



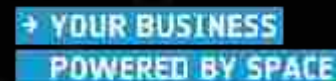
Business Applications at ESA

ESA ISD, 11-12 September 2018

ESA downstream business applications team

Rita.Rinaldo@esa.int

business.esa.int



European Space Agency

science



human spaceflight



applications*



earth observation



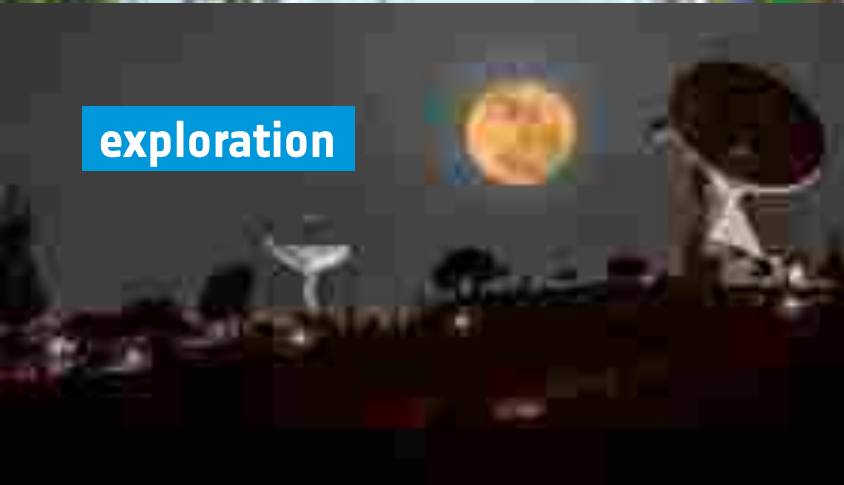
space transportation



navigation



exploration



technology



telecommunication



→ FUEL FOR YOUR BUSINESS

Could you be leveraging Space technology and data for the benefit of life on Earth?



→ ...MORE TECHNOLOGIES



- Big Data analytics
- Artificial Intelligence
- Megaconstellations
- 5G
- Crowdsourcing
- IoT



→ OUR OFFER TO YOU

We'll work together to make your idea commercially viable, with:



Zero-Equity
Funding
(€60k-€2M+)



Tailored Project
Management
Support



Access to
Our Network
& Partners



Use of the
ESA Brand for
Credibility

ESA's Downstream Business Applications

→ Returns and investments

68%
of revenues goes to export

€29b+
Space Applications &
Services Market

59
Export countries



*Socio-economic assessment of 60 out of 320 projects (September 2016)

→ WORK WITH US

business.esa.int/funding

Open Competition: ~€200K 100% funded)

Kick-start: ~€60K 75% funded)

Call for Proposals: up to 3M+ (50% funded)

