



**EARSC**

European Association  
of Remote Sensing  
Companies

# The Value of EO: A Regional Approach

Side-event to GEO Plenary  
Kyoto

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29<sup>th</sup> October 2018



# Welcome!

Side-event on **The value of Earth Observation**

Analysis of the economic benefits arising from the use of EO data and services

Introduce the wider societal benefits such as improved environment

Various approaches are possible

Workshop last year on the value chain approach which can have:

Thematic, market, product or geographical baseline

Decision to merge the two side events to look at the value following a regional approach.

# 2017 Workshop

The GEOValue Group held a workshop as a side event in Washington 2017

A report will shortly be published (under peer review process at present)

A summary of findings shows that:

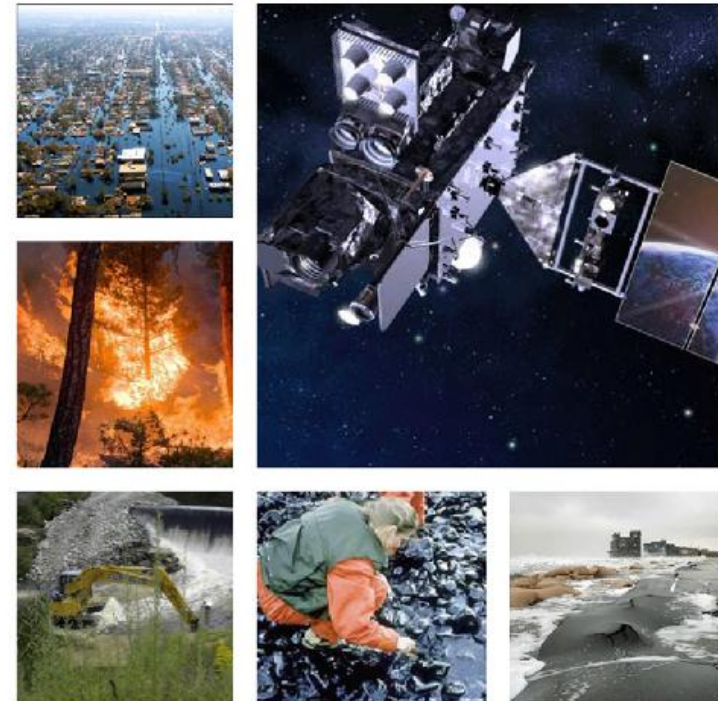
*Understanding and quantification of socio-economic benefits is increasingly critical in demonstrating the value of Earth observations.*

A further GEOValue Workshop is being planned for 2019 (1<sup>st</sup> week of July TBC) hosted by ESA in Frascati.

## Workshop on Demonstrating the Value of Earth Observations: Methods, Practical Applications and Solutions

*A GEO Side Event, Washington D.C., October 23-24, 2017*

### Summary findings and recommendations



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USGS  
science for a changing world

FourBridges

esa



# 2017 Workshop Findings (1)

- 1. It is critical that improved understanding of the value of Earth observations be developed.**

Important to scientists, policy makers and managers to develop improved EO-based solutions that capitalize on key opportunities, support decision making and prioritization in handling scarce resources.

- 2. The understanding of the value of EO is facilitated by a description or narrative explaining the basis for EO-based societal benefits in a clear and simple way, possibly accompanied by a quantified estimate of the value (in monetary or non-monetary terms).**
- 3. a multidisciplinary approach is needed that integrates the knowledge base of economists, physical and biological scientists, decision scientists, and investigative journalists.**



## 2017 Workshop Findings (2)

- 4. extend the chain concept beyond the production of information and to consider how this information impacts societal decisions.**
  - Value chains provide useful tools in understanding the value of EO and building convincing narratives.
- 5. Case studies are particularly effective to analyse and validate the dynamics associated to a given value chain. They are also particularly useful for “telling the story” to a non-technical audience.**
- 6. improved knowledge about users, uses and impacts of their data can help EO data and service providers to improve their services and design better solutions for the future.**



# Overall Agenda

1. The importance of sustained EO activities at regional level
  - to look at how co-operation internationally can help drive the benefits of using EO with the focus on regions as a particular case.
2. From Research to Business
  - R&D is the motor but which often stops before it can deliver results commercially. How can we improve the situations?
3. Measuring the value in EO data and communicating it to stakeholders
  - How to convince budget holders of the wisdom to invest in the use of EO? Showing them how beneficial it can be for their business whether public or private is an effective way.
4. Developing the Future
  - Putting all this together into a strategic roadmap with a concrete plan.



