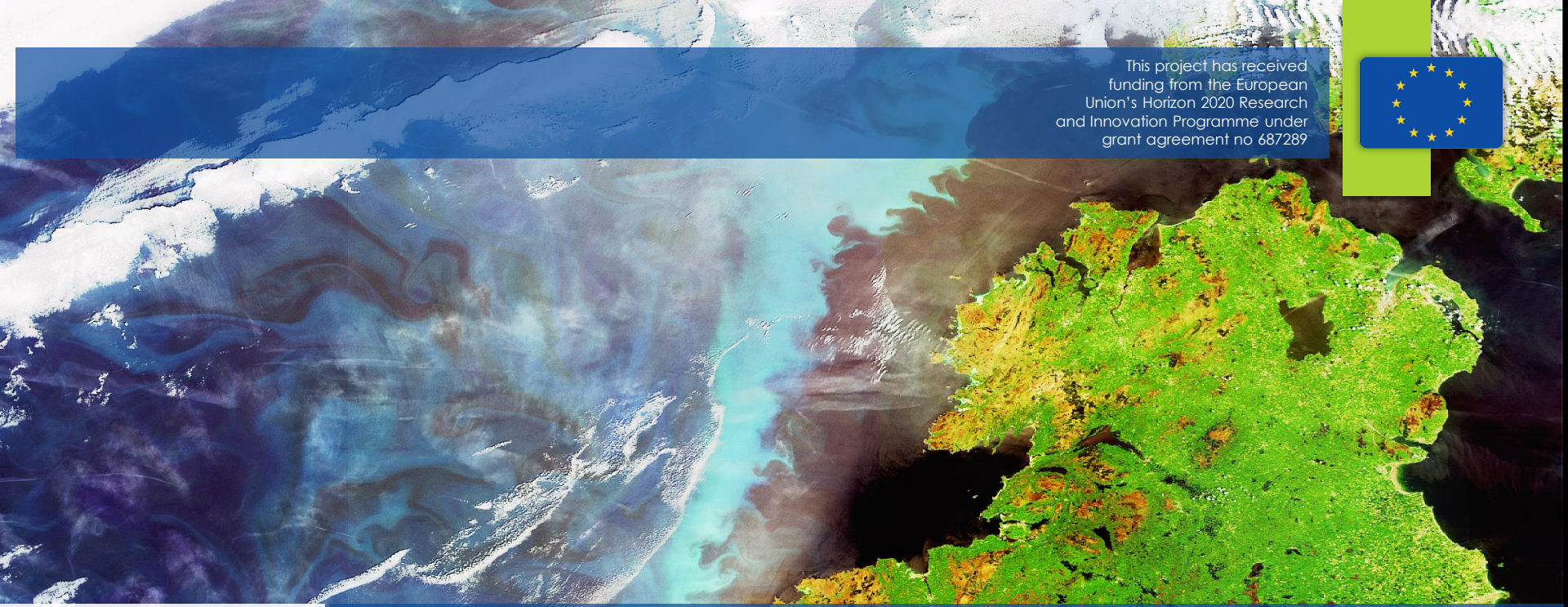
This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement no 687289

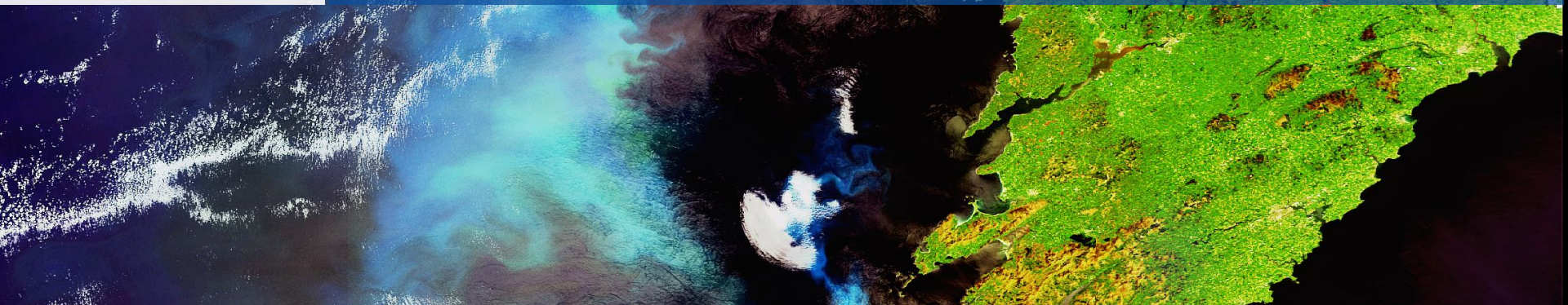


Coastal Waters Research Synergy Framework

Integrating Big EO Data into Multidisciplinary Coastal Research

Challenges and Opportunities for Co-ReSyF Users

Eirini Politi (presenting on behalf of UCC)