Closing date: 08 Nov 2018



Closing date: 26 Oct 2018



Closing date: 01 Oct 2018



→ Feasibility Studies
integrating
space asset(s) and 5G
networks

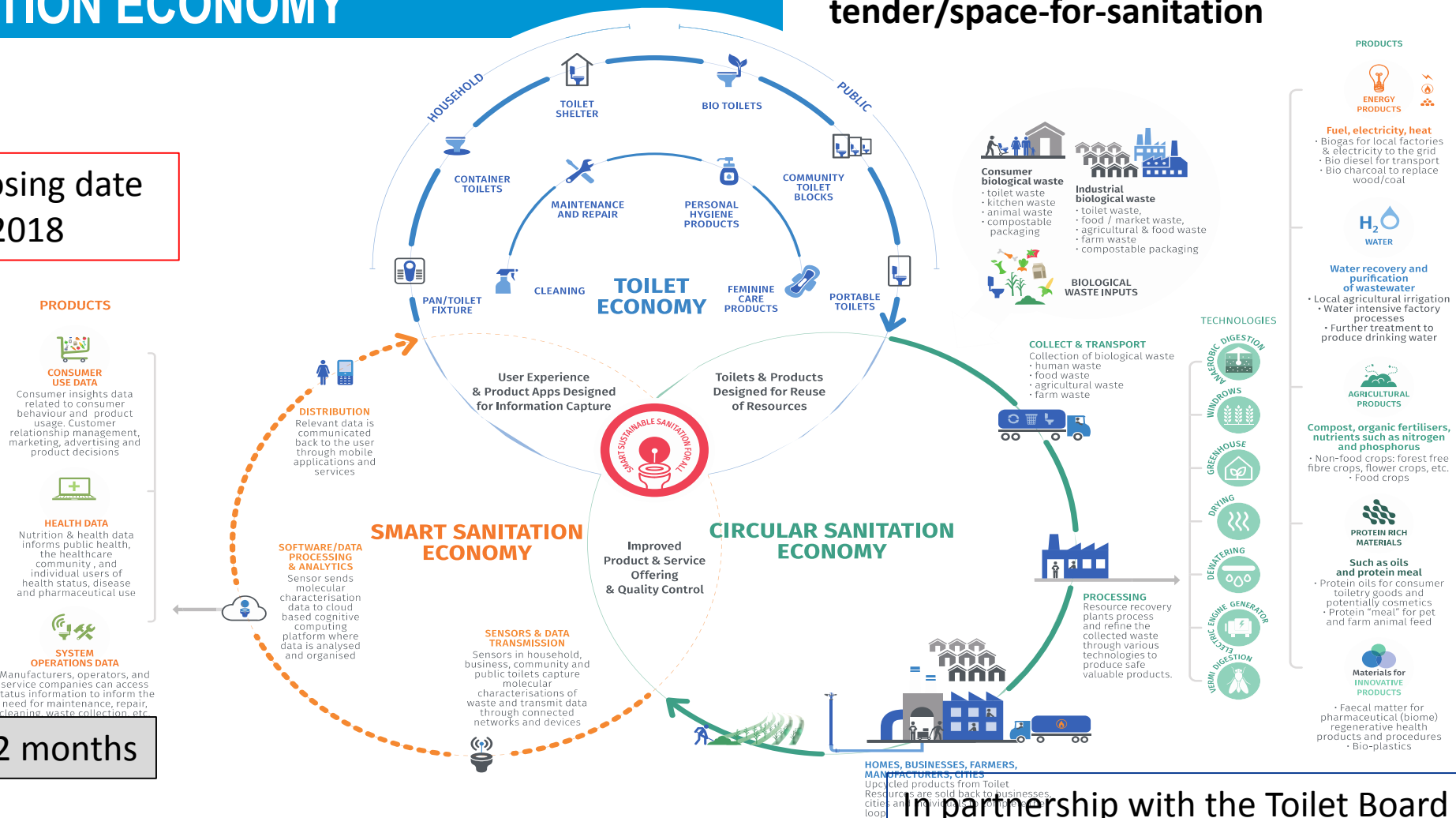
in the Groningen region

First deadline: 26 Oct 2018

→ INTEGRATED APPLICATIONS FOR SANITATION ECONOMY

<https://business.esa.int/funding/intended-tender/space-for-sanitation>

ITT open: closing date
26 October 2018



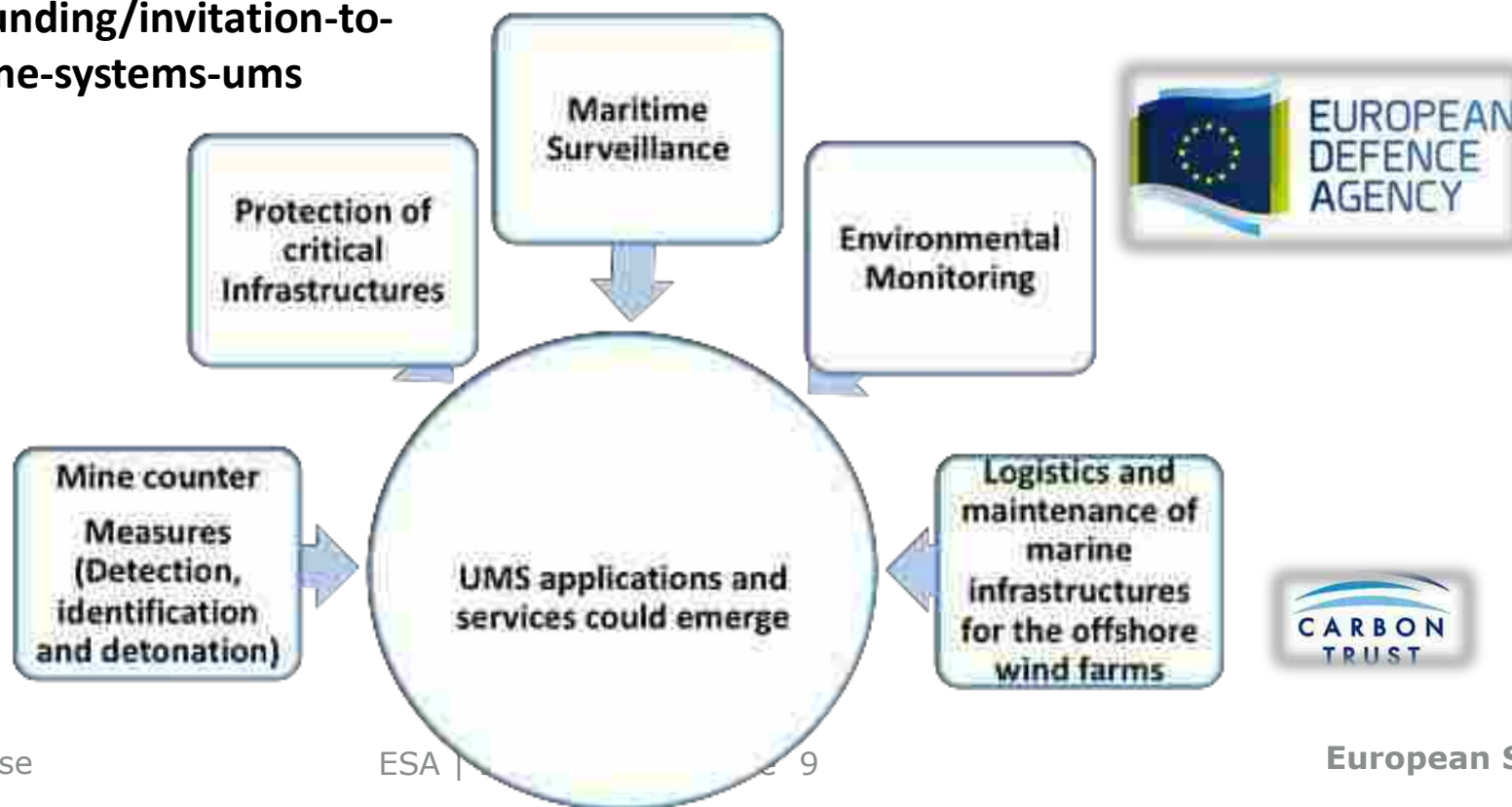
200 kEUR/12 months

In partnership with the Toilet Board Coalition

→ UNMANNED MARITIME SYSTEMS

<https://business.esa.int/funding/invitation-to-tender/unmanned-maritime-systems-ums>

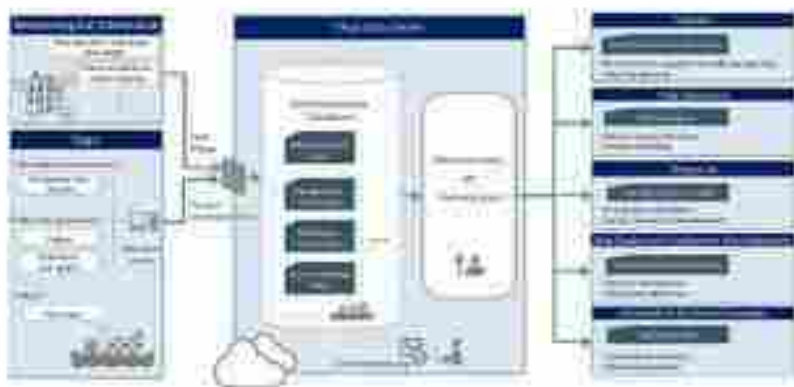
ITT open: closing date
8 November 2018



→ SHIPPING AND NAVIGATION: A SECTOR IN EVOLUTION

Tomorrow

Maritime Big Data platforms



VDES/ VDES-SAT



Autonomous ships



e-Navigation



M2M and IoT



Today

Space-based services for distributed energy networks (smart-grids)

