

GEO-CRADLE:

**Fostering regional cooperation
and roadmap for GEO and
Copernicus implementation in
N. Africa, Middle East, and the
Balkans**

*Funded under H2020 - Climate action,
environment, resource efficiency and raw
materials*

*ACTIVITY: Developing Comprehensive and
Sustained Global Environmental Observation
and Information Systems*

*CALL IDENTIFIER: H2020 SC5-18b-2015
Integrating North African, Middle East and
Balkan Earth Observation capacities in
GEOSS*

Project GA number: 690133

Total Budget: 2,910,800.00 €



**Haris KONTTOES, Research Director, National
Observatory of Athens,
Project Coordinator**

GEO-CRADLE

... is a unique EU funded Coordination Action running at regional level,
... is looking at the N. Africa, Middle East, and the Balkan territories;

It seeks to identify common needs, create synergies, and integrate capacities,

Fosters the regional cooperation and integration of monitoring capabilities and networks, and scientific skills

Proposes/sets up large scale regional initiatives based on the Earth Observation (space based and in-situ) for addressing societal priorities in different thematic aspects such as Adaptation to Climate Change, Access to Raw Materials, better exploitation of the renewable Energy resources, and Food Security

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1

To create a multi-regional (Balkans, N. Africa and Middle East, namely RoI) coordination network

2

Support the effective integration of Earth Observation capacities in the RoI

3

Facilitate the engagement of the complete ecosystem of EO stakeholders in the RoI

4

Promote the uptake of EO services and data in response to regional needs

5

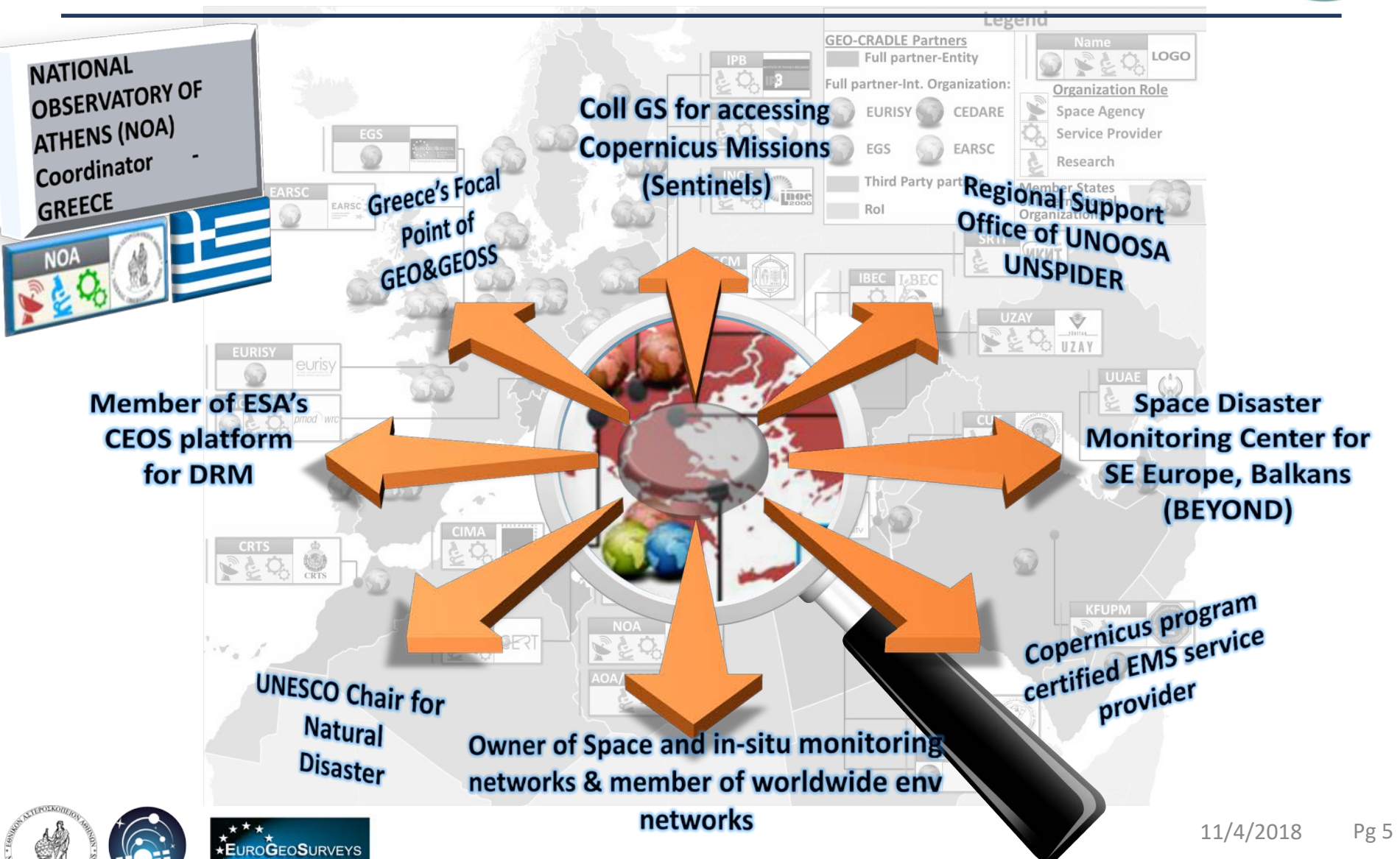
Enhance the participation in and contribution to the implementation of GEO, GEOSS, and Copernicus in the RoI

GEO-CRADLE & the 2nd EuroGeoSurveys Networking Meeting, 17-18 Oct 2016, Morocco

The Coordinator



The Coordinator





Legend

GEO-CRADLE Partners	
■	Full partner-Entity
●	Full partner-Int. Organization
●	EURISY
●	EGS
■	Third Party
■	RoI