# From Research to Business



# Scope of this panel discussion

- Discussion on how to improve the uptake of research results feeding into commercial reality
- Understand the barriers which exist to developing business from research results
- Explore some ideas for improving the process to move from research to business
- Discuss and exchange views on R&D leading to commercial success.





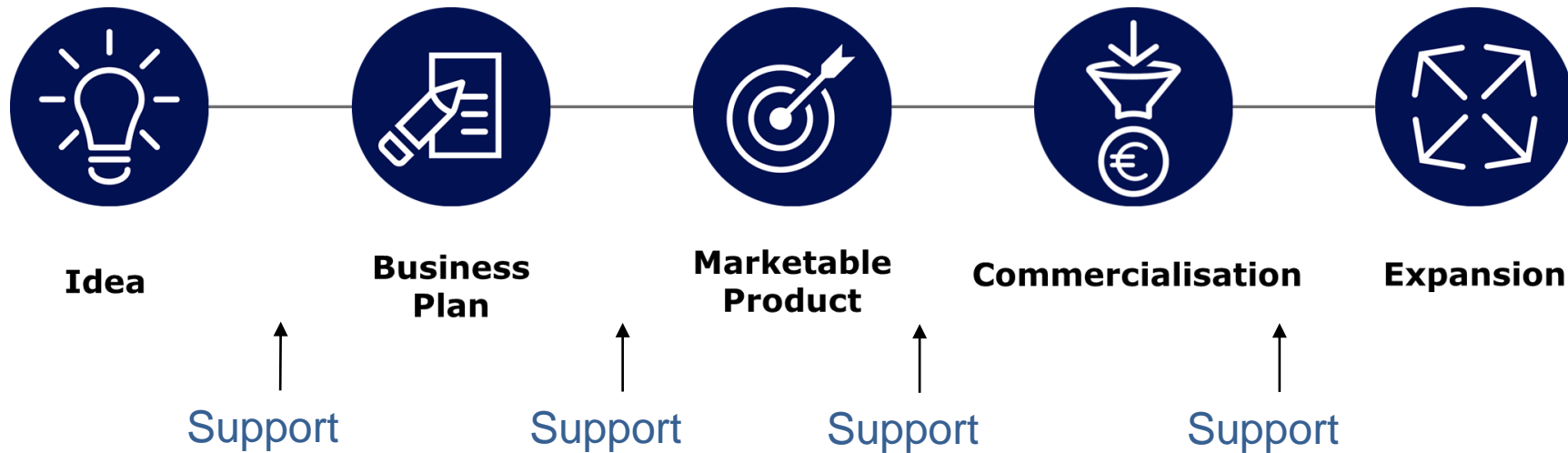
# From Research to Business

- Barriers to exploitation of the results of research projects:
  - users become used to have results which are free and await the next project rather than commit to purchase
  - Funding stops leaving a gap before further work can be committed
  - Lack of business engagement during the projects leaves researchers / innovators searching for support
  - Research being an uncertain activity, funding may run-out before the project or development activity is completed.
- Goal is to develop a support office to provide advice and resources to overcome these barriers.

# Commercialisation of EO services

Developing a Conveyor Belt of Services:

From Pilot to Market





# Commercialisation of EO services



## Access to Knowledge

Understanding **user requirements**

Capturing **market, technology and investment trends**



## Access to Financial Resources

Receiving **incubation and acceleration support**

Tapping into relevant **funding schemes and vehicles**



## Access to Technology

Having continuous **access to EO data** (satellite, in-situ, airborne, etc.)

Utilising necessary **tools** (data analytics, cloud resources, etc.)