Objective: assess the technical feasibility and commercial viability of **downstream space based services for the distributed energy networks** to be deployed in the next 5-10 years:

- Energy services for utilities: Monitoring, early warning of outages and self-healing of the grid
- Virtual Power Plant services: Energy forecasting to optimize use of energy assets and stabilize the grid

In partnership with Transmission System Operators (TSOs), Distribution System Operators (DSOs) and Friends of the Supergrids

250 kEUR/9 months

ITT will be issued
in Q4 2018



→ SPACE AND BIOTECHNOLOGY



Biotechnology has made possible and improved the effectiveness of a range of pharmaceutical, medical and agricultural goods.

In partnership with European Food Safety Authority's (EFSA) and the United Nations Interregional Crime and Justice Research Institute (UNICRI)

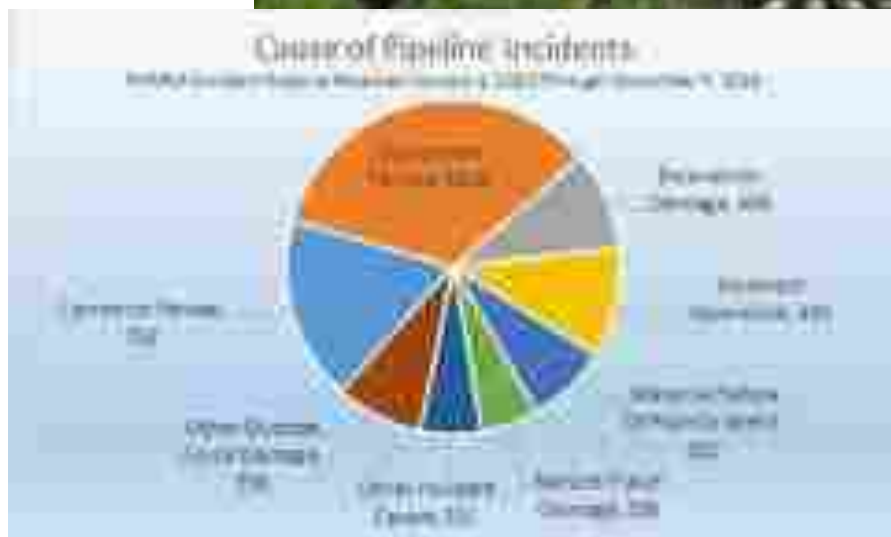
200 kEUR/12 months

Areas of applications are: Energy, Health, Environment and Safety

ITT will be issued
in Q4 2018

→ SPACE FOR CLEAN AND SAFE MANAGEMENT OF WATER, HYDROCARBONS AND ELECTRICITY

ITT will be issued
in Q4 2018



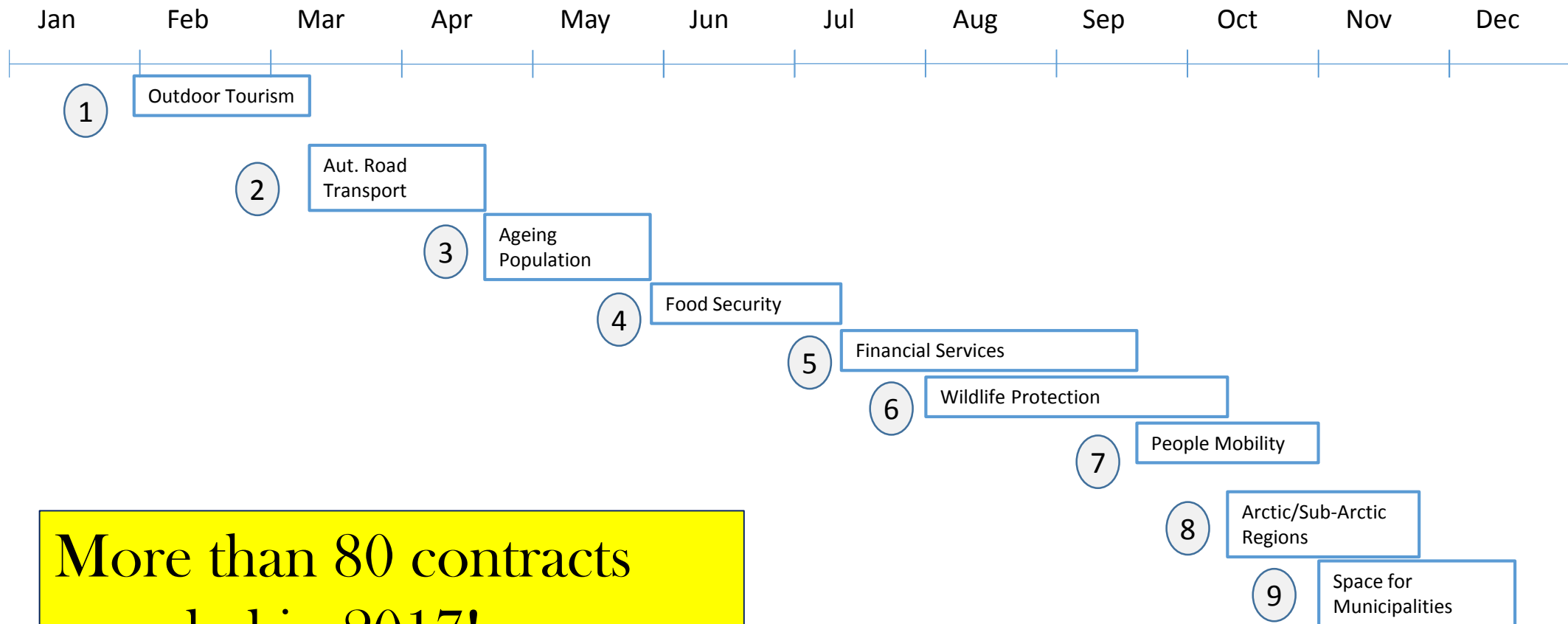
ESA UNCLASSIFIED - For Official Use



200 kEUR/12 months

→ KICK START THEMATIC CALLS

Support offered to application developers and service providers to develop innovative initial ideas