At the consortium level 48 women (39% of personnel) are involved

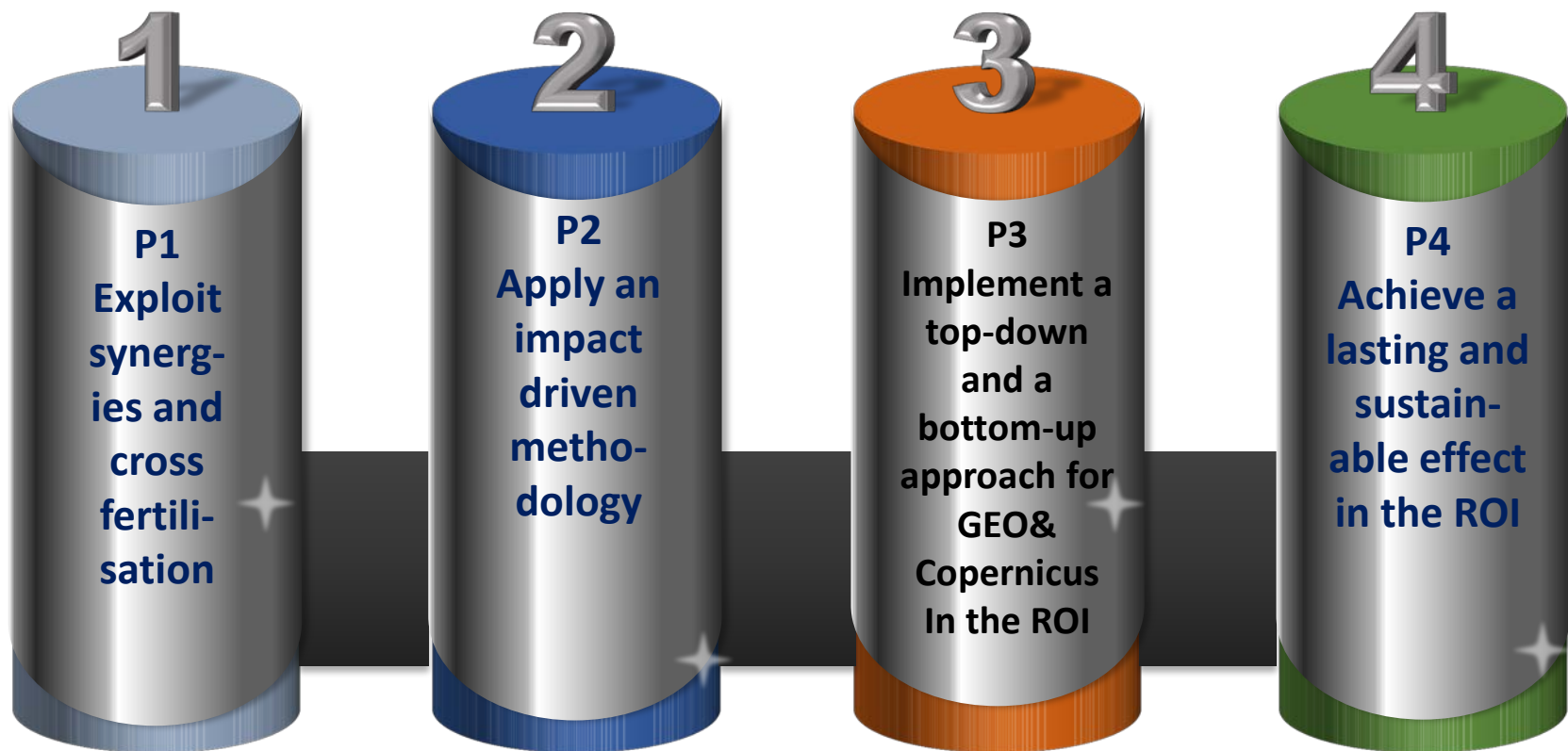
Gender Analysis

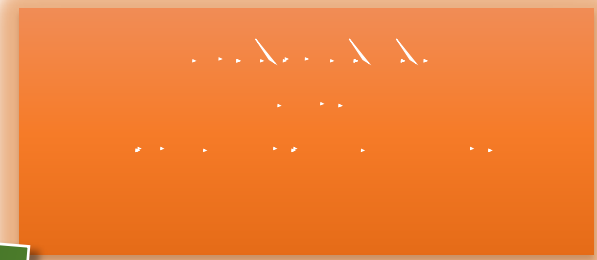
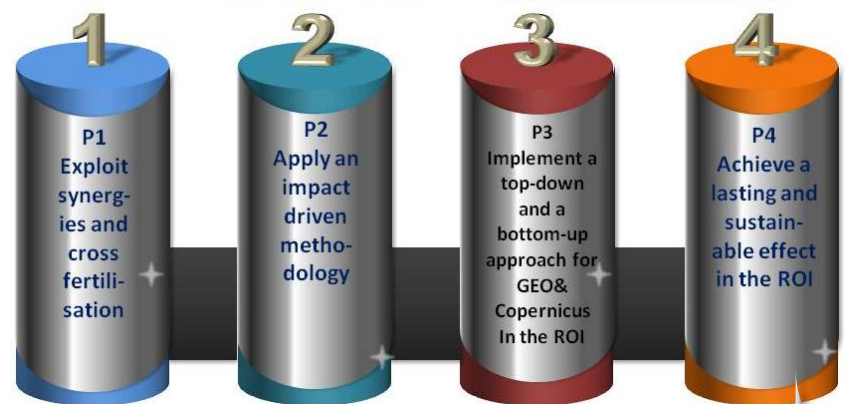
31% of the WorkPackages are led by women

Gender Analysis



4 main pillars underpin the GEO-CRADLE concept





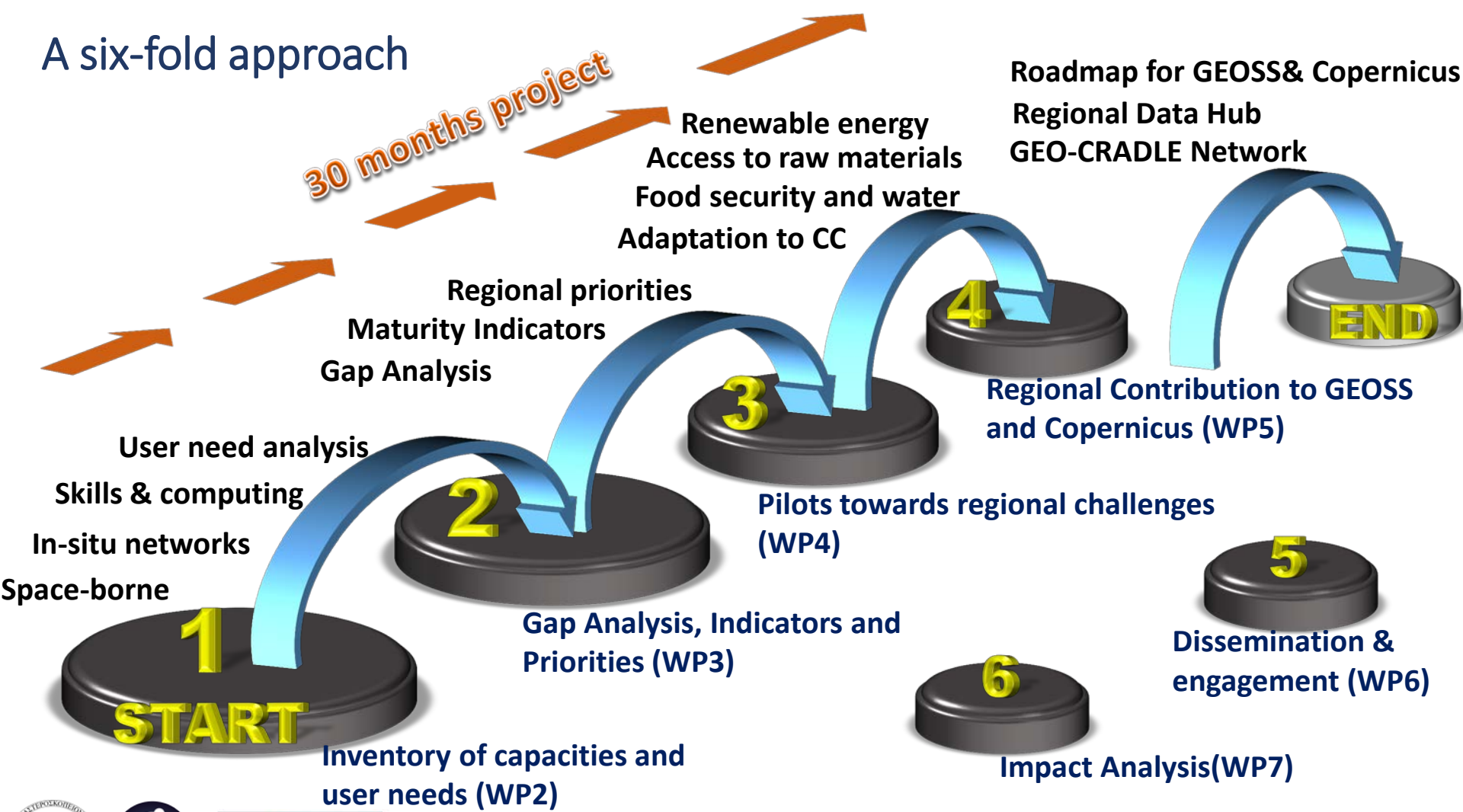
Alignment with EC & GEO priorities/vision

1 Lessons learned and best practices from past projects and initiatives

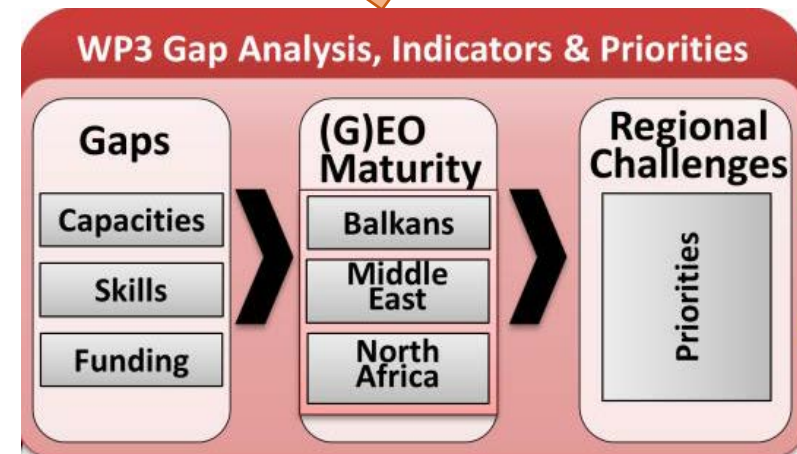
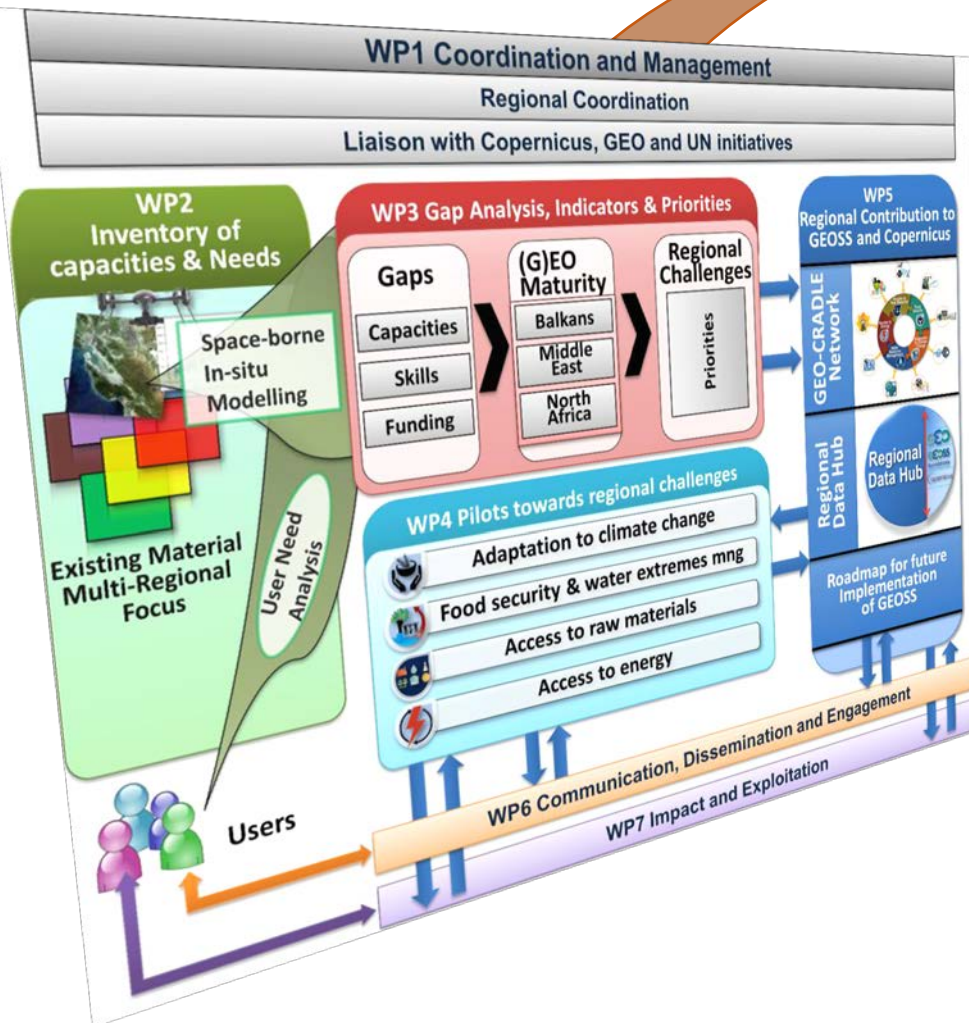