## Access to Markets

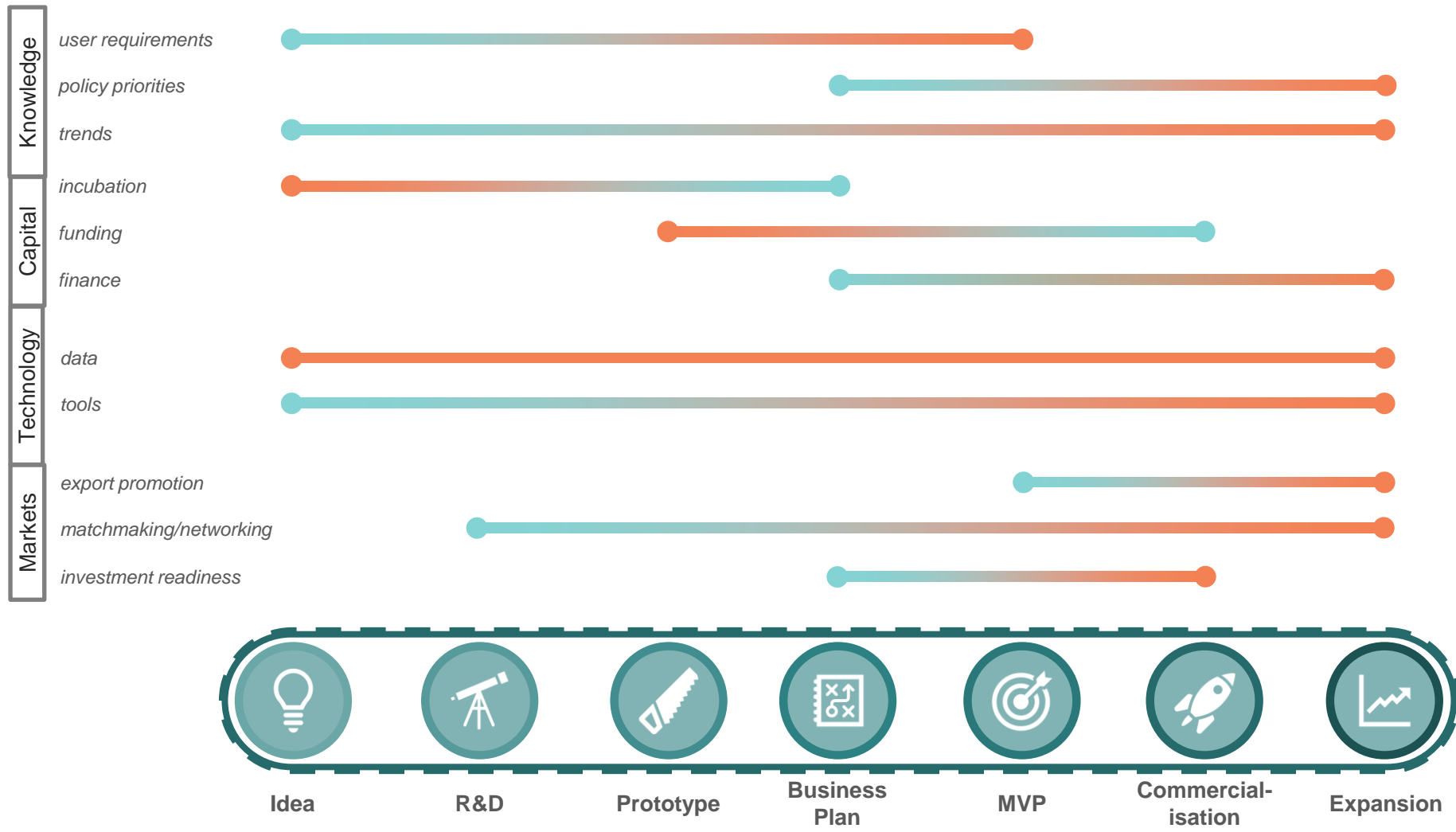
Getting coordinated support for **export promotion**

Being involved in **cross-border and cross-sectoral matchmaking**

Receiving **investment readiness support**



# Support needed at different stages with varying intensity





# Panel

Franz Immler – EC / EASME

Nicola Pirone – CNR / ERA Planet

Gerard Margarit Martin – GMV

Alexia Tsouni – NoA / GEOCRADLE



# Sentinel Benefits



# The Value of Earth Observation

Winter navigation  
in the Baltic



€24m - €116m

Forest Management  
in Sweden



€16.1m - €21.6m

Pipeline Monitoring  
in the Netherlands



€15.2m - €18.3m

Farm Management  
in Denmark



€23.7m - €54.5m

- Case analyses for ESA and the EC into the benefits coming from the use of Copernicus Sentinel Data.
- Value-chain based approach; as single product used with the impact along the value-chain.
- 4 cases so far with more being published regularly (very shortly concerning Flood Management in Ireland).
- More information at [www.earsc.org](http://www.earsc.org) and <https://tinyurl.com/k3bh9t6>

