Copernicus

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European Commission

Outline

New Multiannual Financial Framework 2014-2020

- Horizon 2020
  - Space Research 1,4 bn€
- GNSS 6,3 bn€
- Copernicus 3,8 bn€
- Other ...

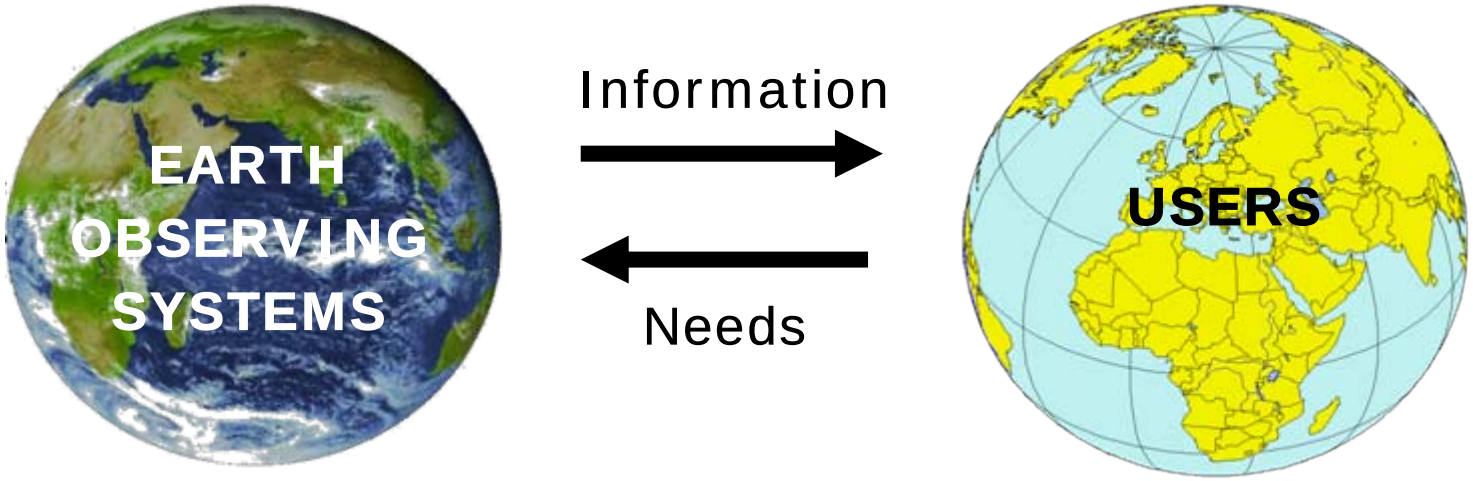
Tot 12 bn€

Outline

- *What is Copernicus?*
- *Governance, financing, legislative basis*
- *Some concrete applications: from core to downstream*

Objectives

1. **To provide information services to policy-makers and other users**



2. **To strengthen the market for downstream products and services ! ! !**

- The Copernicus programme is designed to ensure:
  - An uninterrupted provision of accurate and reliable data and information on environmental issues and security matters
  - Users in charge of policy making , implementation and monitoring , in the EU are supplied with the information they need to do fulfill their tasks
  - Commercial applications that exploit environmental data are stimulated to invest and flourish through a full, free and open Copernicus data policy