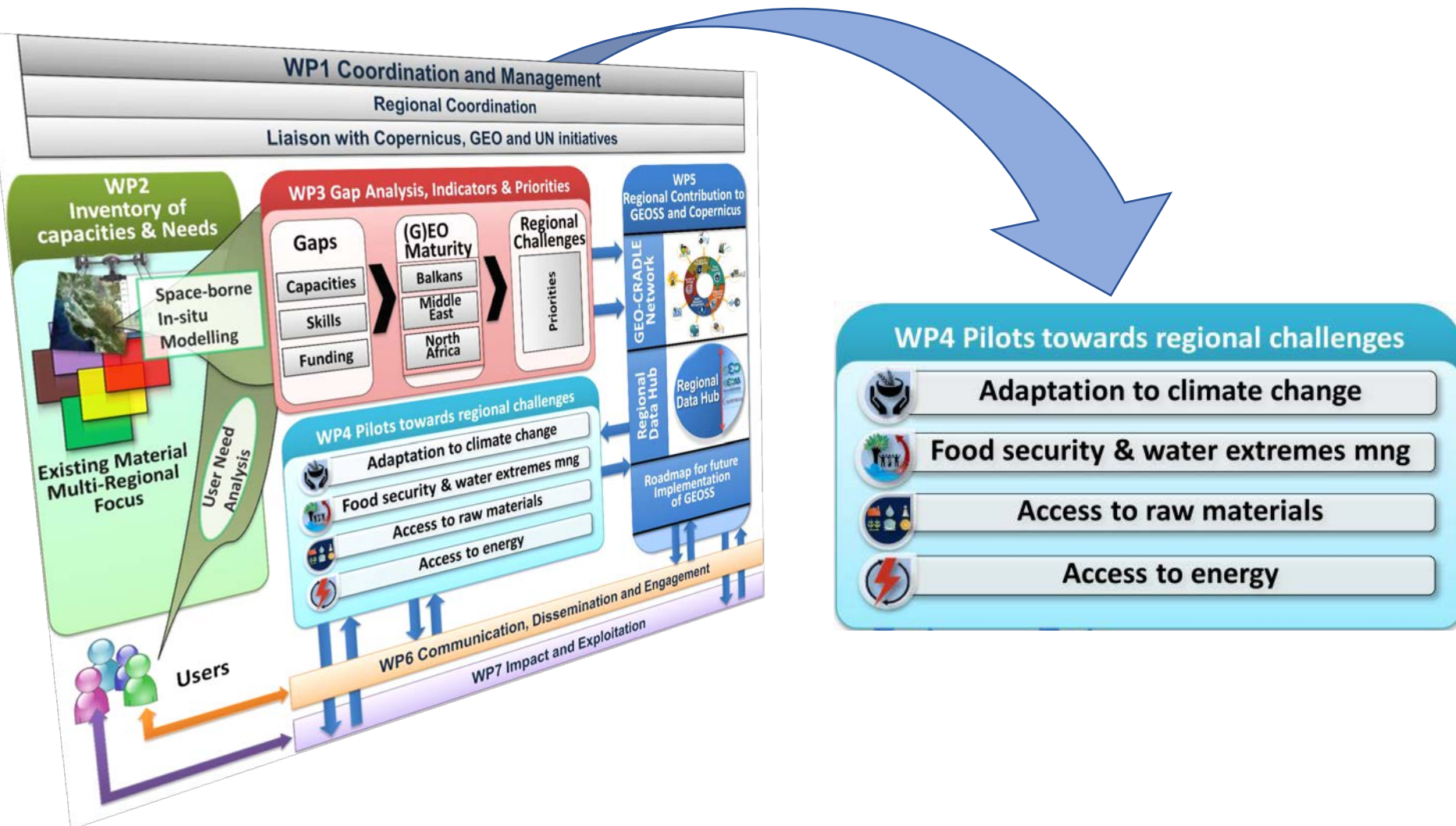
A six-fold approach



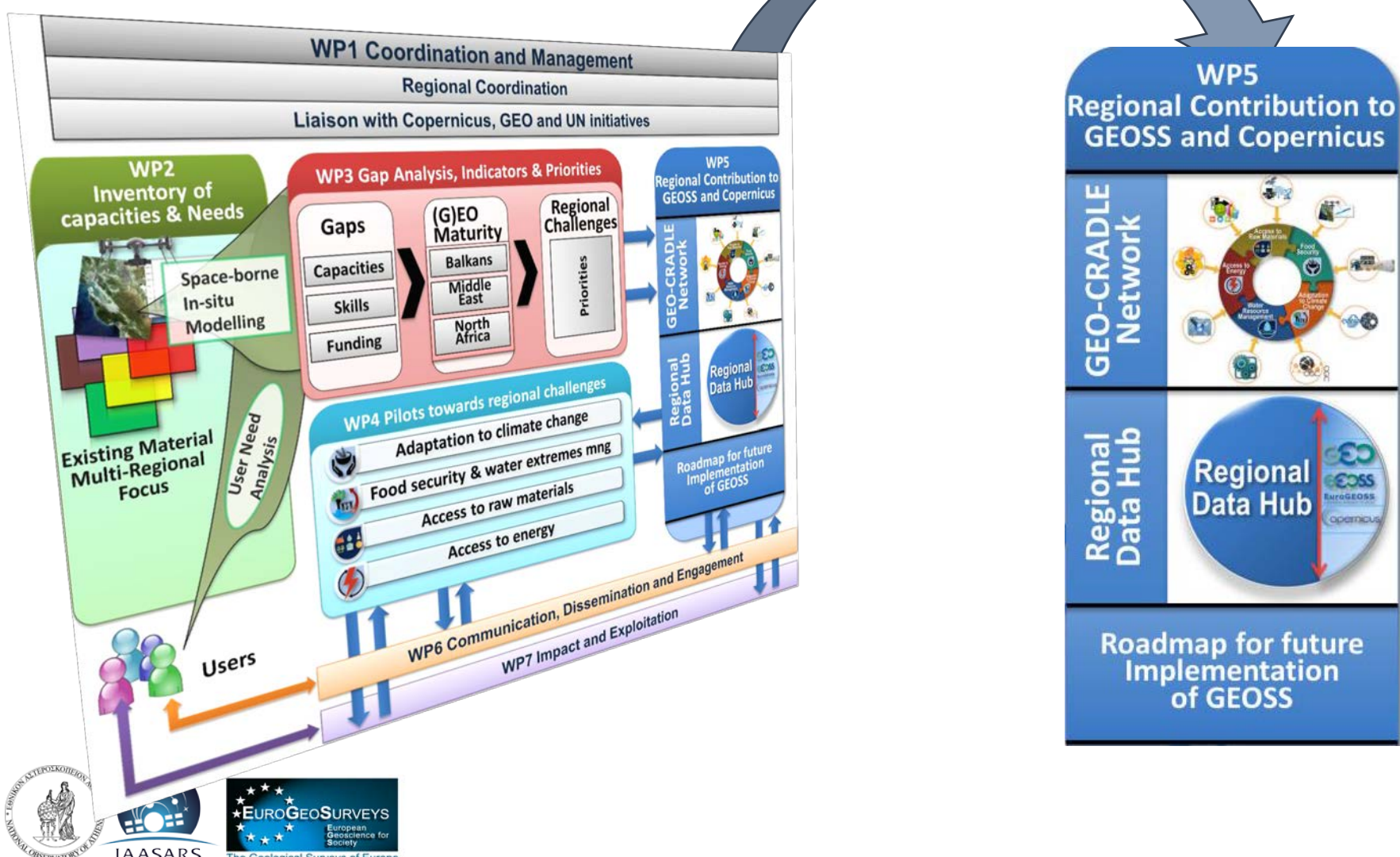
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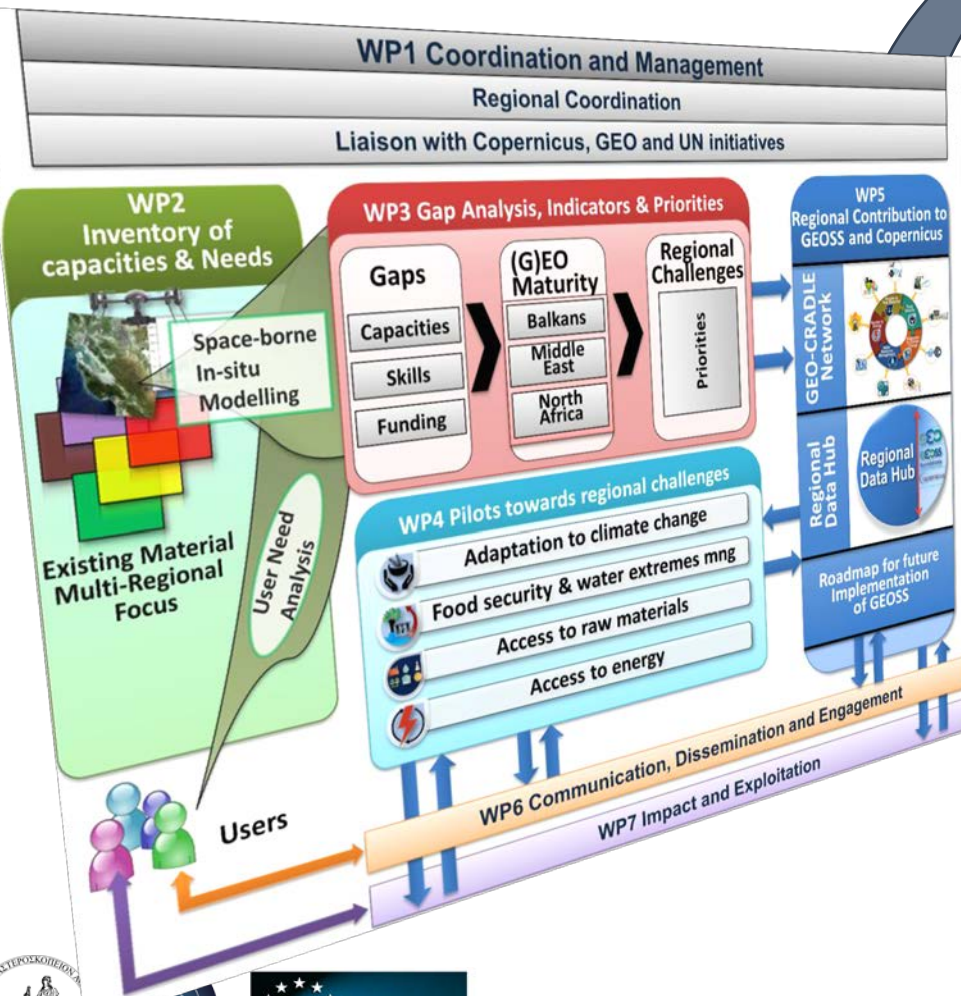
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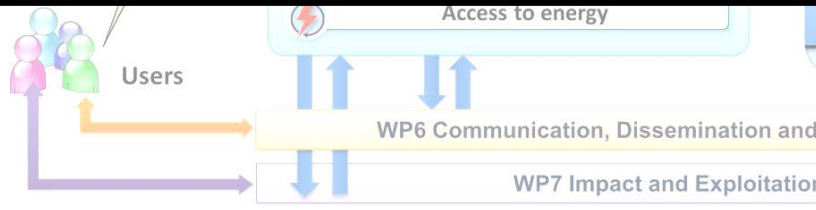


