](#)
[My Documents](#)
[Maps](#)
[E-learning](#)
[Inspection results](#)
[Activities](#)

[Report a problem](#)

CC Rules - Checklist

Dashboard > CC Rules - Checklist

33 Farmer Michael Robinson

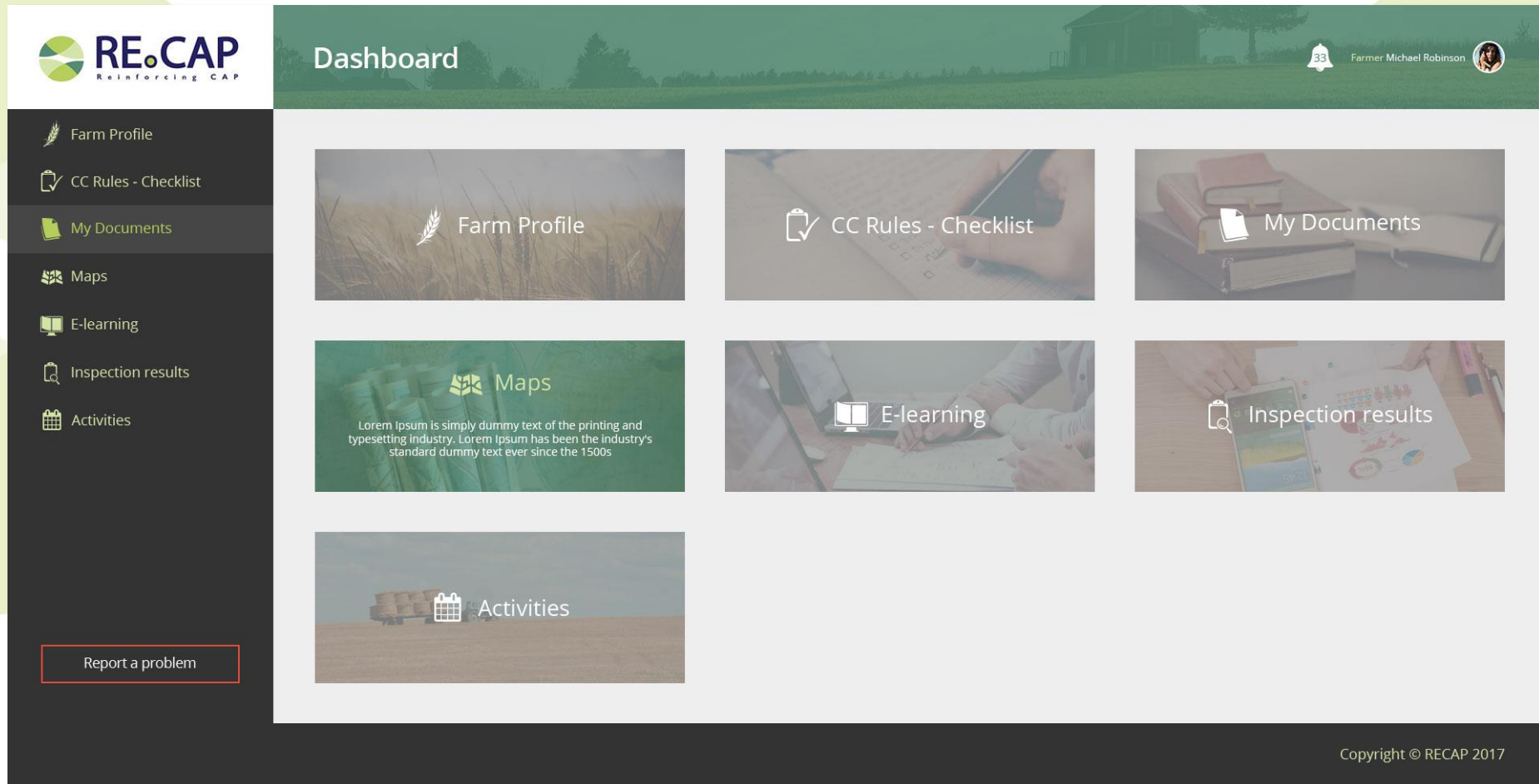
Self Assessment

<div>- GAEC 1 -</div> <div>Inspection completed - no problems identified</div>	<div>- GAEC 2 -</div> <div>Inspection completed - no problems identified</div>	<div>- GAEC 3 -</div> <div>Inspection completed - no problems identified</div>
<div>- GAEC 4 -</div> <div>Inspection completed - no problems identified</div>	<div>- GAEC 5 -</div> <div>Inspection completed - no problems identified</div>	<div>- GAEC 6 -</div> <div>Inspection completed - no problems identified</div>
<div>- GAEC 7 -</div> <div>Breach Detected</div>	<div>- SMR 1 -</div> <div>Inspection completed - no problems identified</div>	<div>- SMR 2 -</div> <div>Inspection completed - no problems identified</div>
<div>- SMR 3 -</div> <div>Inspection completed - no problems identified</div>	<div>- SMR 4 -</div> <div>Not Inspected</div>	<div>- SMR 5 -</div> <div>Inspection completed - no problems identified</div>
<div>- SMR 6 -</div> <div>Inspection completed - no problems identified</div>	<div>- SMR 7 & 8 -</div> <div>Inspection completed - no problems identified</div>	<div>- SMR 9 -</div> <div>Not Inspected</div>
<div>- SMR 10 -</div> <div>Inspection still on-going</div>	<div>- SMR 11-13 -</div> <div>Inspection completed - no problems identified</div>	