EO data challenges

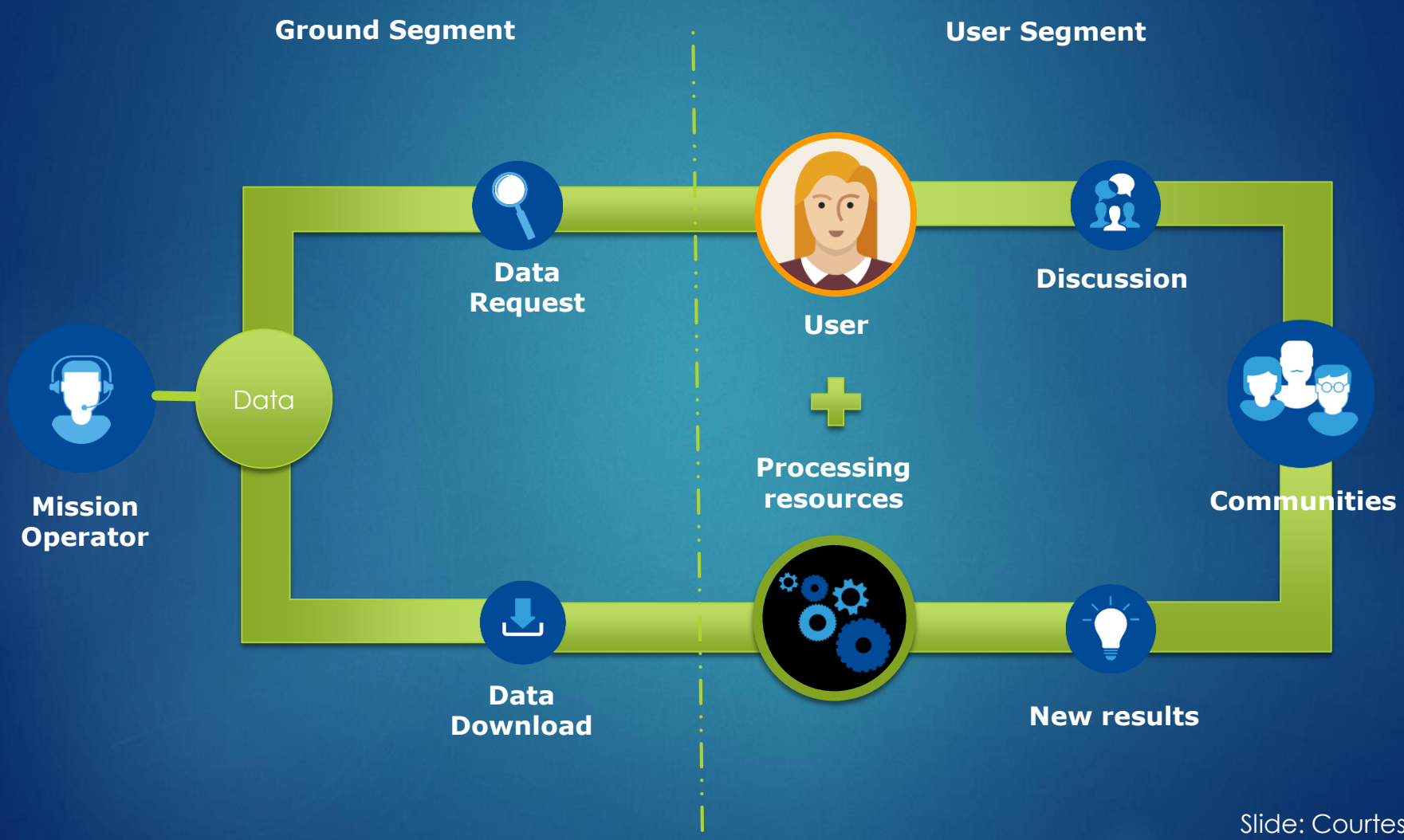
BIG DATA

VELOCITY
VOLUME
VARIETY
VERACITY
VISUALISATION
VALUE

CHANGE
•
CHALLENGES
•
OPPORTUNITIES

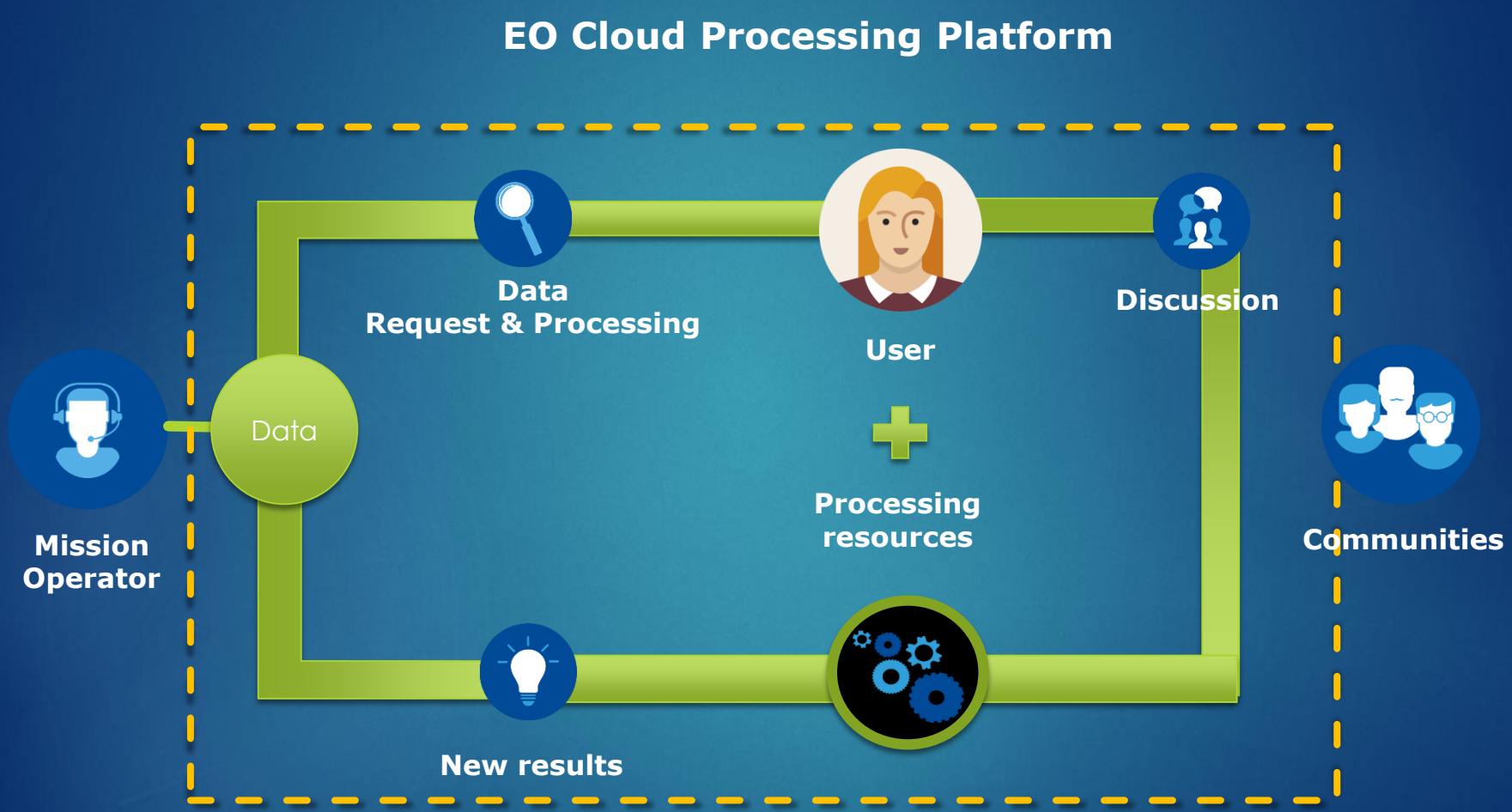
(in data exploitation, support required by scientific community, processing methods, meeting users needs, *etc.*)

Data exploitation mechanism (up until recently)



