SpaceWave

International Markets and Trends for European SMEs to Use Earth Observation Technologies in the Blue Economy

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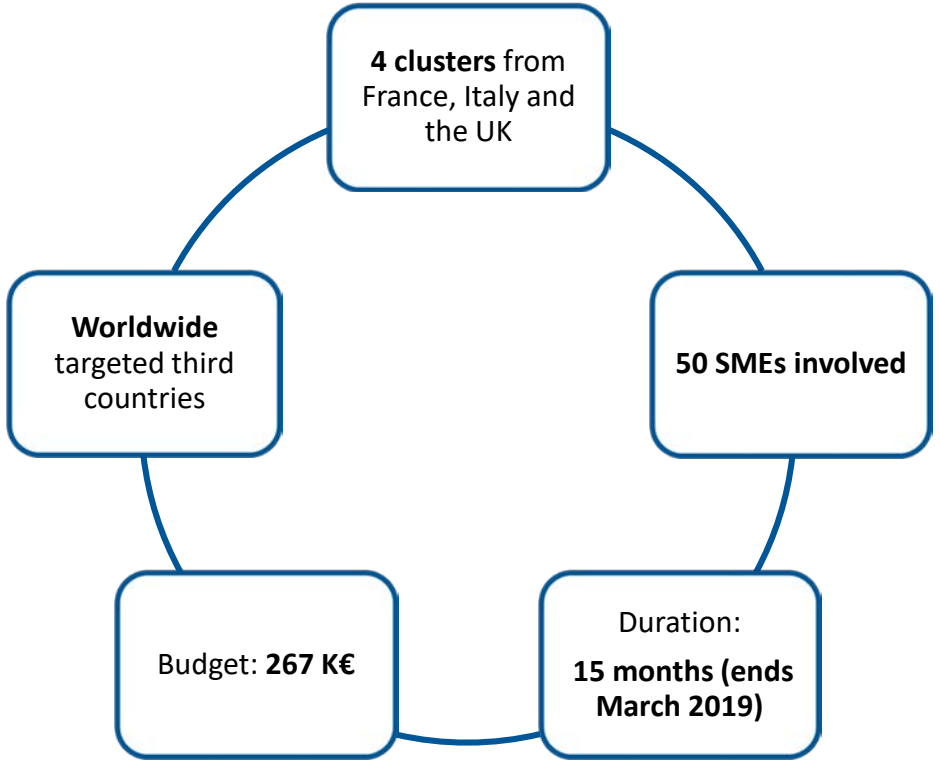
SpaceWave at a glance

The SpaceWave project is identifying the current and future commercial and technological potential of Earth Observation technologies to enable growth in the Blue Economy sector



The project is co-funded by COSME – managed by the Executive Agency for Small and Medium-sized Enterprises (EASME)

Consortium


marine
southeast
PÔLE MER
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aerospace
valley
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Objectives

- To study the international markets for downstream EO applications enabling Blue Growth
  - *What are the challenges where EO could be valuable?*
- To identify European and international stakeholders and analyse the related value chains
  - *Which capabilities are needed and are available?*
- To develop an internationalisation plan
  - *Steps to realise Europe's full potential in downstream Earth Observation for Blue Growth applications*

Blue Economy Sectors

- Fisheries
- Aquaculture
- Offshore Wind
- Marine energy
- Coastal erosion
- Sea level rise
- Port infrastructure
- Port security
- Transport
- EEZ surveillance