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RECAP Web Platform





RECAP Web Platform


**RECAP**
Reinforcing CAP

CC Rule - GAEC 6
Dashboard > CC Rules - Checklist > CC Rule - GAEC 6

Farmer Alan Ford





 Farm Profile

 CC Rules - Checklist













 My Documents

Report a problem

GAEC 6 - Maintaining the level of organic matter in soil

Description	Comments	Documents	Images	Compliance
Maintain soil organic matter through appropriate practices.				

Must do

Tasks	Comments	Documents	Images	Date	Time	Checked
If burning residue for plant health reasons, have 1000l of water available, capable of spraying at 100l per minute; have at least 5 fire beaters available, fire extinguisher on all vehicles.						
Incorporate ash into the soil within 24 hours.						
Before burning warn Environmental health department						



Motivation

- Improving the quality of remotely-sensed LULC products
- Uncovering the potential of citizen science and crowdsourcing at the intersection of LULC & EO
- Lowering cost and extension of in-situ component of LULC monitoring and management
- Business innovation and bringing technologies to market



A person's hand with purple nail polish holds a silver smartphone over a laptop keyboard. The background is a blurred office setting. The text 'LandSense Services' is overlaid in white, bold, sans-serif font, with a thin white horizontal line underneath.

LandSense Services

LandSense Services

EXISTING ECOSYSTEM

GEO-WIKI
LACO-WIKI
FOTOQUEST
GEOPIEDIA
SENTINELHUB
CLEVERFARM
AGROSENSE
EODC
COBWEB



LANDSENSE SERVICES



A young boy is looking through a telescope mounted on a tripod. He is standing in a room with large windows that look out onto a lush green forest. The room is dimly lit, with light coming from the windows. There are some lamps and a wooden table in the background. The text "Demonstration Cases" is overlaid on the image in a large, white, bold font.

Demonstration Cases

Demo Cases



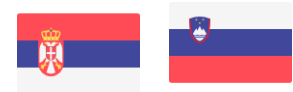
Complementing authoritative data sources

- Reducing costs on professional surveying
- Optimizing workflows of mapping agencies
- Opening up access to land take information



EO-driven services for farm management

- Lowering barriers to technology for farmers
- Creating an ecosystem of EO-based services
- Improving agriculture policy compliance