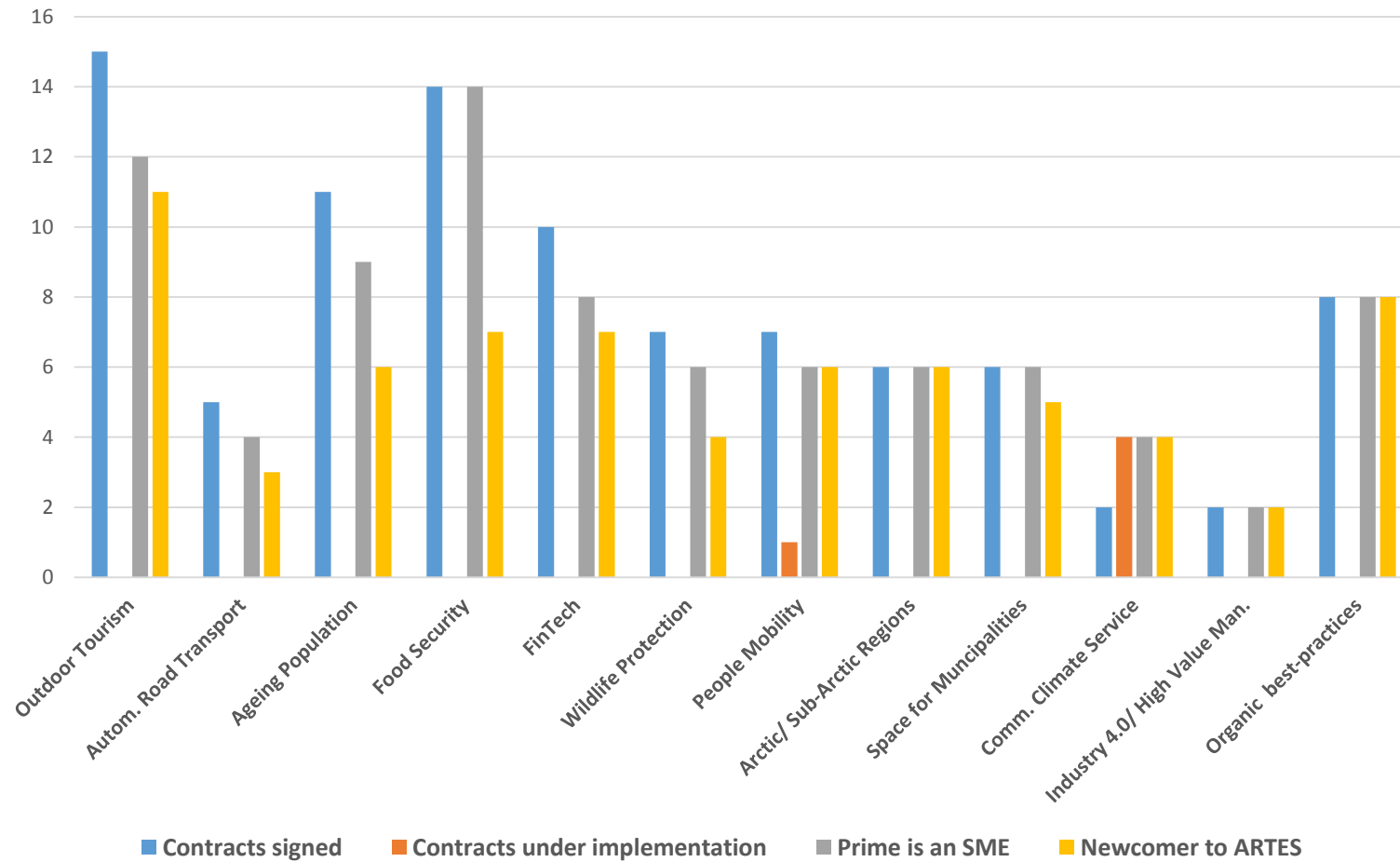
More than 80 contracts awarded in 2017!