six Copernicus services are necessary to meet user needs

Earth monitoring

Land Monitoring

Marine Environment Monitoring

Atmosphere Monitoring

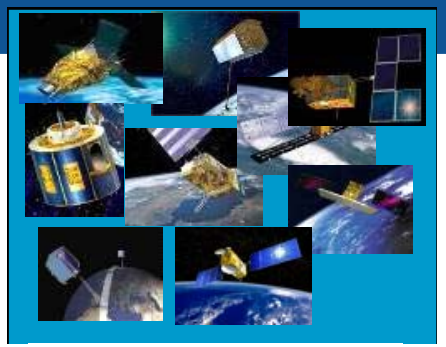
Transversal services

Emergency Management

Security

Climate Change

European Commission



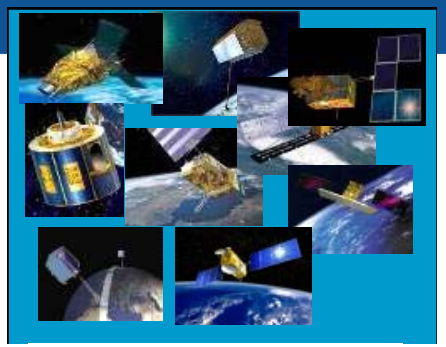
contributing missions

6 services need Earth observation data to make…

in-situ

…added-value products

European Commission



contributing missions

6 services need Earth observation data to make…

esa

EUMETSAT

European Environment Agency

ECMWF

?

FRONTEX

EMSA

SatCen

in-situ

European Environment Agency

…added-value products

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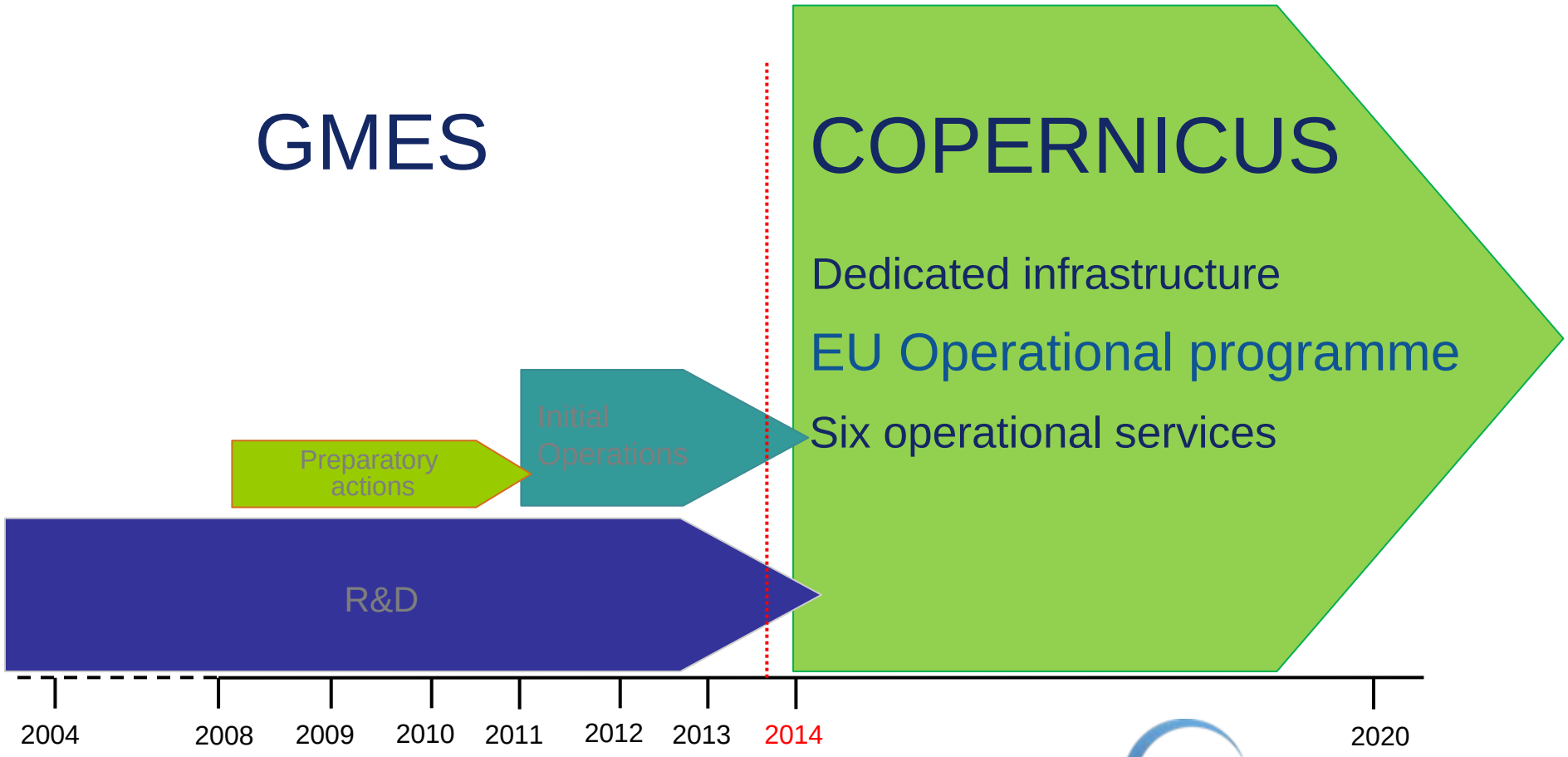
GMES/Copernicus evolution