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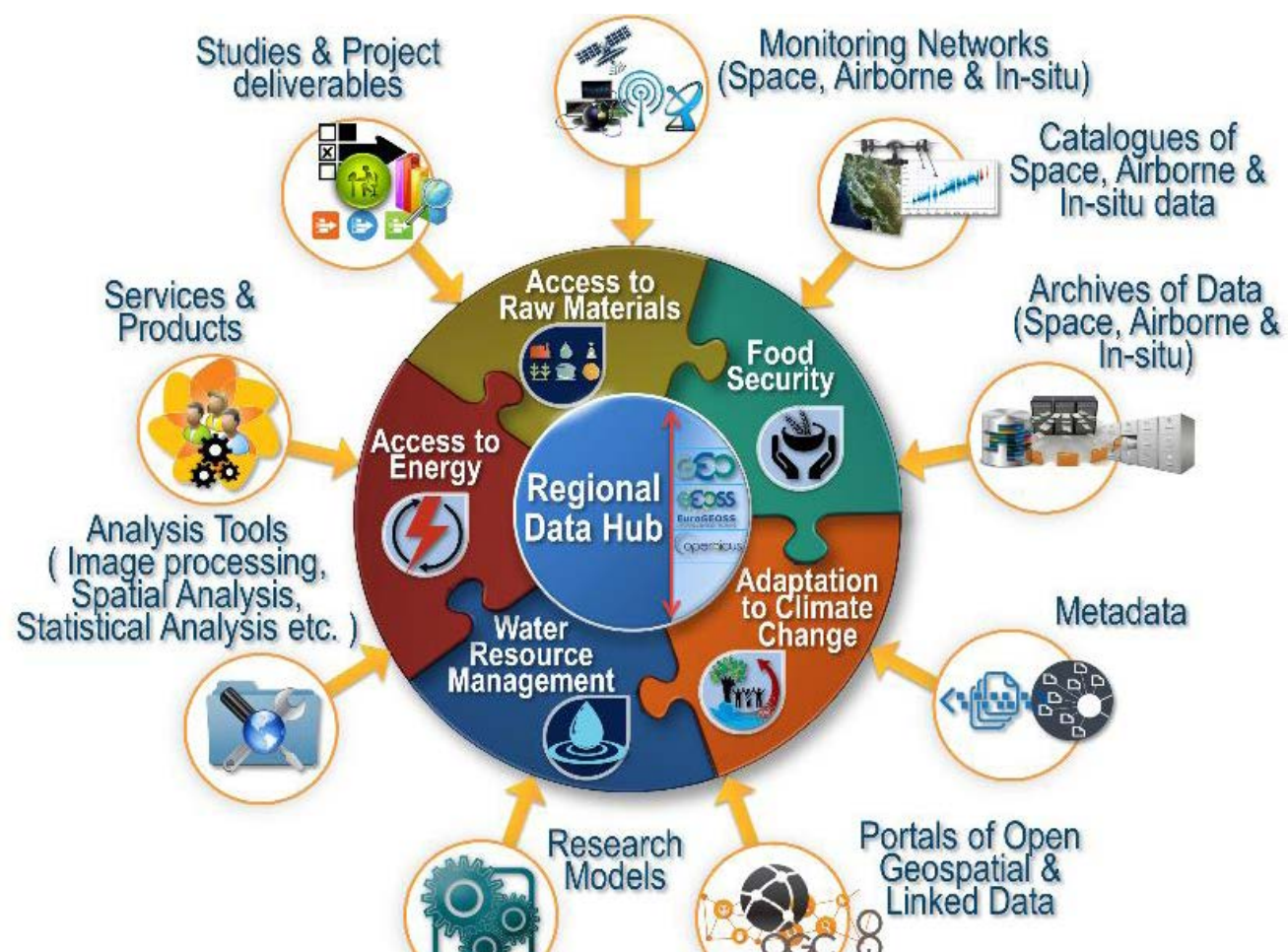


**Roadmap for future
Implementation of
GEOSS**



Guides	the implementation of GEOSS and the uptake of Copernicus in the RoI
Assesses	the readiness and maturity of each country in the RoI
Lays out	the actions for the long-term response to major regional challenges in the RoI
Paves	the ground for a potential regional large initiative

GEO-CRADLE & the 2nd EuroGeoSurveys Networking Meeting, 17-18 Oct 2016, Morocco



Acts as “one-stop-shop” that offers free access and several discovery options to catalogs of data and metadata specific to the RoI

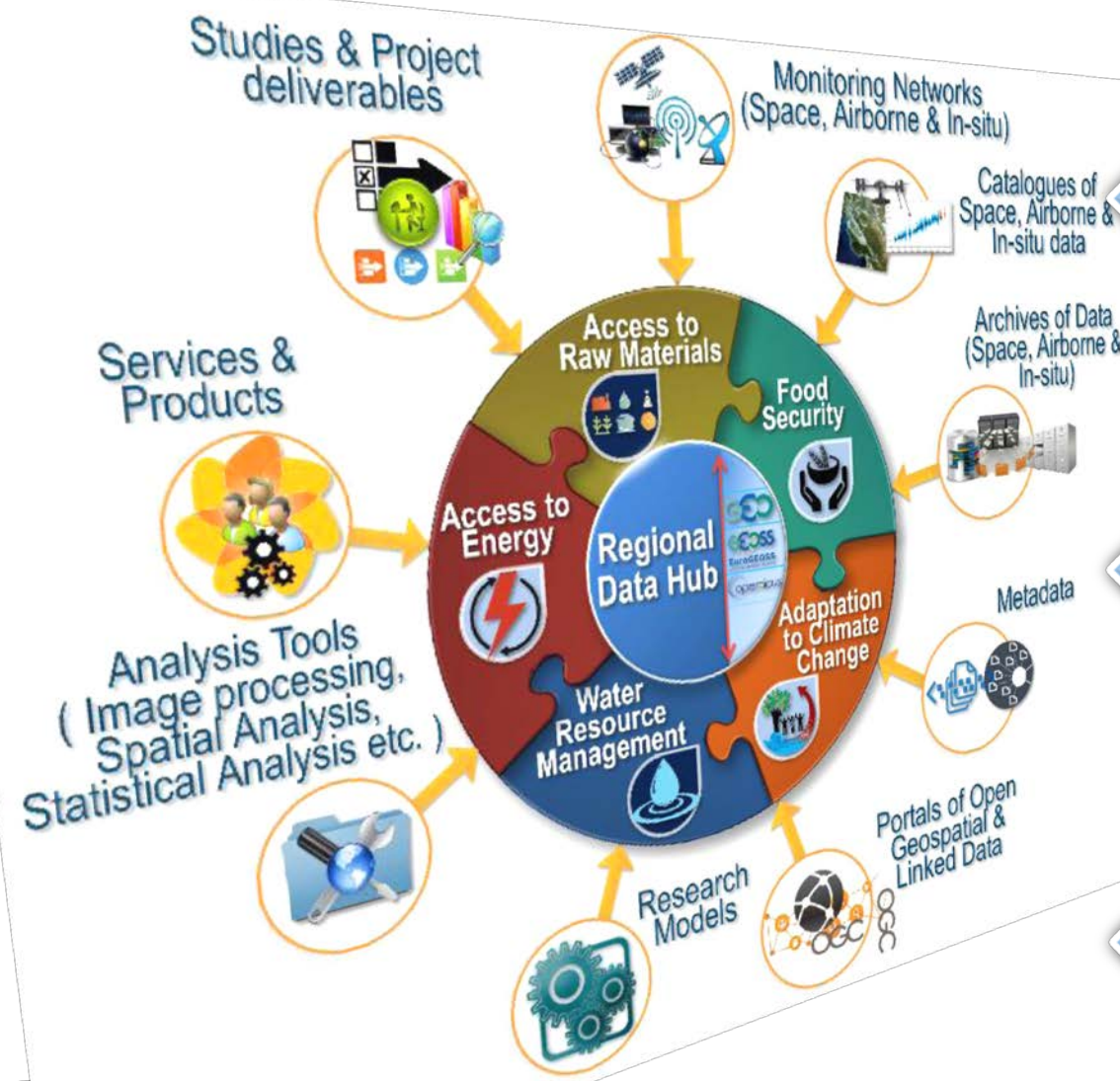
WP5

Regional Contribution to GEOSS and Copernicus


GEO-CRADLE Network

Regional Data Hub


Roadmap for future Implementation of GEOSS




**Abides by the
GEOSS Data
Sharing
Principles**



**Complies with
the navigation
logic of the
GEOSS portal**



**Strengthen the
GEOSS portal &
Alleviate its
shortcomings**



Disseminate
the scope and
perspectives
of GEO-
CRADLE
towards
enlarging the
EO market at
regional level
and the
country