Overview all KS calls so far

SMEs and newcomers

Kickstart Studies SMEs and Newcomers to ARTES

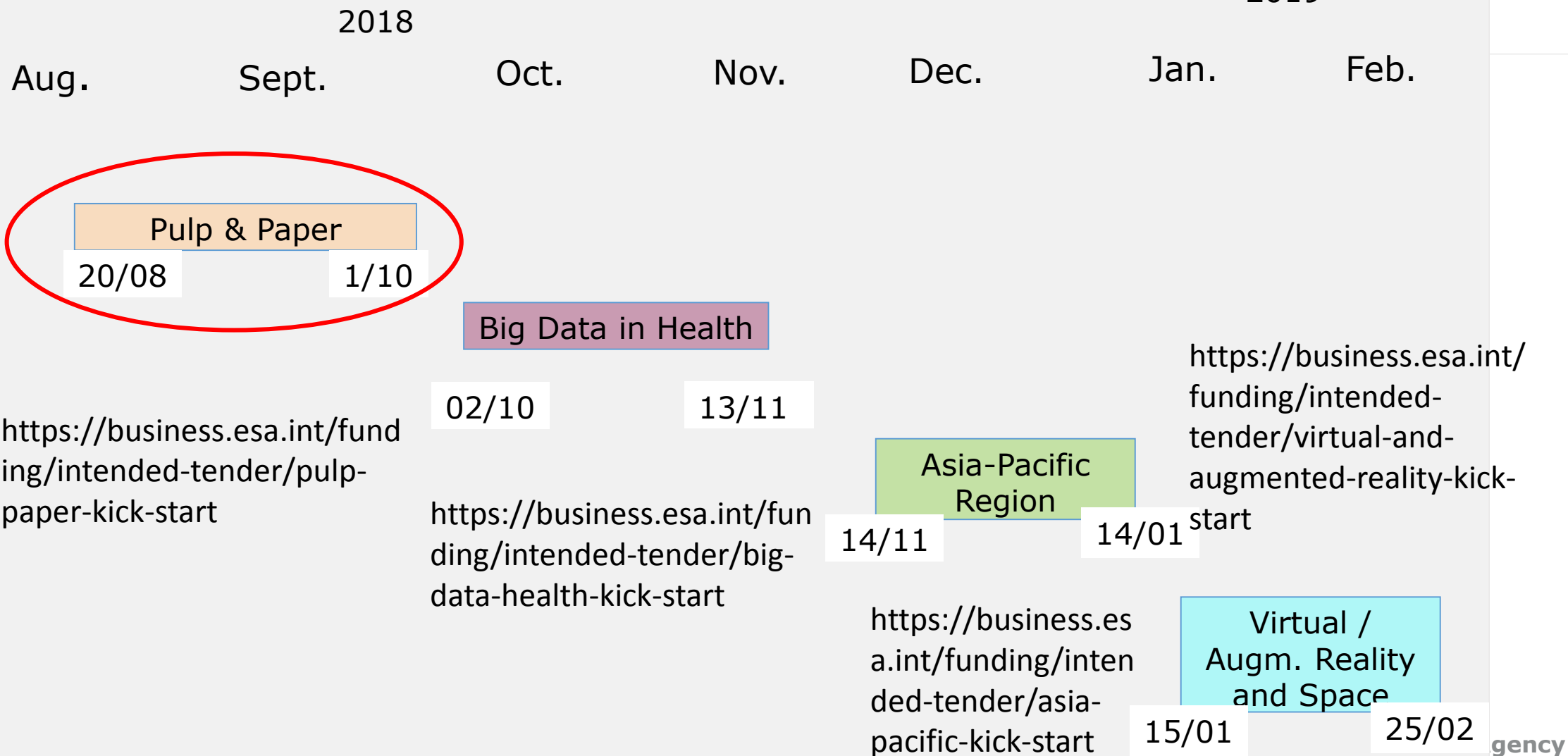
- Across all KS calls, 84% of primes are SMEs
- Share of newcomers to ARTES participation is 68%



Status as of 02/08/18

→ KICK-START THEMATIC CALLS: 2ND SEMESTER 2018

2019



→ SPACE AND 5G

- **Space** has an invaluable role to play in the **5G** ecosystem.
- **Telecommunication** satellites can extend, enhance, and provide reliability and security to 5G, helping to deliver its promise of global, ubiquitous connectivity. Other space assets, such as **Earth Observation** and **Satellite Navigation** can be integrated with 5G technology to deliver innovative applications in a number of vertical sectors.
- The European Space Agency (ESA) has joined forces with the Economic Board Groningen (EBG) to support the development of **applications that integrate** space and 5G.



→ KEY ELEMENTS

Objectives: study service(s) using 5G technologies and space asset(s) and perform a proof of concept of those services(s) in the Groningen (the Netherlands) rural region.

Budget: to be proposed by the Bidder (50%-75% funded by ESA)

Application dates: Call opening on 12th September

First deadline: 26th October

Project duration: 12 months

Eligibility: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Sweden, Switzerland and the United Kingdom

What happens after? The project can be further supported from ESA BA. For more information visit [here](#).

→ Feasibility Studies integrating
space asset(s) and 5G networks
in the Groningen region

Zero-equity funding & support for

→ ENERGY



More than **20** Projects

Over **10MEur** ESA Investment

15MEur Additional Investment

Com4Offshore– One-Stop-Shop for wind farm communication and monitoring

Cloud based interactive communication and monitoring system for the construction and operation phase of an offshore wind farm providing:

- Stable and broadband communication at low costs (system automatically switches to the best and cheapest connection)
- Business support services: data gathering and sharing from all parties involved during the construction or operation of the wind farm to monitor wind farm construction progress in real-time, and timely identify issues



High-data rate multipurpose communications between on-shore and offshore players (construction vessels)
Backup service for fibre optic connections during operation

- Services were successfully demonstrated to Vattenfall that is considering contracting the Com4Offshore solution for the construction phase of next wind parks (HornsRev 3, Kriegers Flak). The consortium is also in discussion with other potential customers (e.g. OBE, OWF Deutsche Bucht, Merkur, GeoSea/Deme)
- A NewCo – OHB Digital Maritime Services – was set-up in Q3/2017 to act as Com4Offshore service provider

business.esa.int/projects/com4offshore



Assets maintenance and recovery

→ Sharper Shape



RPAS and SatEO for maintenance and recovery of electricity grid

Sharper Shape uses EO data to detect vegetation change near power lines.