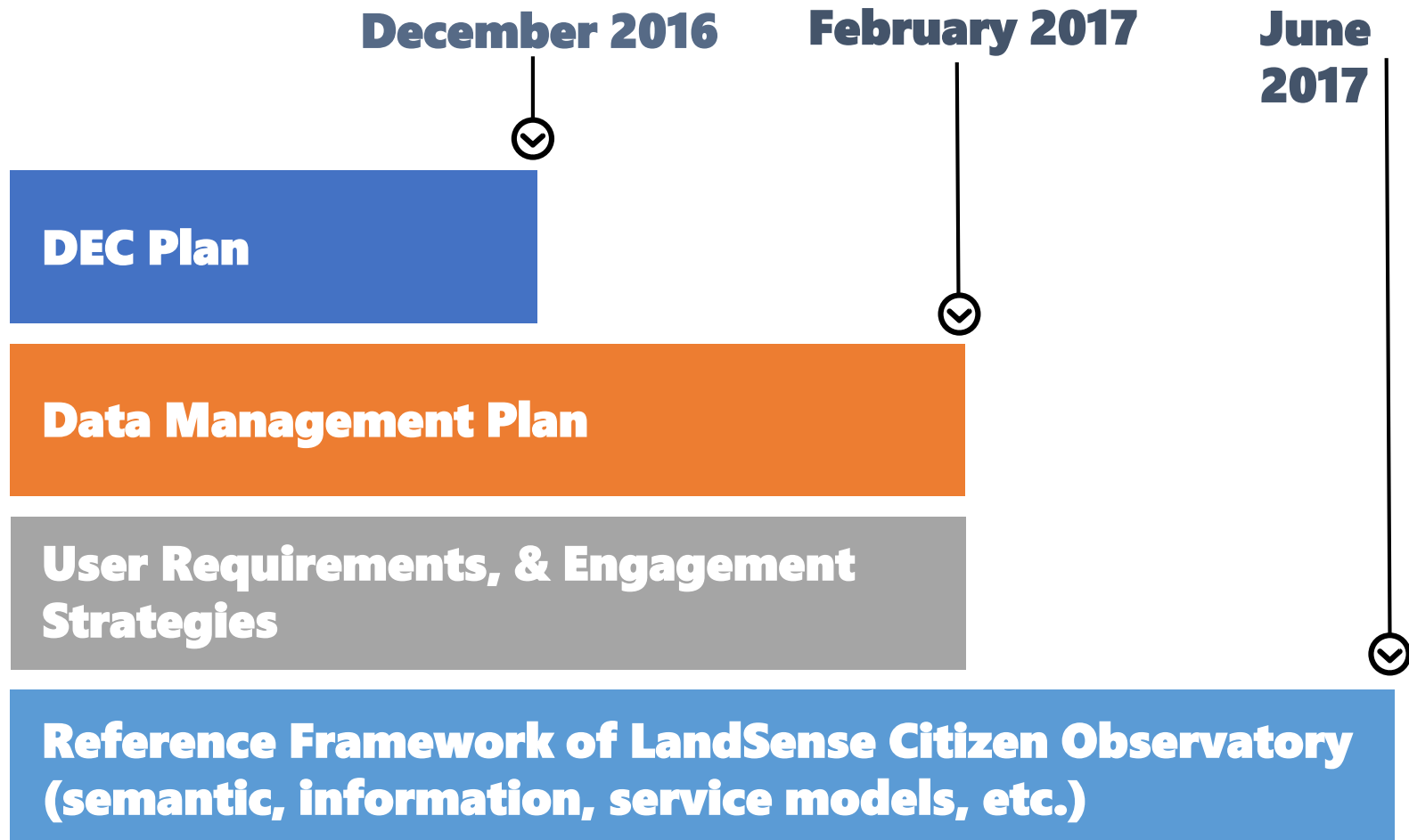


EO data for biodiversity conservation

- Adding LULC data into biodiversity databases
- Reducing habitat degradation and deforestation
- Opening up EO-data for forest monitoring



LandSense Outlook



Collaboration



LandSense can offer:

- Federated system of services
- Quality control and assurance
- Calibration/validation database for LULC
- ...



**How can we foster
collaboration
between the citizen
observatories?**





Balkan GEO Network: Towards Inclusion of Balkan Countries into Global Earth Observation Initiatives

*ENV.2010.4.1.4-1: Identification & networking of EO activities in the Balkan area
2010-2013*

1.