Be engaged,
and assist
reporting on
the needed
support in
relation to EO
data,
excellence,
education,
funding
schemes



Provide analytic
information
about the
priorities set out
by the local
decision makers
in each one of
the four
thematic
priorities of the
call



Use the project
as the driver to
outreach the
country's state-
of-the-art to
the wider
markets, and
assist the setting
up of beneficial
joint ventures
and partnerships



Support the
development
and enrichment
of the RDH with
data, facilitating
the local EO
community to
build upon it of
new businesses
of wider interest
in the RoI



Concluding issues

thank you!

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GEO-CRADLE:

**Methodological aspects
for assessing the regional
gaps and maturity in
relation to GEO, GEOSS,
and Copernicus**

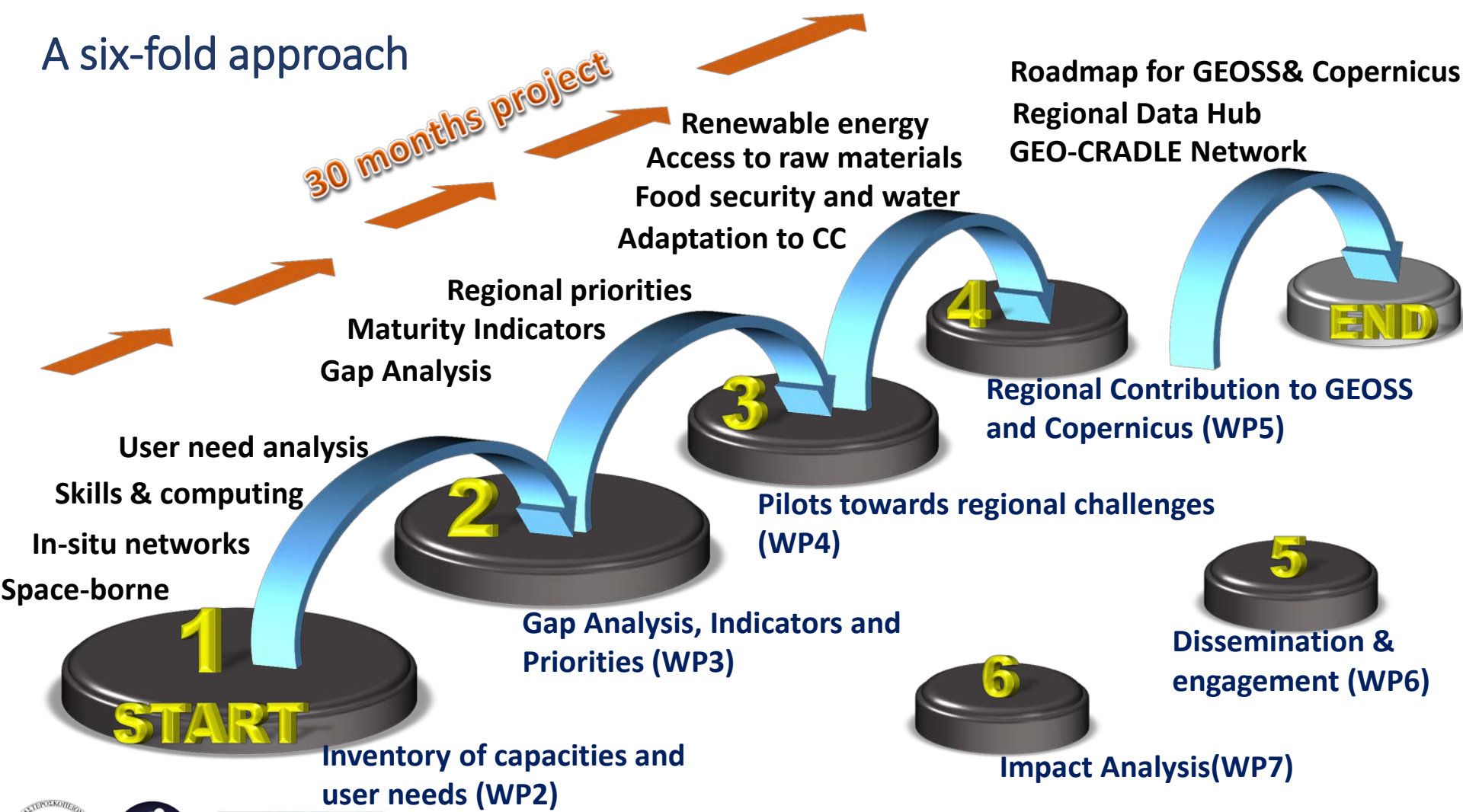


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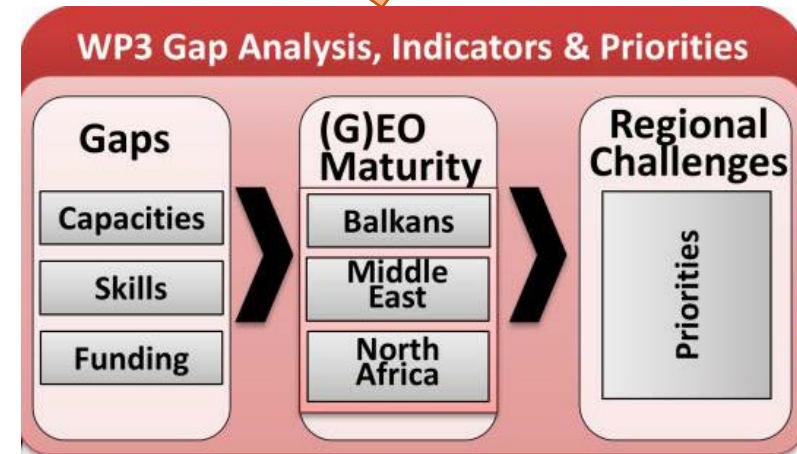
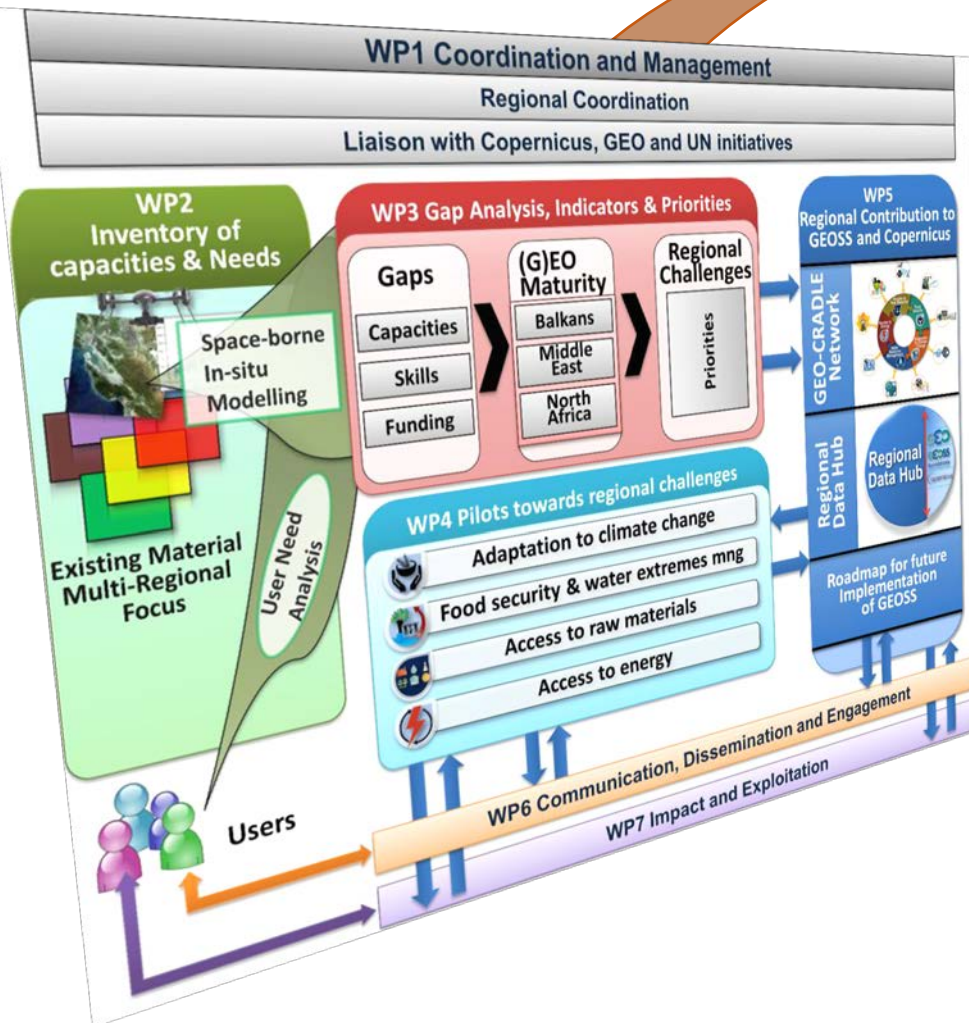
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A six-fold approach