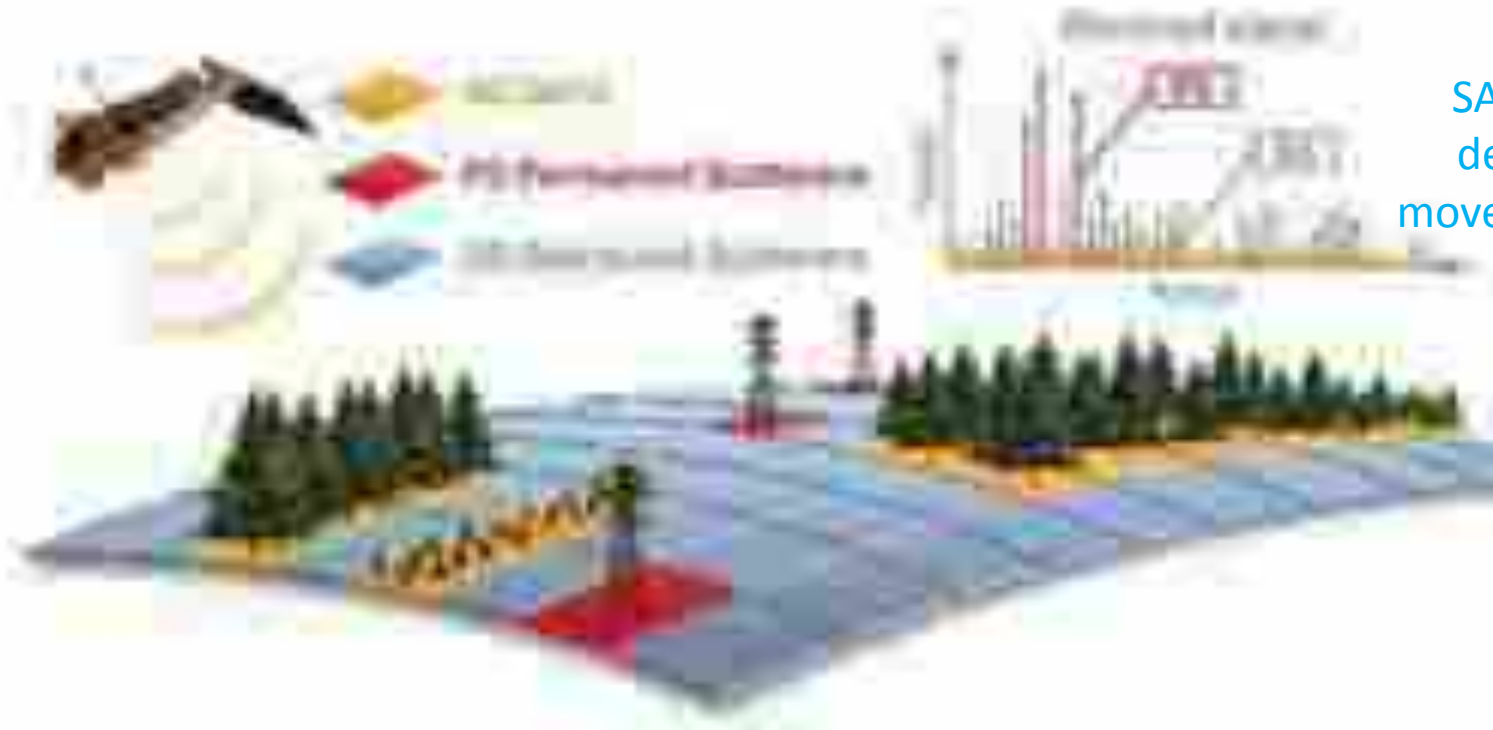
Use of EO change detection:

- Identification of clear cuts near power line corridors
- Vegetation clearance supervision (VHR)
- Trigger UAV inspection

Credits: Sharper-Sat ESA IAP feasibility study
<https://business.esa.int/projects/sharpersat>

Pylon movements and ground displacement

→ GridWatch



SAR images are used for the detection of small and slow movements of pylons and ground



Credit: GridWatch IAP project
<https://business.esa.int/projects/gridwatch>

Displacement map using
satellite SAR data

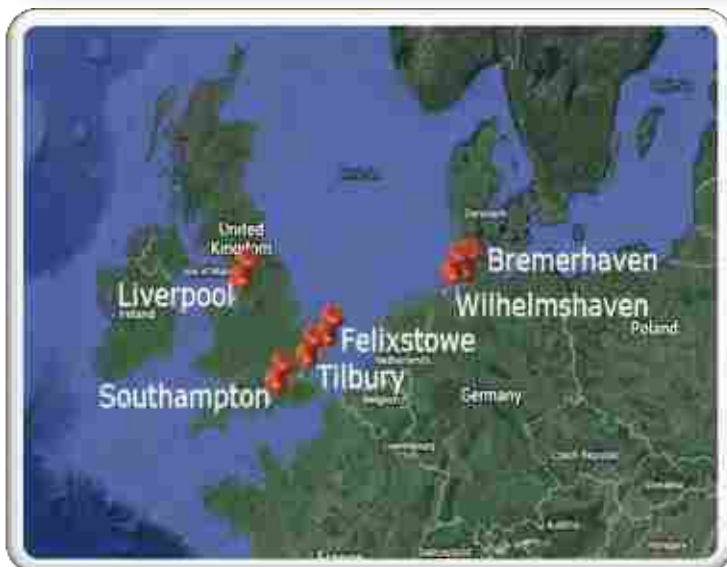
Intermodal Transport

I-PORT: Optimising Intermodal Freight Transport through European Ports

Led by Aimes (UK) with Avanti (UK), Container Port (UK), ISL (DE), DBH (DE)

i-Port integrates space with logistics data to:

- track the location of vessels and trucks,
- compute the estimated time of arrival and optimal routing for vessels and trucks,
- optimize container movement by accessing container locations,
- perform transport job management for container import or export,
- Enable a adjustment of vehicle slots in the port terminal.



EUROPORT - Optimising Intermodal Freight Transport

Led by GMV Innovating Solutions (PL) with TIS.pt (PT), GMV SKYSOFT (PT).



Service 1 – Haulage Operations

To improve the haulage process by optimizing port related operations; monitor real-time trucks/trains locations, activities and routes; estimate ETA/ETD of trucks/trains at/from ports.