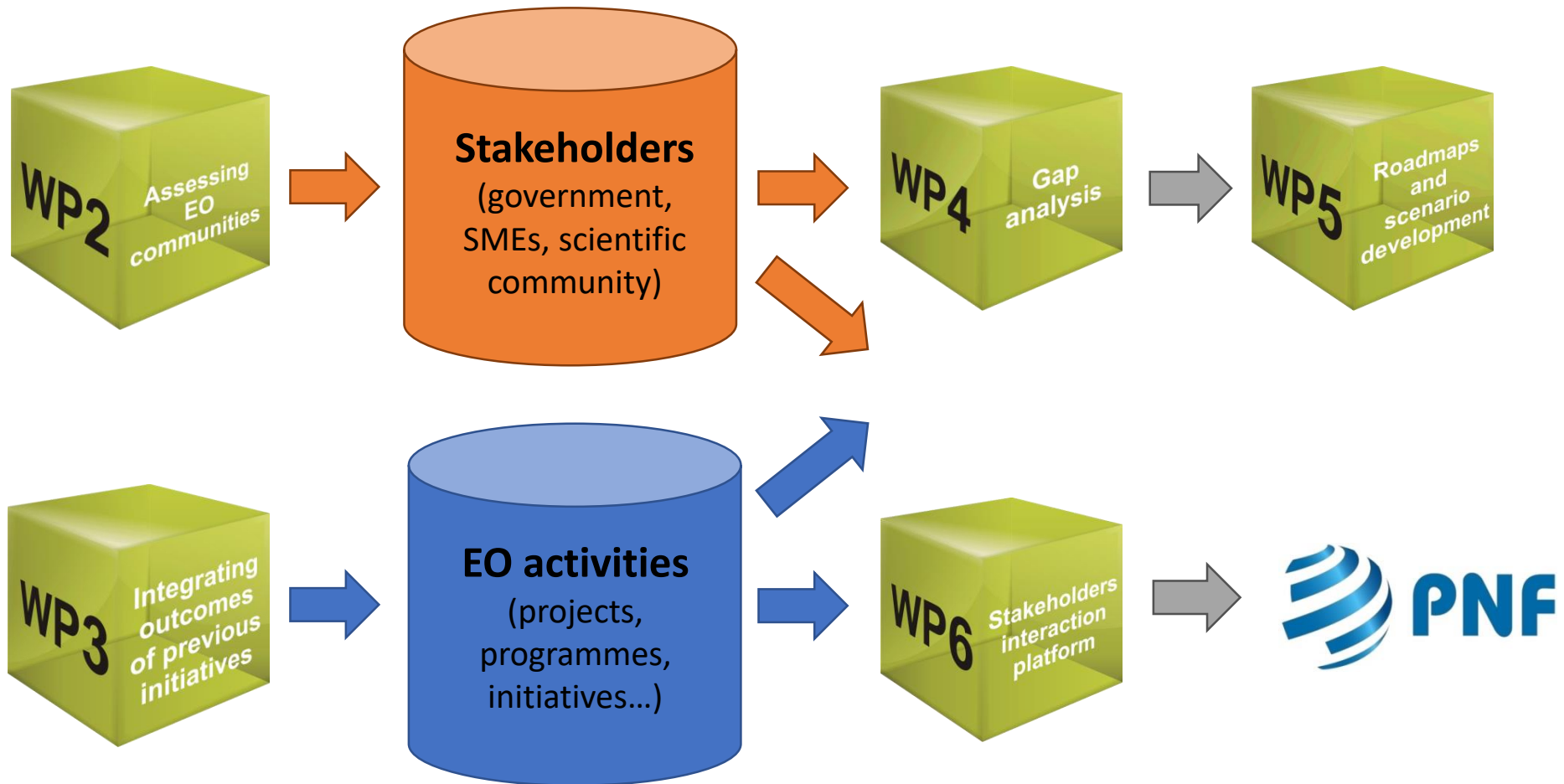
B.GN
BALKAN
GEO
NET

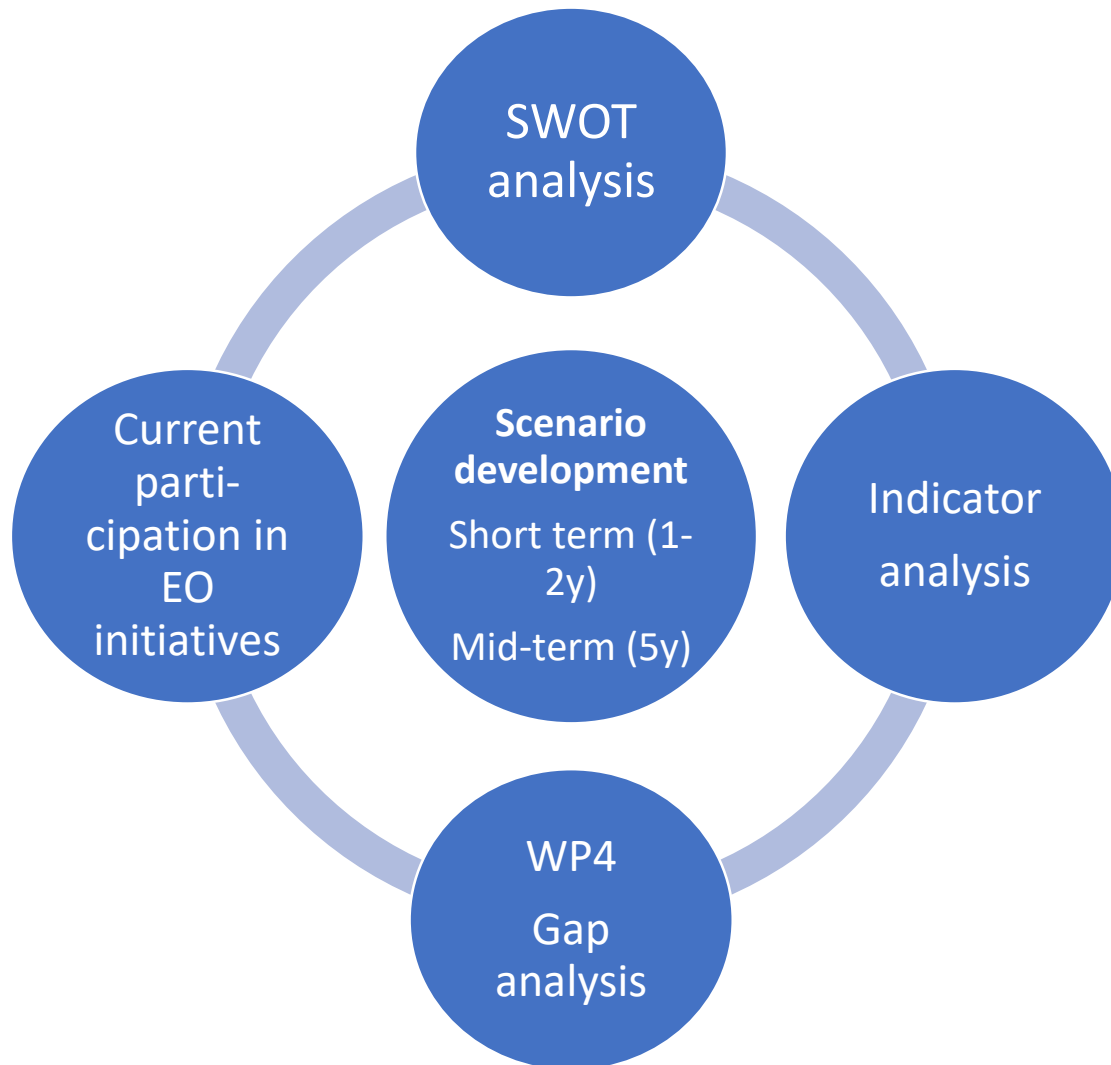


http://cordis.europa.eu/project/rcn/97148_en.html
<http://pnf.unist.hr/>

Towards inclusion of Balkan Countries into GEO initiatives

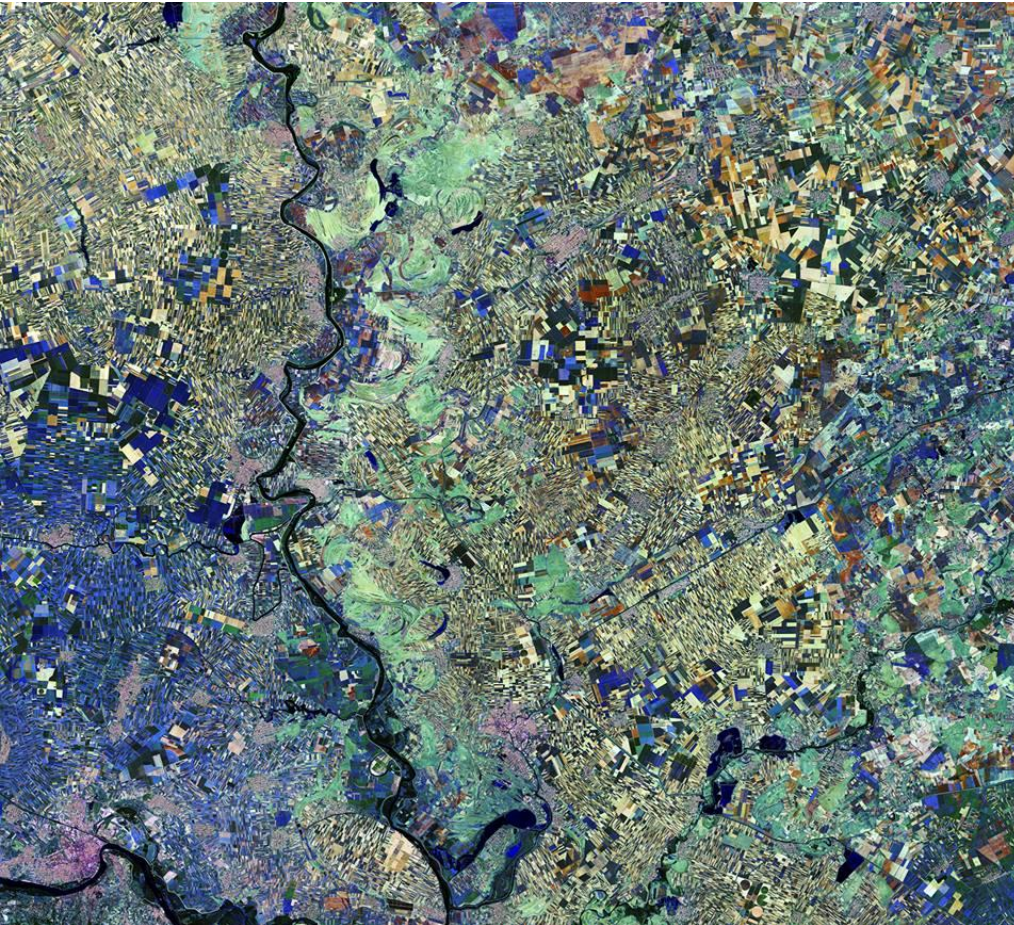








SWOT for Balkans as a Whole