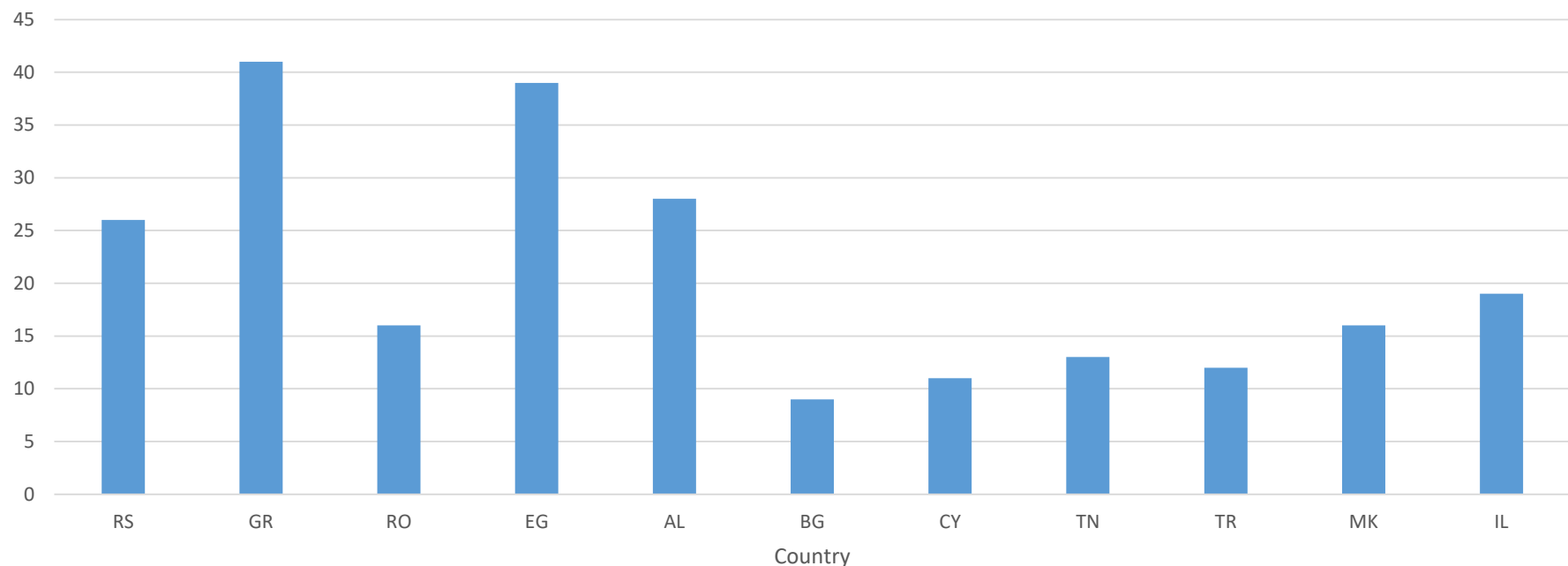


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Total Responses and User Type



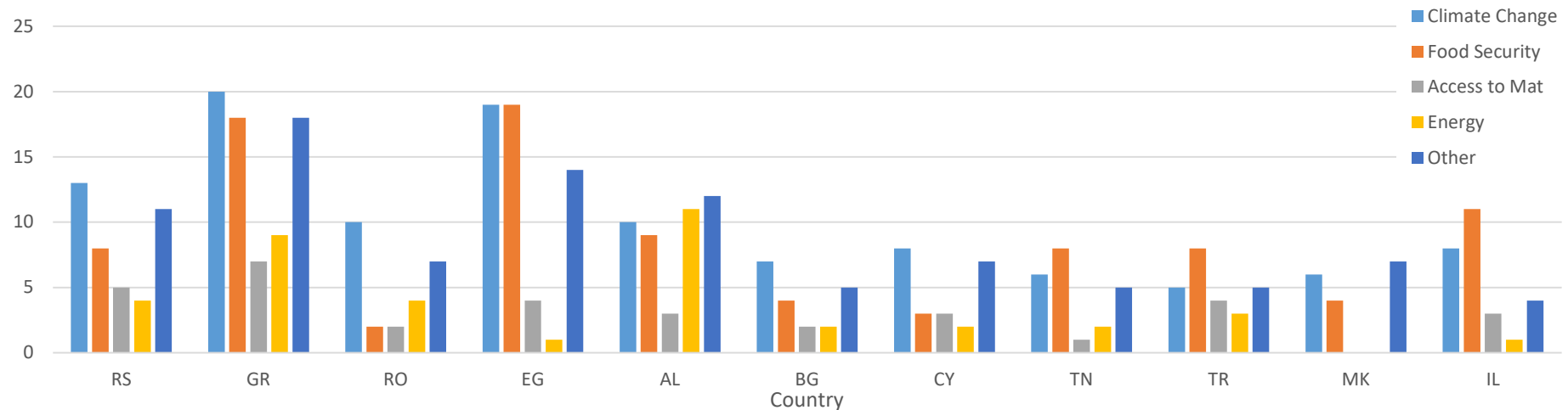
Total
Responses:
260



Balkans: 183
North Africa: 59
Middle East: 15



Thematic Area

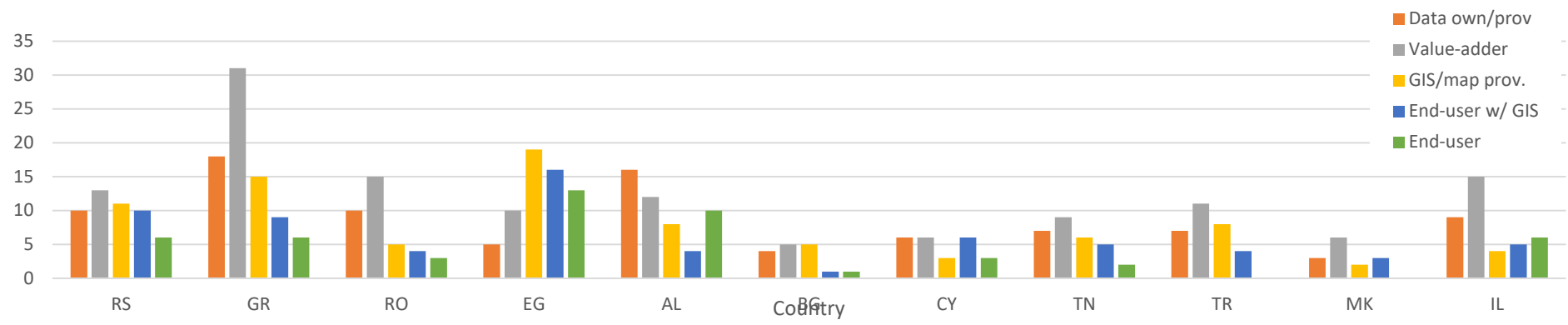
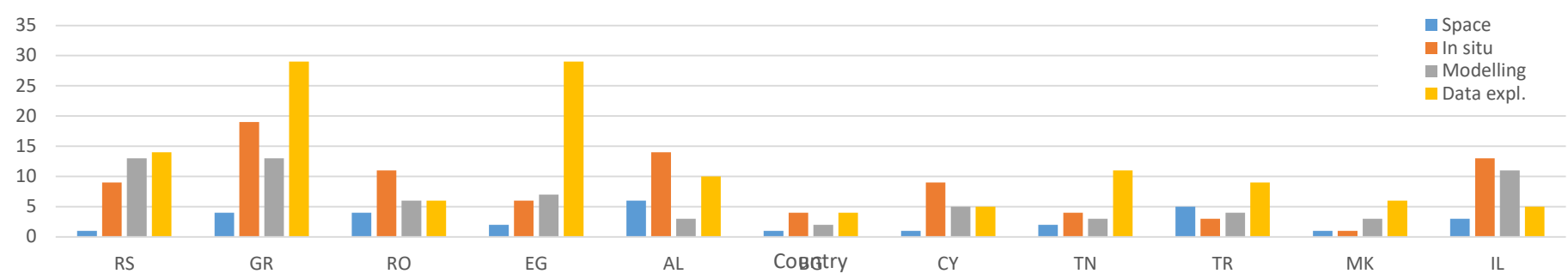


Most responses in:
 Food Security &
 Climate Change

Less responses in:
 Access to Raw Materials
 Energy



Capacities and Position in Value Chain



Methodological aspects for GAP Analysis

1. EO capacities

Identified through
inventorying of key EO actors

2. EO end-user needs

Identified through in-depth
end-user interviews of a
representative sample

3. Indicators

Characterize identified gaps
and pinpoint where in the
value chain they occur



Methodological aspects for GAP Analysis

Need for high
quality end-
user interviews

&

Country partner
to drive
intensive
inventorying



Methodological aspects for GAP Analysis

The gap analysis is on-going task and is conducted on the basis of three sources of information:

- 1. Results on gaps from previous projects**
- 2. Results on gaps from the GEO CRADLE inventorying phase**
- 3. Results on gaps from the intensive desk research conducted to complement inventorying**



Indicators



- EO capacity is a complex term
- During the 19th GEO Executive Committee Meeting, the need to streamline gap analyses in EO was recognized
- An action team was formed to streamline gap analyses in EO

Indicators

Geographic- Spatial discrepancy in the coverage of the observation capacities in regards to availability of data over the RoI.