Targeted third countries

Australia

Canada

Mexico

Morocco

South Africa

Thailand

United Arab Emirates

Vietnam

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Australia

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~~Mexico~~

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~~Thailand~~

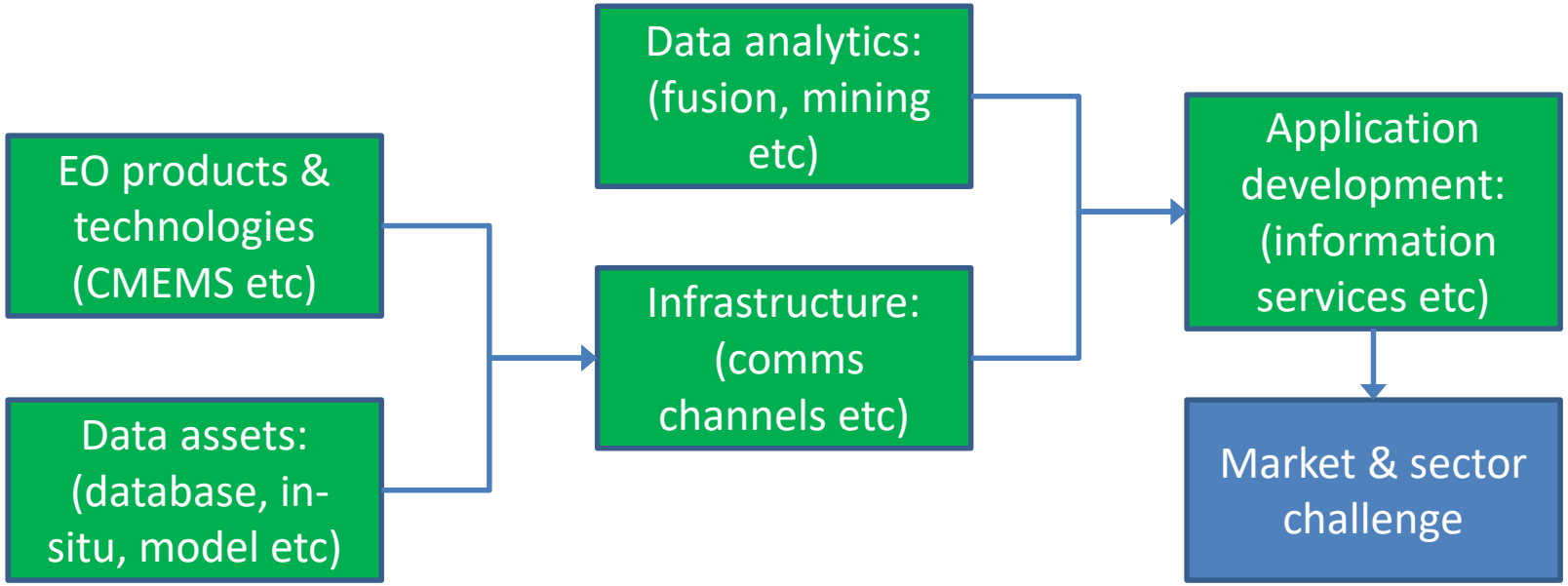
United Arab Emirates

~~Vietnam~~

Blue Economy Sectors

Fisheries	✓
Aquaculture	✓
Offshore Wind	✗
Marine energy	✗
Coastal erosion	} ✓
Sea level rise	
Port infrastructure	} ✓
Port security	
Transport	
EEZ surveillance	✓

Value Chain Mapping



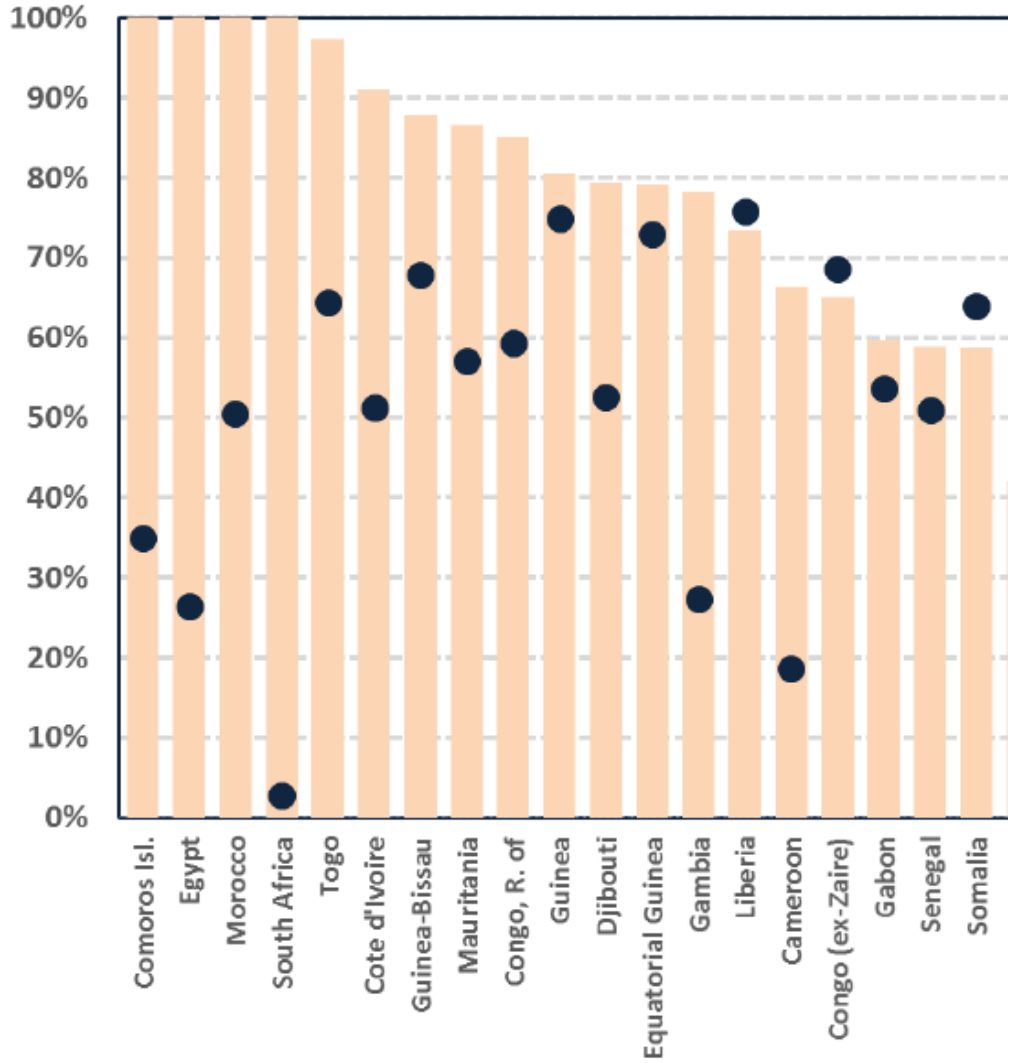
- Questions to be answered:
  - *What kind of applications are needed to meet market challenges?*
  - *Which organisations can supply capabilities along the value chain?*
- Cluster organisations are ideally suited to find the answers using their networks