- *Global Monitoring for Environment and Security:*
  - **predecessor of Copernicus until 2013/2014**
  - **established by Regulation (EU) No 911/2010**
- *Until end-2013: funding for GMES from*
  - **GMES Initial Operations (GIO) – 107 mio EUR**
  - **FP7 funded pre-operational projects**
- *From 2014:*
  - **Copernicus operational phase**
  - **funding from 2014-2020 MFF: €3.8 Bn**

GMES / Copernicus evolution



FP7 GMES Projects overview

79 GMES projects from 2007 to 2012 FP7 space calls, of which 57 Downstream projects.

	Total	*D/S*
• **Land**	**Euro 53 m**	**Euro 23 m**
• **Marine**	**Euro 90 m**	**Euro 57 m**
• **Atmosphere**	**Euro 44 m**	**Euro 8 m**
• **Emergency**	**Euro 49 m**	**Euro 16 m**
• **Security**	**Euro 34 m**	**Euro 10 m**
• **Climate Change**	**Euro 19,5 m**	**Euro 16 m**
• **Specific support actions**	**Euro 5,5 m**	
• **Total EU contribution:**	**Euro 295 m**	**Euro 130 m**

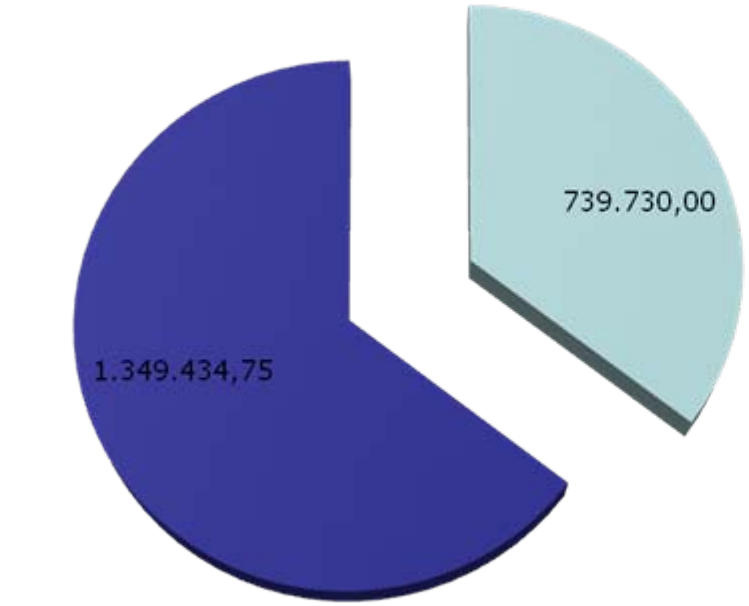
GMES / Copernicus Projects overview

		Land	Marine	Atmosphere	Emergency	Security	Cl. Change
FP7 Projects	*Core*	GEOLAND2	MYOCEAN* MYOCEAN2	MACC* MACCII	SAFER*	GMOSAIC*	
	Service Evolution / R&D	BIO_SOS MS.MONINA ISAC MyWATER SIRIUS GLOWASIS IMAGINES** LOTUS** GLASS** SenSyF**	MYWAVE OPEC OSS2015 SANGOMA	NORS	LAMPRE** IncREO** SENSUM** PREFER**	G-SEXTANT** G-NEXT** SAGRES** LOBOS** NEREIDIS DOLPHIN SIMITYS	EURO4M MONARCH-A CARBONES ReCOVER REDDAF
	Downstream applications	CRYOLAND FRESHMON EUFODOS	FIELD AC AQUAMAR ASIMUT COBIOS SeaU SIDARUS OPERR	PASODOBLE ENDORSE	EVOSS DORIS SubCOAST PANGEO GeoPICTURE*		
GIO	*Operational Services*	GIO Land			EMS-Mapping EFAS		