Strengths

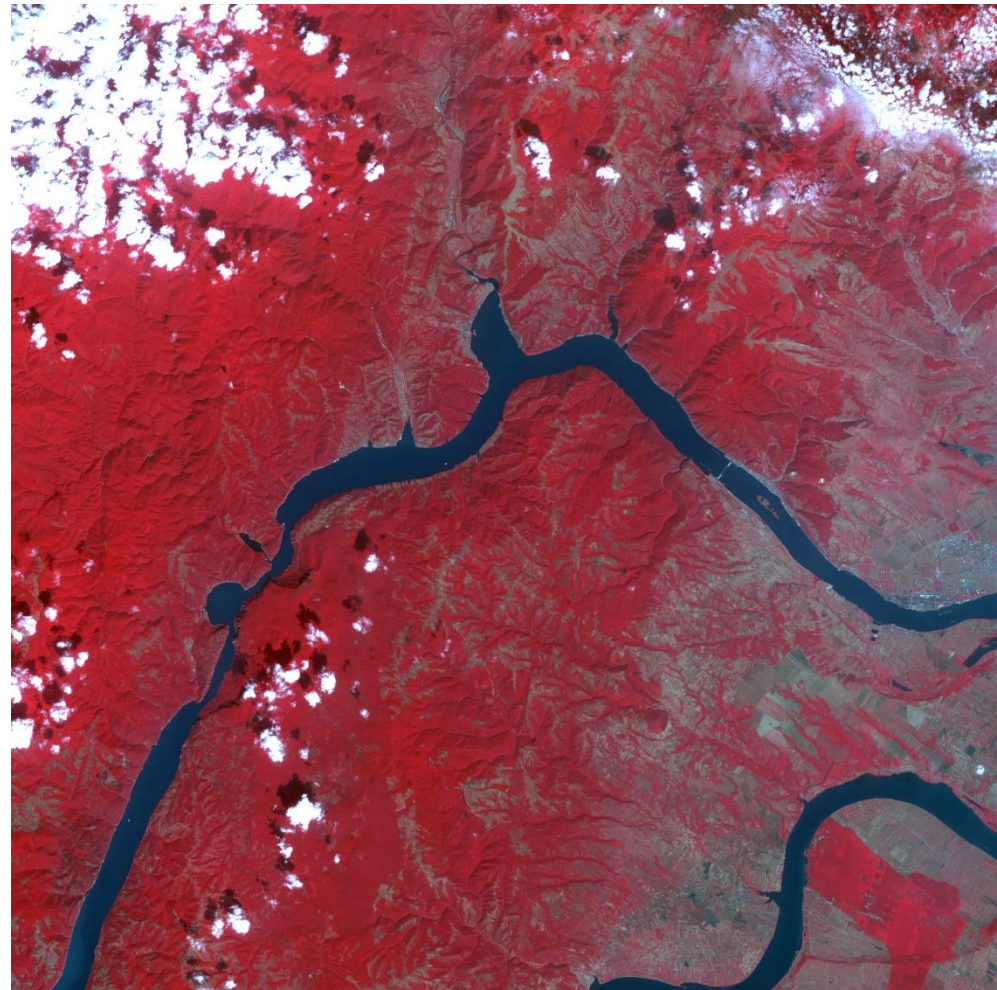
- Land monitoring, environmental monitoring, climate change and natural hazards are key EO applications for most Balkan countries
- Organizations involved in research programs or other EO related activities have already developed results and services in this field