Case Studies

- Improved management of aquaculture facilities
  - *Optimise feed/growth/productivity*
  - *Manage risk of contamination*
- Compliance & enforcement for fisheries
  - *Detect instances of likely illegal (IUU) fishing*
  - *Direct interventions to collect evidence & enforce*
- Coastal erosion & sea-level rise
  - *Monitor trends in sensitive coastal areas*
  - *Manage risks and socio-economic impacts*
- Weather and metocean forecasting
  - *Improve efficiency of marine operations*
  - *Exploit new Aeolus satellite for wind measurement*

IUU Fishing in Africa

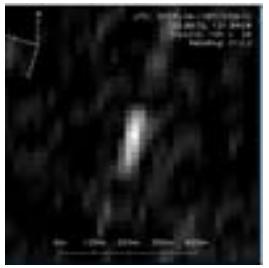
- 4.7 million Tons of biomass per year
- Dots indicate level of IUU fishing per country as % of total catch
- Bars indicate % of IUU by foreign vessels
- Recommendations to African Union include:
  - *Develop a detailed IUU Strategy and Action Plan for Africa*
  - *Explore the cost effectiveness of using regionalised vessel detection systems.*



Report for African Union (2016) by Univ of Cape Town and OLSPS.
Data based on Zeller and Pauly (2015)

IO Blue Belt: Limitations of SAR and AIS

- Circumstantial evidence only – can't be used in isolation
- Limitations on vessel size and construction
- Icebergs and environmental factors
- Cost
- Real-time response
- AIS spoofing and jamming



Other technologies: Blue Belt Approach

Technology Focus:

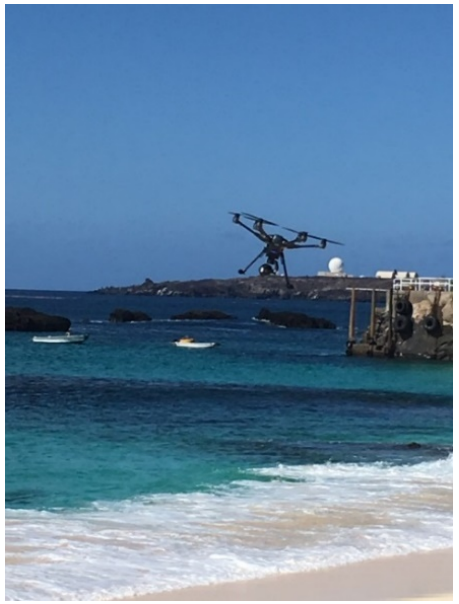
- Drones
- Passive acoustics

Integrated approach:

- Technology supported by Earth Observations and at-sea assets

Legacy

- Long term impact



Conclusions

- Blue Growth challenges present major opportunities for novel satellite applications
  - *Improve aquaculture productivity to meet demand for seafood*
  - *Tackle IUU fishing to improve resource sustainability*
  - *Develop flood risk management tools to combat sea-level rise*
  - *Enhance metocean forecasting for efficient marine operations*
- These solutions need expertise along the full value chain
  - *Broaden awareness among capable SMEs to build consortia*
  - *Collaborate with leading research teams to advance the data resources, models and data analytics*
- SpaceWave Phase 2 aims to:
  - *Identify key customers/users in selected international markets*
  - *Build channels to market for businesses offering solutions*
  - *Expand network of organisations needed to deliver and maintain these solutions*

Recommendations

South Coast
Centre of Excellence in Satellite Applications

- Assemble public-private partnerships interested to implement innovative solutions in one or more of the priority domains
  - *Aquaculture facility management service for operators*
  - *IUU fishing solutions (risk identification, evidence capture, enforcement) for regional government*
  - *Flood risk remediation tool against sea-level rise for government*
  - *Enhanced metocean forecasting service for vessel operators*
- Discuss potential financing/support options for building and testing pilot systems
  - *ESA*
  - *Satellite Applications Catapult and South Coast Centre of Excellence in Satellite Applications*
- Use SpaceWave phase 2 to access specific international markets and customers
  - *Create a robust 'pathway to impact'*