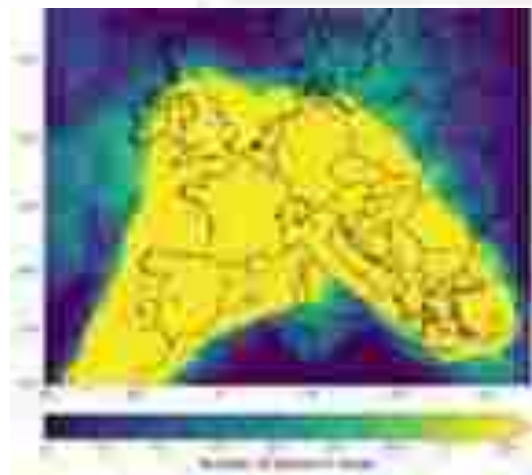
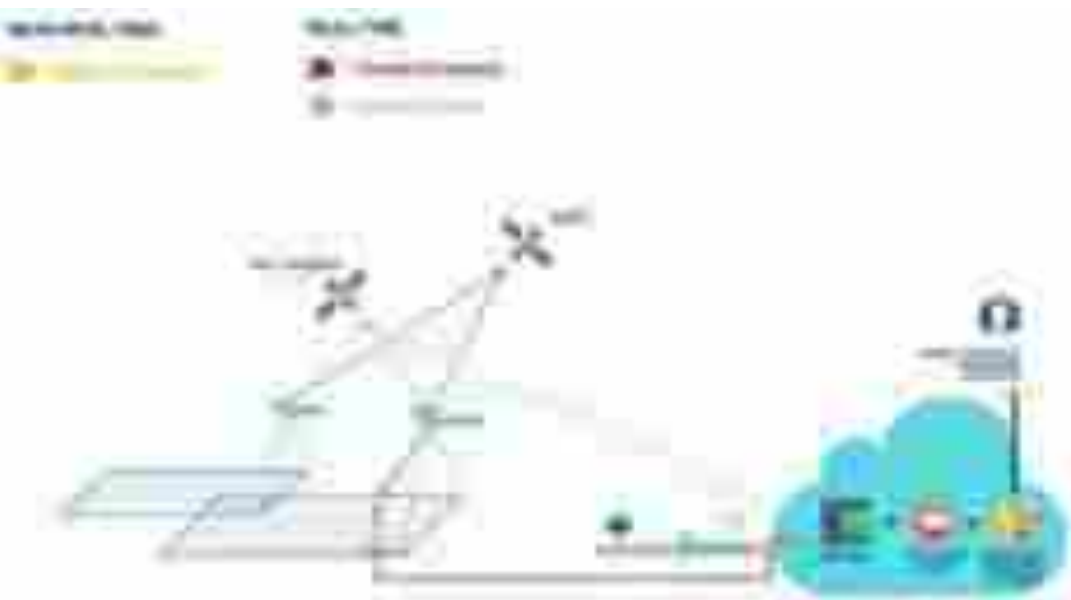
Service 2 – Ship Voyages Optimization

To improve the calculation of ships ETA and ETD to/from ports: ship positioning tracking, optimal ship route calculation based on satellite observation data and weather "en route.

Service 3 – Port Operations

To support the planning and optimization of intermodal transport operations in ports and terminals: access to relevant documents, transport orders management and gate operations, as reception of notices of arrival at the gate, yard operations (pick-up and delivery).

DEMONSTRATION OF ORCA CONSTELLATION SERVICES FOR HIGH RESOLUTION IMAGING (DOCS)



• Coverage simulation with TUI Group Fleet for connectivity applications

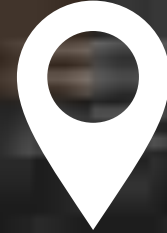


ORCA complements existing space-based earth observation solutions, by realising a sub-orbital constellation capable of supplying wide coverage earth observation data with **high spatial and temporal resolution, in a sustainable and affordable manner**

Supported services: Forestry, Oil & Gas, Asset Management, Smart cities, Competitive Intelligence/Analytics, News and Media, Financial trading, Agriculture, Internet of Things, M2M, Maritime applications

Hazardous Goods Monitoring

SaMoLoSa: Ovinto (BE)