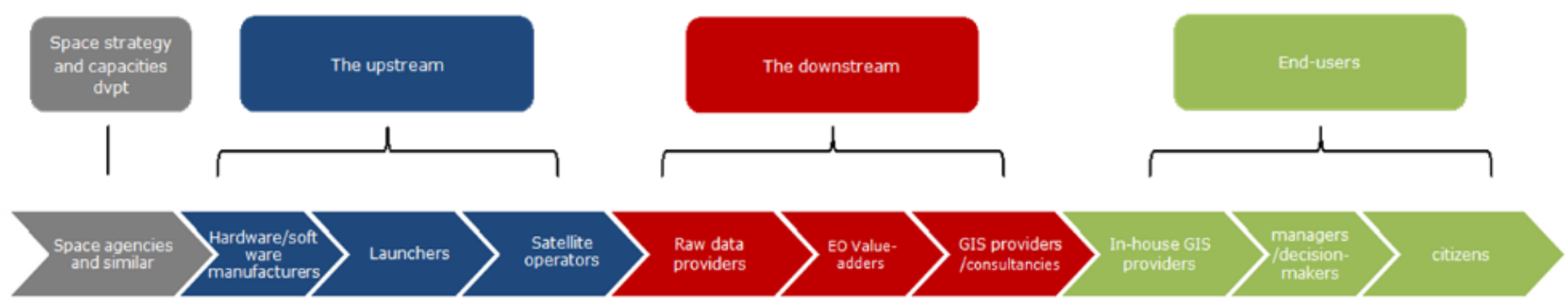
Observational- Technologies and system for EO are not available or insufficient to provide the data and quality needed.

Structural- The connectivity and ability of data to flow freely within organizations or networks.

Qualitative/quantitative- EO products are available but not of sufficient timeliness, frequency or quality to be of use.

Capacity for use- EO products are available but there is insufficient technical capacity in regards to infrastructure and personnel to make use of it.

Indicators



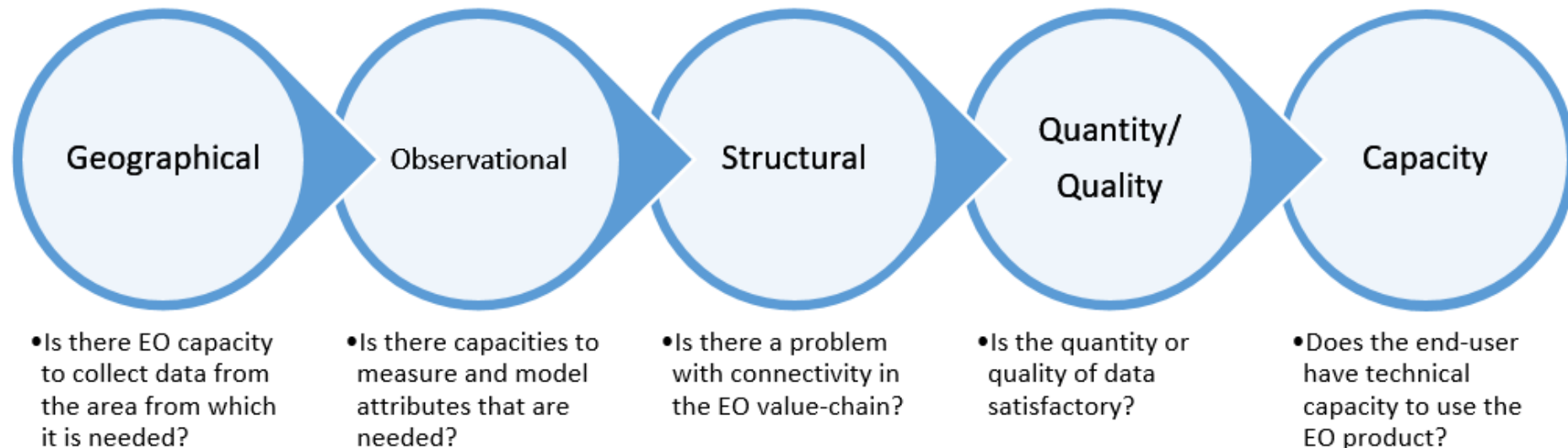
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Indicators
across the value
chain

- Data availability (real time, upon request, archives)
- Data policy (free and open, commercial, restricted, etc.)
- Temporal resolution
- Number of geoportals used by end-users
- Coordination with decision makers
- Number of organizations with modelling and processing facilities
- Range of satellite coverage
- Etc.

Gap Analysis

Start with end-user needs, and successively go through categories of EO capacity



Maturity Indicators in relation to GEO & Copernicus

The maturity indicators capture the level, and measure the progress of each country in the implementation of GEO and Copernicus

The assessment on the maturity level per country is based upon the outcomes from the survey and the gap analysis

The Methodology uses the following stages:

- Desk research
- Semi-structured interviews with country partners
- Validation of findings by experts
- Comparative assessment per country level

Maturity Indicators definition

Parameters by which the maturity in Earth Observation and geo-information capabilities can be measured and monitored

Help to understand the capabilities of the country and the country's prospects

Indicators are Grouped by:

- Capacities (including national or regional capacities)
- Cooperation (including international cooperation)
- Uptake (including national uptake and awareness)

For each indicator a table is created providing:

- Description, parameteres, constrains, gap analysis, comments

Capacities

National Infrastructure

- Own space-borne capacity, access to 3rd party missions, ground base/ in-situ monitoring networks, modelling & computing , EO data exploitation platforms

Critical mass of EO researchers

- Nb of public organizations & universities promoting EO, courses offered by universities, diversity & level of courses, Nb of the researchers, papers published

Industry base

- Nb of companies, scale companies, employment numbers, resellers, existence SME clusters

Space authority

- Space policy, organization chart

Capacity building

- National R&D investment, EO focus actions

Cooperation

Impact of GEO

- Participation in GEO, designated GEO Office, actions on SBA's, provision of data to GEOSS portal

Impact of Copernicus

- Projects using Copernicus data/services, and involved entities

Participation to international efforts

- ESA, WMO, EUMETSAT, CEOSS, UN-system, INSPIRE, OGC

Funding opportunities

- EC R&D participation, ITTs etc

National Uptake & Level Awareness

Events

- Organisation of networking events, and thematic workshops

Dissemination activities

- Networking, and data portals

National policy implementation

- Existence of national Policy, and dedicated budget

Penetration to the market

- Use (awareness, adoption, R&D uptake...)

Indicators' boundaries

Boundaries relating to the degree of formality and optimization of the group of indicators (capacities, cooperation and uptake)

Maturity level:

- Level 0: initial
- Level 1: basic
- Level 2: intermediate
- Level 3: advanced
- Level 4: optimized

Example: (0) no commitment to develop space-borne capacity, (1) there is ability to perform the capacity, (2) the capacity is performed; e.g. at least 1 satellite operated by the country, (3) more than 1 satellite mission exists, future mission planning with improvement degree, (4) well developed capacity in a full integrated structure



Serbia

Capacity = Intermediate

Infrastructure = 2

EO research = 2

Industry base = 2

Space authority = 0

Capacity building = 2

Policy = Basic

GEO & Copernicus projects = 2

GEO task initiatives = 1

Provision of data to GEOSS = 2

Copernicus ground stations = 0

Uptake = Intermediate

Networking events = 2

Thematic activities = 1

Dissemination activities = 2

Policy implementation = 2

Penetration public services = 2



COUNTRY

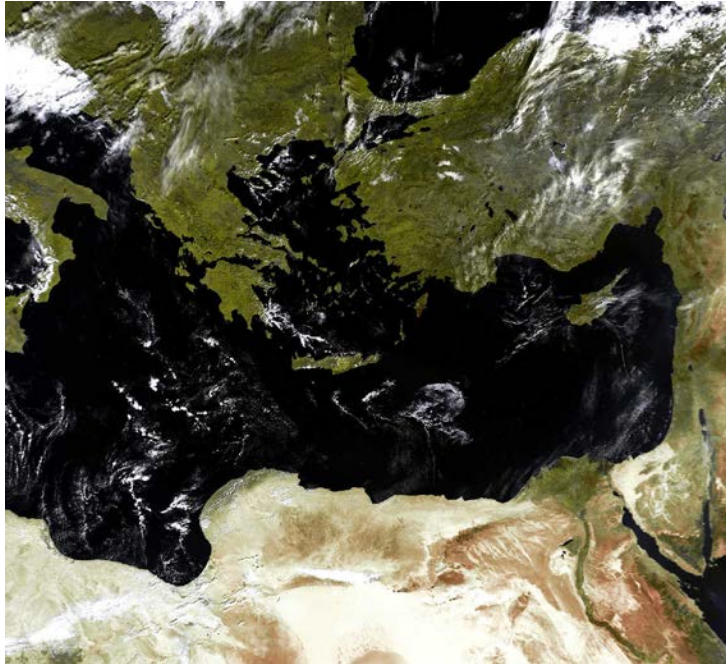
CAPACITY	Infrastructure	
	EO research	
	Industry base	
	Space Authority	
	Capacity Building	
POLICY	GEO & Copernicus projects	
	GEO task initiatives	
	Provision data to GEOSS	
	Designated GEO office	
UPTAKE	Copernicus Ground Segment	
	Networking events	
	Thematic workshops	
	Dissemination activities	
	Policy implementation	
	Penetration public services	

LEGEND maturity card

initial basic intermediate advanced optimized



State of the Art



Romania, Bulgaria & Cyprus (EU members)

Have ground receiving
stations that are integrated
into European level space
programs

Western Balkans (not EU members)

Small countries with no
space program and no space
strategy

State of the Art

Greece, Turkey & Israel as more advanced

Turkey has its own satellite program, Greece part of ESA and integrated with European level space missions