# Value in EO

Latest case study based on value-chain methodology looking at the benefits arising from using Sentinel data:

Fieldsense service in Denmark using Sentinel 2

- Used by farmers to improve field management.
- Potential savings of €23.7m to €54.5m in Denmark

<http://earsc.org/news/farm-management-support-in-denmark>



## FARM MANAGEMENT IN DENMARK

### What we found

- High resolution (10m), Sentinel, satellite imagery is **helping cereal farmers save time inspecting** (scouting) their fields and money by reduced crop damage and chemicals used.
- The **Fieldsense** service leads to direct, **economic benefits** to the farmers of between €3.8m and €7.9m available today in Denmark.
- Benefits are almost **exclusively felt by the farmers** due to the very large size of the market for cereals and derived products.
- As **new machine-learning technology** is applied these benefits can potentially reach €23.7m to €54.5m.
- If extended across the whole of Europe, we estimate that the **total benefits** to cereal farmers could be as much as **€2.7b per annum**.
- Everyone benefits through **reduced use of chemicals** as a result of more timely and controlled application which helps improve water quality and the general environment.
- The Fieldsense business of supplying information services to farmers is made possible by the **free and open data policy of Copernicus**.
- The **supply-chain is very dynamic** and business models of Fieldsense and other service providers have adapted, even in the time the case has been developed.



### How are space data used?

**Fieldsense**, a small Danish start-up company, provides a service that helps farmers be more efficient. Every 5 days, Sentinel 2 images are processed to provide maps of refined vegetation indices. These highlight where crops are under stress and action might be needed.

### Who benefits?

The main beneficiaries are the farmers with large, cereal farms. Farm machinery manufacturers and agriculture suppliers as well as Danish Ministries benefit through market information on the crops. Citizens and farmers benefit through reduced use of chemicals on the farms.

Copernicus Sentinel-2 Benefits Study: A Show Case

Funded by the EU and ESA

Download the full report from the project website





# Benefits of EO

Introduce “Short Cases”.

Focus is on the story rather than the numbers.

Strong communication tool

1<sup>st</sup> Short case published deals with

## Peatland Management in the UK

- Strong environmental and societal dimensions
- Improved water quality for citizens
- Reduced costs for the water companies.

<https://tinyurl.com/k3bh9t6>



## PEATLAND MANAGEMENT IN THE UK

Copernicus Sentinel data is being used by water utilities in the UK to improve the management of peatlands, leading to better water quality for local citizens, reduced costs of purification for the water companies and strong environmental benefits.



### THE CHALLENGE

Peat is an important material within water collection basins both for water retention and its controlled release. Peatland makes up 12% of the total area of the UK but, unfortunately, 80% are in a poor condition where they have been drained or damaged by over-extraction. Peat is a material with some unique characteristics. When it becomes very dry, a water-repellent barrier forms making it difficult to rewet and leaving it friable and prone to erosion. Many peat areas, especially in upland moorlands, have been drained in the past to enable farm animals to graze. As peat soils dry out, wildfires or over dominance of shrubby plants like heather cause further damage so that the peat, and the carbon stored in it, leaches into the water courses turning streams and rivers brown.



The cost of removal of peat colouration from water for domestic use is currently borne by water companies and, ultimately, consumers. Recently, new management practices have been developed whereby poor-quality peat land is restored by blocking water channels (ditches) so increasing the water level and greatly improving the quality of the peat. The problem faced by the water companies is to identify where the areas of degraded peat lie. Mapping of uplands is an expensive process and, whilst land-cover maps provide broad views of the peatland, a more accurate classification is required to distinguish between peatland in good condition and that which is not. This is where the satellite data becomes useful...

March 2018

More information on  
[www.earsc.org/sebs](http://www.earsc.org/sebs)



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**Thank you  
for your attention!**



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