Slide: Courtesy ESA

(Big) Data exploitation mechanism (now being implemented)

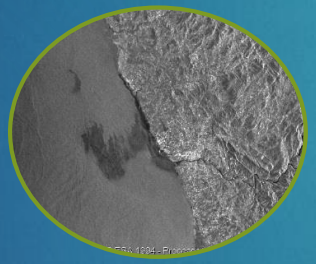


Slide: Courtesy ESA

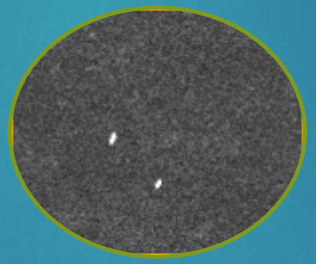
Project Overview

- Co-ReSyF is a cloud platform to support coastal research applications that use EO Big Data
- Co-ReSyF is a research and education resource for both experienced and novice EO data users
- Core research applications include:

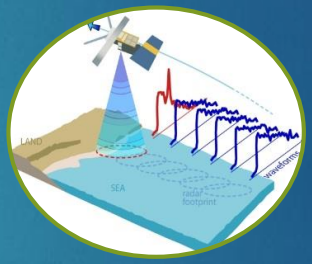
Oil spill detection



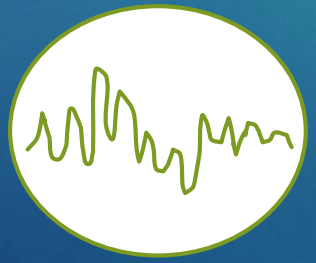
Vessel detection



Coastal Altimetry

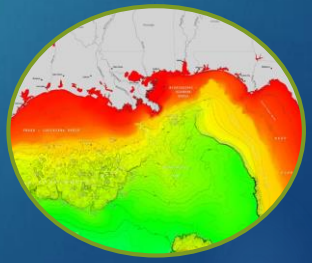


Hyper-temporal Time Series



Water quality

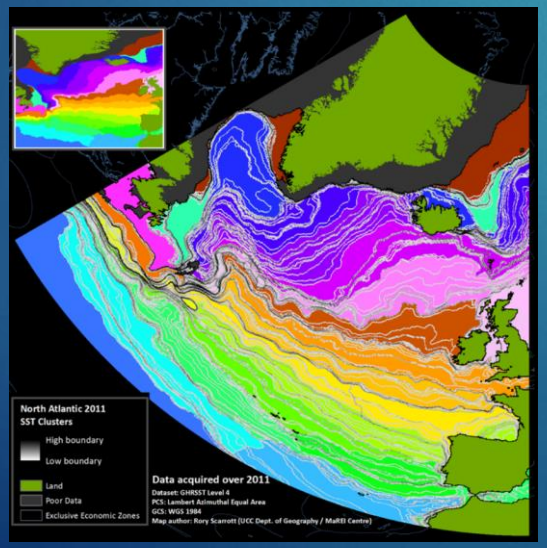
Optical & SAR Bathymetry



Case study: Ocean surface heterogeneity mapping using hypertemporal EO-based SST

Research Application (without Co-ReSyF)

- **In-house expertise** used to assess application potential
- Technical skills and interpretation limited to in-house expertise and partners/network
- **Desktop limitations** restrict processing of Big Data
- **Days of computer work** required to achieve single dataset run



Research Application (with Co-ReSyF)

- **Global Co-ReSyF community of practice** can be used to assess application potential
- Technical skills and interpretation open to interaction with global Co-ReSyF community
- **Cloud processing** enables more temporally and spatially detailed datasets to be run
- Runtime for single datasets reduced to less than a day, with **parallel processing** possible

- *Enables more research to be conducted with less resource effort*

Opportunities

- Community interaction
- Easier EO data access
- Multi-source data for (synergistic) research applications
- Faster and larger dataset processing
- Smaller resource effort than in conventional data processing
- Open access, open source

Challenges

- Maintain community engagement
- Data and methods quality control and assurance
- Platform sustainability
- Maintenance and running costs, provision of helpdesk
- Advanced users require programming skills

Thank you

Eirini Politi
Geography and Environmental Science
University of Dundee
Scotland, United Kingdom

e e.politi@dundee.ac.uk
w https://www.dundee.ac.uk/geography-environmental-science/staff/profile/eirini-politi.php