SWOT for Balkans as a Whole

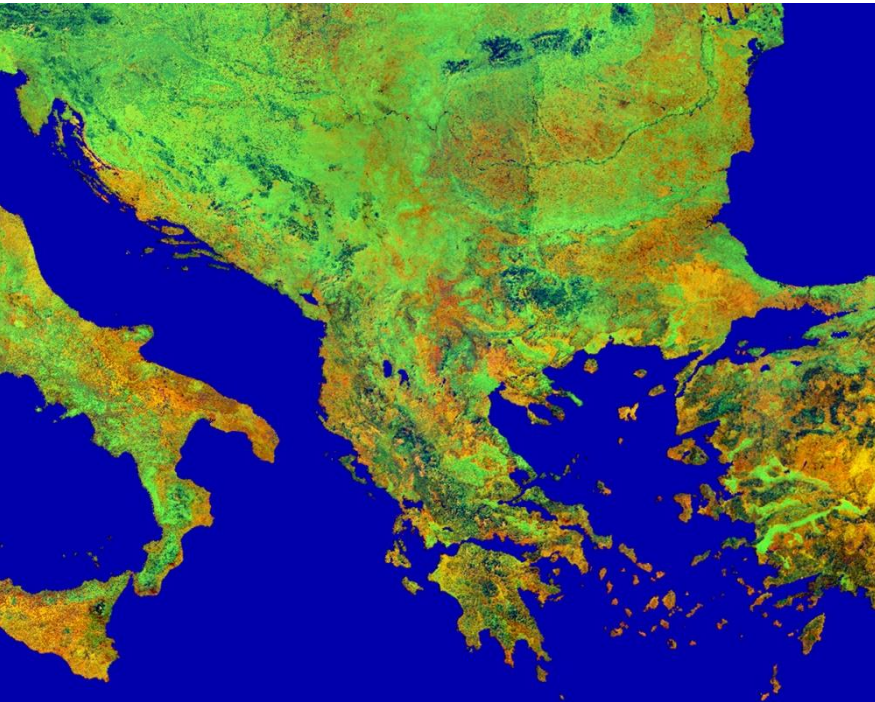
Weaknesses

- Interoperability between EO providers & users, nationally & regionally
- Use of research results for sustainable/innovative products
- Limited funding for EO related activities
- Low level of awareness on EO benefits
- Lack of EO national policies & priorities





SWOT for Balkans as a Whole



Opportunities

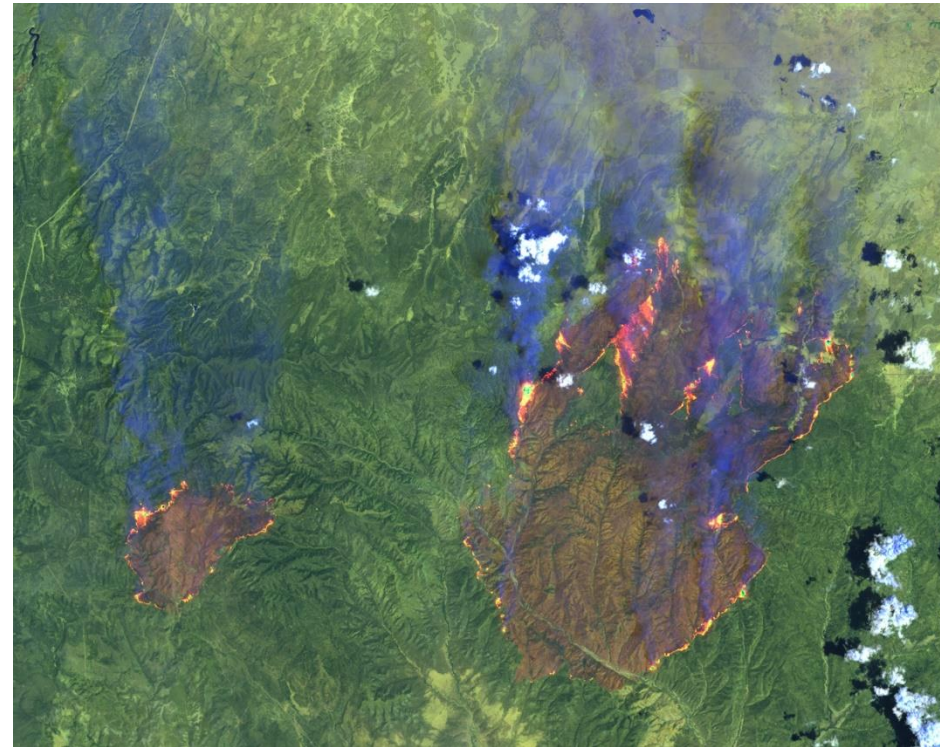
- Via European/global initiatives, collaboration among academic institutions is increasing
- Interest within specialized research organizations is increasing
- Networking between data providers nationally and regionally
- Laggard countries could learn from best practices study cases in stronger countries
- well trained or/and highly qualified EO personnel in public/private sector
- Most countries integrating into EU