Israel has large degree of maturity

Egypt

Own space program and space strategy

Tunisia, Morocco, Algeria

Space strategies, Agencies, and operational programs defined years ago, participation in EO efforts



Gaps Identified

EO is significantly dominated by the public sector

Private companies provide data products and resell satellite imagery to public sector

Reluctance to share data between organizations

Distrust between organizations – success stories based on a large degree on personal connections

Red tape for formal sharing between organizations

Projects allow for opportunity to cooperate, relationships established live on post-project and encourage data sharing

Lack of educational capacities (Western Balkans)

No life time learning

Education centered on geodesy, little remote-sensing capacity building

Gaps Identified

Large difference between countries and within countries

Advanced capacities developed in emergency response

Meteorological sector is advanced in most countries

UAE has well funded and advanced EO capacities

Several in-situ networks in Albania were offline at time of inventorying due to funding problems

Vulnerability to politics – lack of institutionalization

Organizations tend to be centralized and decision making posts are assigned at the political level

Changes in government and other political occurrences can stall or backtrack progress in an organization

Sentinel-1A satellite aids flood relief in the Balkans



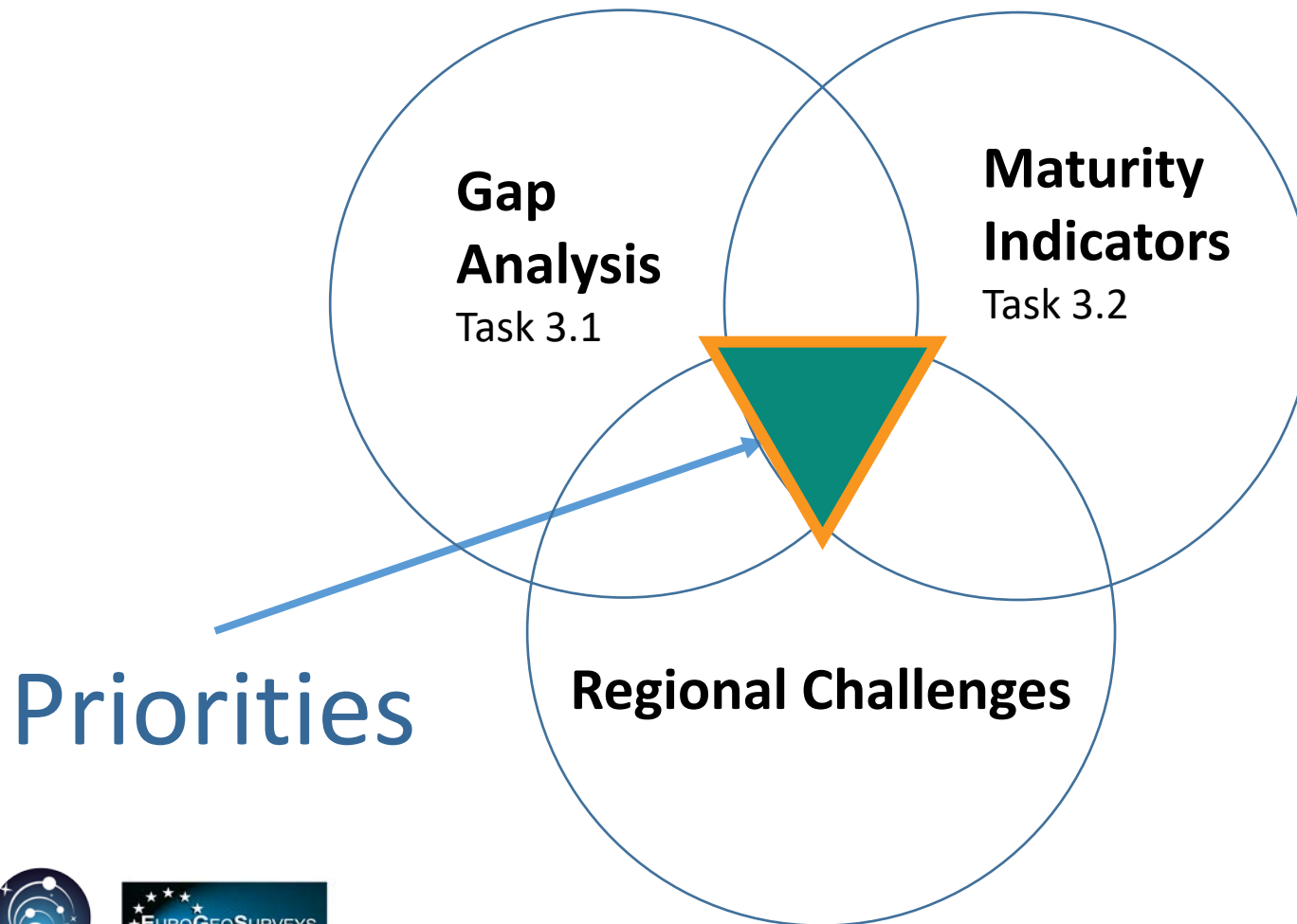
For the first time Sentinel-1A satellite was operationally used to support emergency management operations in the Balkans, where prolonged heavy rainfalls and widespread flooding since the 15th of May 2014 triggered the declaration of the State of Emergency

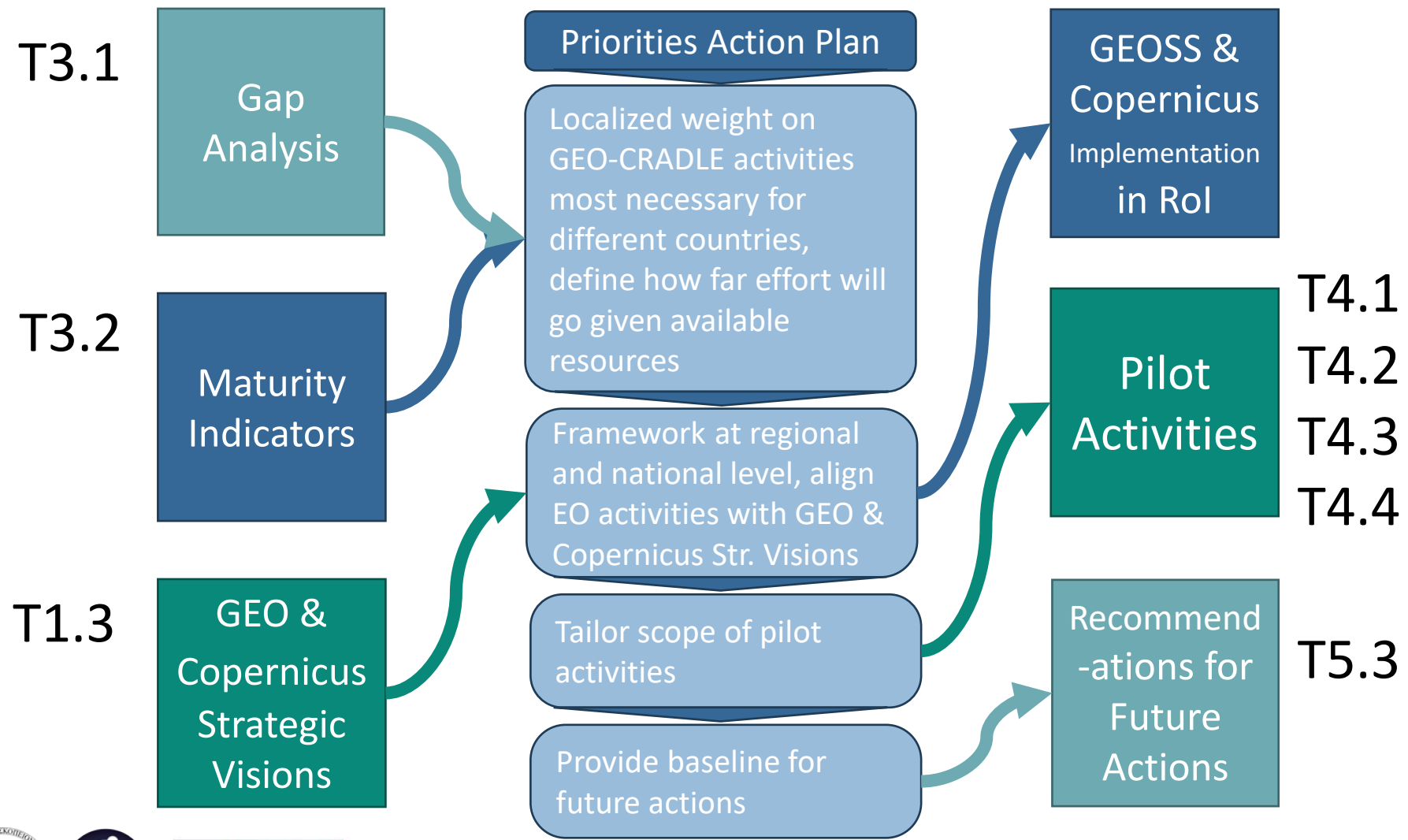
In order to provide fast and complete map product delivery it is crucial to take into account and use all available sensors. Although the radar sensor carried by Sentinel-1A is still in commissioning stage, its data was integrated into the Copernicus EMS flood maps of the Sava river in the Balatun area in Bosnia and Herzegovina.

Although the processing chain in use have not yet been tuned to process Sentinel-1A data, and despite the tight timelines for map production, new procedures have been put in place to exploit Sentinel data and to combine them with the pre-event analysis achieved from Spot 6.

Sentinel-1A was launched on April 3rd from the European spaceport in Kourou, French Guiana, and it is the first in a fleet of Sentinel satellites developed for European Copernicus programme.

Where Gap & Maturity Assessments used? Define the Priorities in Relation to Reg. Challenges





thank you!
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