→ FARMING

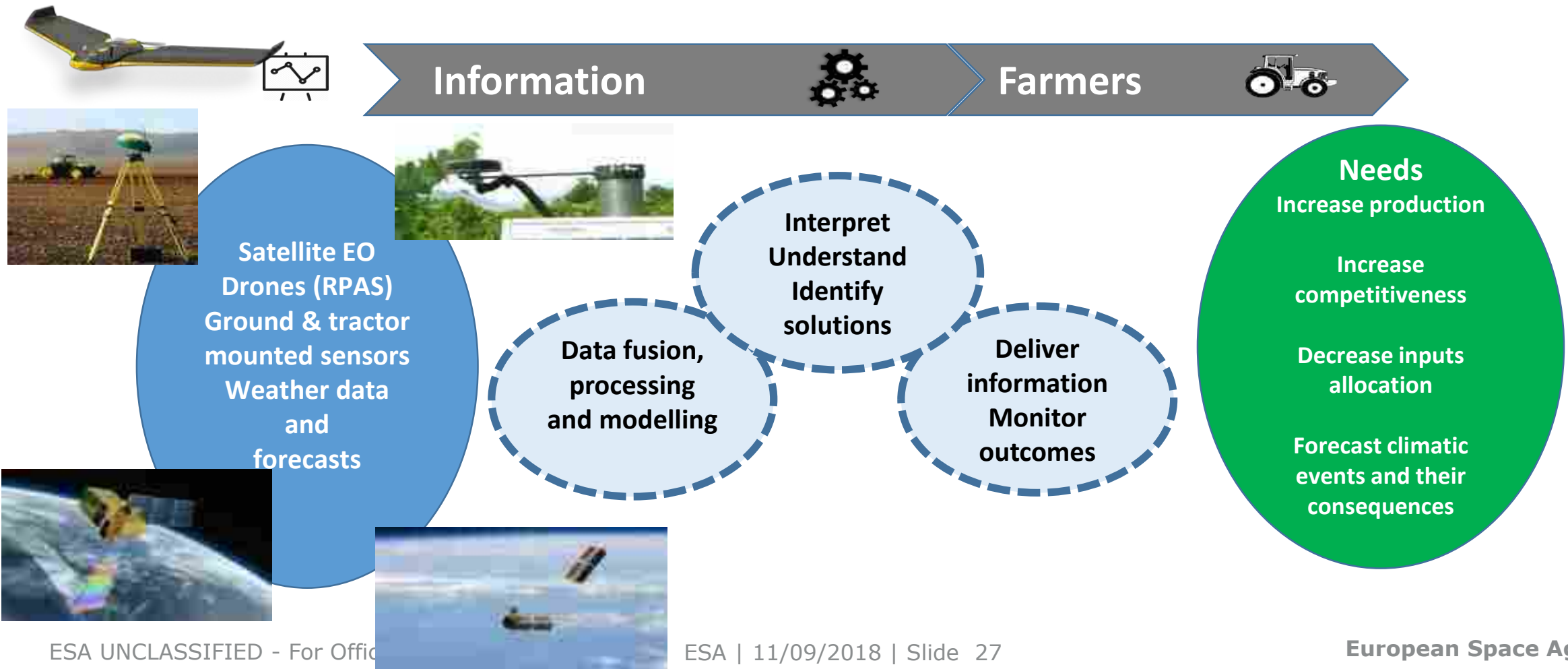
Downstream Sector

Users/stakeholders

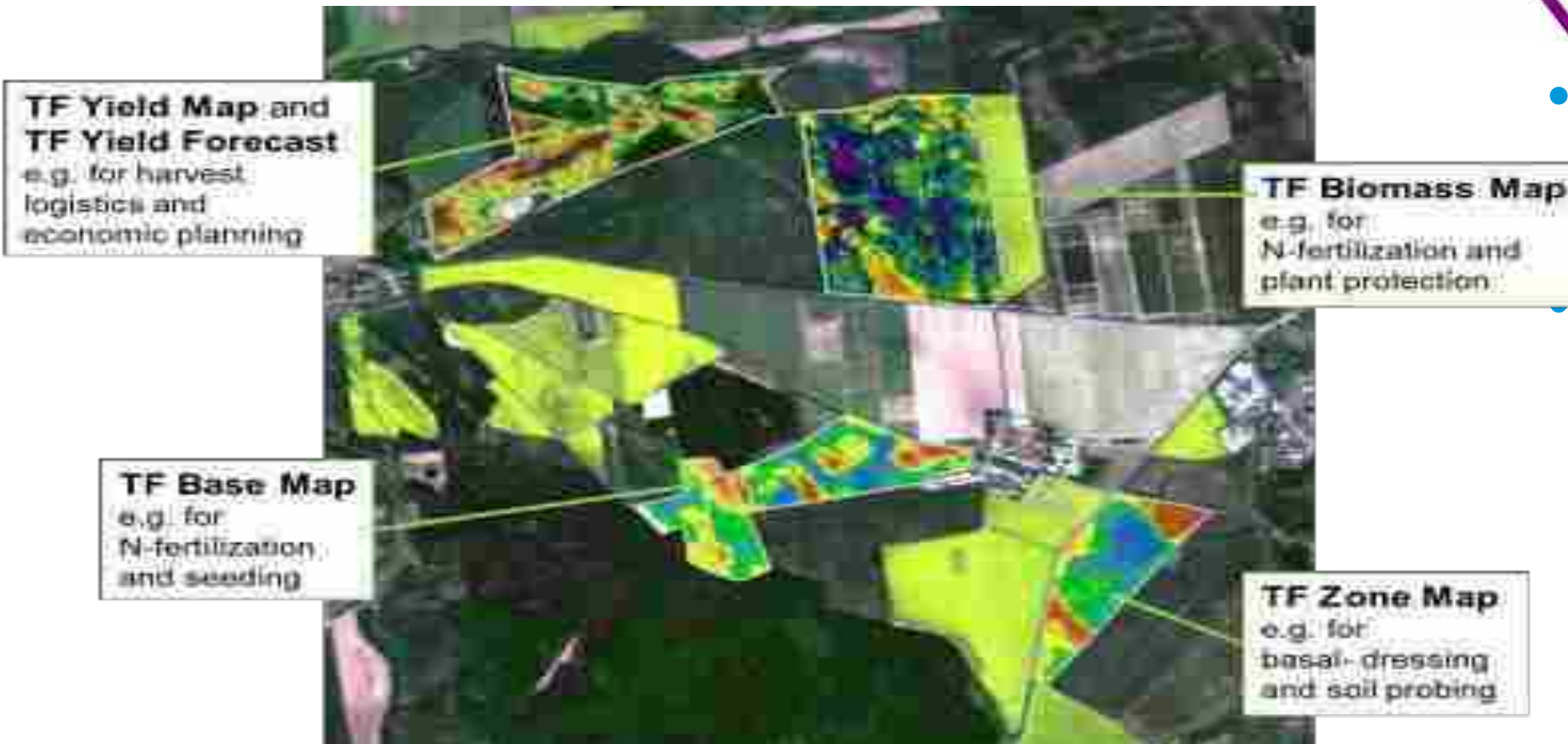
Experts and
technology
suppliers



→ INFORMATION IS REQUIRED TO BIND DATA & NEEDS



→ TALKING FIELDS: SITE SPECIFIC PRECISION FARMING



- More than **100 customers** from **13 countries**

- **Agritechnica Innovation**
Gold Medal award winner in 2015

Objectives

EO-li is a broker platform and market place matching demand and supply of identifying, selecting and reporting in the land restoration context.

Features

EO-li has four components:

- identification of locations to be restored
- selection of an area and the actors
- monitoring and reporting on the restoration project progress
- a learning component providing guidance and capacity strengthening.

Target users

- indigenous groups, NGOs, government, civil society
- tree planting companies, financial technology services
- investors, development banks, impact funds

Partners

- Mundialis
- Groasis
- Maptailor

EO-li was selected for public voting in the Dragons 'den event of the Global Landscape Forum- investment case in Washington DC (30 may 2018).





→ **THANK YOU**