SWOT for Balkans as a Whole

Threats

- Economic crisis along with already low or non existing national funding.
- Difficult access, cost of data, and not well defined distribution policies.
- Not all the countries have adopted EU standards for EO data, thus compatibility of data is disputed among different organizations at regional level.
- Collaboration among Balkan countries and ex-YU is weak and should be improved and increased, mainly in terms of sharing regional datasets
- The collaboration among academic institutions and decision makers for EO data development could be improved





Following BalkanGEONet Recommendations

BalkanGEONet results provide a good insight into the region

BalkanGEONet methodology for development of scenario and recommendations:

- Universally applicable
- Applicable on various scales
- Modifiable through selection of additional indicators

Life-long-learning programs in EO very much needed



Web Resources Available

www.balkangeo.net

- Project description: about, objectives, partners, work packages, etc.
- Info about workshops & trainings including material (e.g. presentations)
- Deliverables

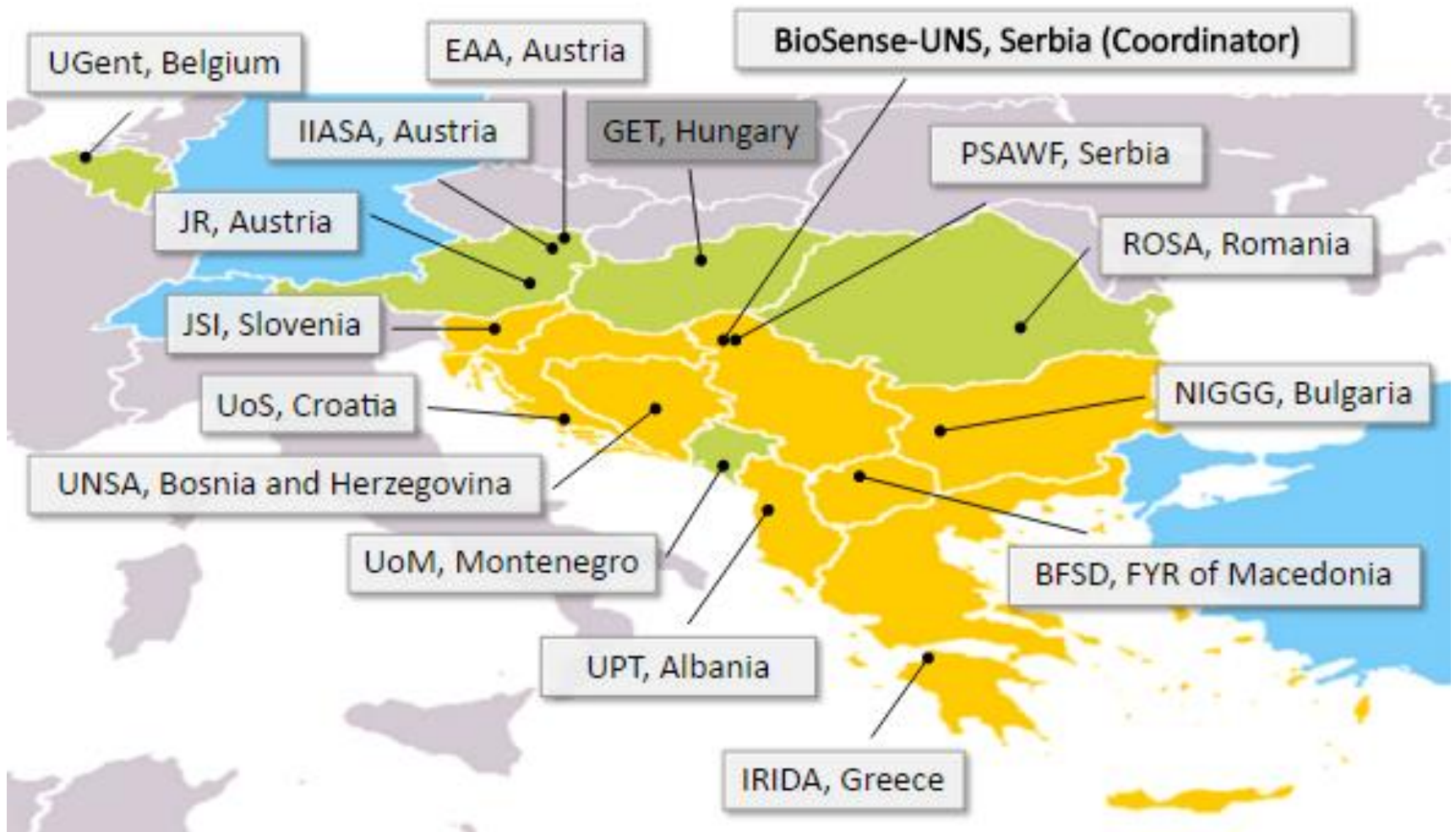
www.pnf.unist.hr

- Metadata on EO community and projects





Balkan GEO Net Partners





Main Goals



- To derive scenarios of participation of various Balkan countries in the global EO activities
- To assess their potential future contribution to EO
- In addition:
 - To derive scenarios of participation in ESA, EUMETSAT, etc.
 - To perform SWOT analysis
 - To present case studies and identify best practices



SWOT for Greece (example)

Population	11,290.785
Area	131,990 km ²
GDP per capita	\$26,293

Strengths	Weaknesses
<ul style="list-style-type: none"> ➤ Greek organizations have already obtained results and produced services in EO projects. ➤ Land monitoring, atmosphere – climate change, natural hazards and marine monitoring are key application areas for Greece. ➤ Greece draws profits from its participation in ESA. 	<ul style="list-style-type: none"> ➤ Greek EO organizations fail to transform good research results in innovative and sustainable products and services. ➤ There is a limited amount of national funding in EO related activities. ➤ There is a strong need for determination of EO policy on national level.
Opportunities	Threats
<ul style="list-style-type: none"> ➤ Greek organizations have acquired an adequate sufficient volume of EO data during the past five years. ➤ There are small scientific and technical teams with qualified EO personnel both in public as well as private organizations. ➤ The public awareness for Earth Observation has significantly increased. 	<ul style="list-style-type: none"> ➤ The potential role of Greece in Balkans, or South East Europe is at risk by the lack of an EO national policy. ➤ Greece may lose investments in the commercial EO service sector if there is not a clear national landscape with EO priorities and budget.



Participation in EO Initiatives

Example: Serbia



GEO



EUMETSAT



INSPIRE



GMES



EOEP



DUE



CCI

per country and the Balkans as a whole

- S&W – capabilities, participation in EO initiatives, etc.
- O&T – further EO involvement





Current Situation in Balkan GEO Countries



- GREECE:
Increase of investment in EO field
- CROATIA:
Allocation of funds dedicated to EO
- SERBIA:
Opportunities arise through IPA funds
No compliance with INSPIRE
- GREECE, SERBIA, SLOVENIA:
Stronger countries in EO field.
Becoming more aware on benefits of
EO applications.
- ALL:
Large involvement in EO projects.



Current Situation in Non-GEO Countries



- BULGARIA, MONTENEGRO:
Increase of investment in EO field
- ALBANIA, MONTENEGRO: Allocation
of EO dedicated funds
- BiH:
Opportunities arise through IPA funds
- BiH, FYROM:
No compliance with INSPIRE
- MONTENEGRO:
Only non-GEO country that
participates in the INSPIRE directive
- BULGARIA:
Large involvement in EO projects



Identified Challenges in Balkan GEO Countries



- Lack of a defined national EO policy.
- Weak interoperability among the organizations involved in EO related activities.
- Low institutional and/or public awareness about EO activities.



Identified Challenges in non-GEO Balkan Countries



- Lack of a defined national EO policy.
- Lack or limited amount of national funding allocation.
- Lack of increase of investment into EO related activities.
- Poor or zero level of conformation with INSPIRE Directive.
- Lack of permanent educational programs.
- Low institutional and/or public awareness about EO activities.
- Very poor coordination between the organization.
- Lower number of EO related projects wrt. GEO countries.



Recommendation for GEO Countries



- Increase exploitation of the existing infrastructure:
 - Take advantage of the new Sentinel missions in 2013,
 - Exploit the human potential.
- Create guidelines for a more targeted EO national policy:
 - Define national goals towards EO,
 - Dedicate specific funds.
- Fully integrate in global and European initiatives:
 - Full membership in EU,
 - Full membership in ESA.
- Improve networking among organizations in a country.



Recommendations for non-GEO Countries



- Join EU and global EO initiatives:
 - GEO, GEOSS and GMES.
- Participate in INSPIRE directive.
- Define EO national policy:
 - Further implement National Spatial Data Infrastructure (NSDI),
 - Define priorities and budget.
- Enhance educational EO programs and trainings:
 - Integrate EO related courses in curricula,
 - Organize EO life-long-learning programs for professionals.



Scenario Development (Example for Serbia)

- Strong tradition in in-situ monitoring & expertise in geodetic data collection
- Could play a key role in the region and provide best practice to others, *if empowered in:*

Short term (1-2 years)

- National level:
 - Define a cooperation model for share and use of EO data
 - Vertical communication among institutions
- Participation to EO initiatives:
 - Membership to ESA
 - Follow INSPIRE directive

Mid-term (5 years)

- Full integration to EU
- Become a regional pole
- Transfer of expertise and knowledge



Following BalkanGEONet Recommendations:

MASTER OF SCIENCE IN WATER RESOURCES AND ENVIRONMENTAL ENGINEERING (WREE)



**UNIVERSITY OF SPLIT, CROATIA
FACULTY OF CIVIL ENGINEERING, ARCHITECTURE AND GEODESY**