* Finished
** Under negotiation

State of play: participants from Puglia

EC contribution in FP7 EO projects – call 1 to 5



Total EU contribution 295 m

Project Participants
Centro Euro-Mediterraneo Per I Cambiamenti Climatici Scarl
Planetek Italia Srl
Universita Degli Studi Di Bari "Aldo Moro"

Copernicus Regulation

- EP and Council are currently discussing the Commission proposal for a Copernicus Regulation
  - it should enter into force mid-2014

- Regulation describes the objectives of the programme, the governance and budget for 2014-2020.

- Copernicus budget is EUR 3,786 million (2011 prices), pending approval of the EU 2014-2020 multi-annual financial framework

Copernicus Data Policy

- The Copernicus data policy is adopted via a Delegated Regulation
- This policy promotes the access, use and sharing of Copernicus information and data on a full, free and open basis
- One of the main objectives is to support downstream segment and research, technology and innovation communities
- The European research institutes will be able to make the best use of these data to create innovative applications and services

Cost-Benefit analysis

- *A cost-benefit analysis was conducted taking account of the Copernicus funding from MFF (€3.8 Bn => an average of €541 Mio per year)*
- *Cost per EU inhabitant will be ~€1.07 per year*
- *For every €1 spent we get a return of ~€3.2*
- *An estimated minimum of ~48,000 jobs will be created*

Cost-Benefit analysis

- *Using a system dynamics model, the FeliX model[1)], cumulative benefits could increase further by a factor of between 5 and 10*
- *This could lead to benefits by 2030 in the order of €200 Bn*
- *So Copernicus will result in benefits many times larger than the EU investment*

1) *The FeliX - Full of Economic-Environment Linkages and Integration dX/dt - system dynamics model takes into account the complex relationships between natural and socio-economic systems*

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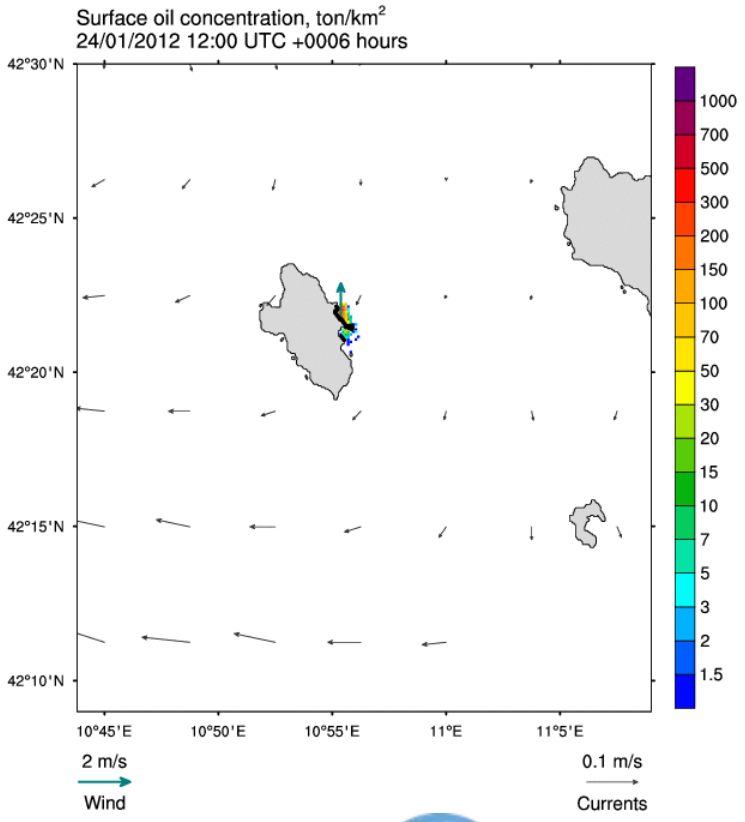
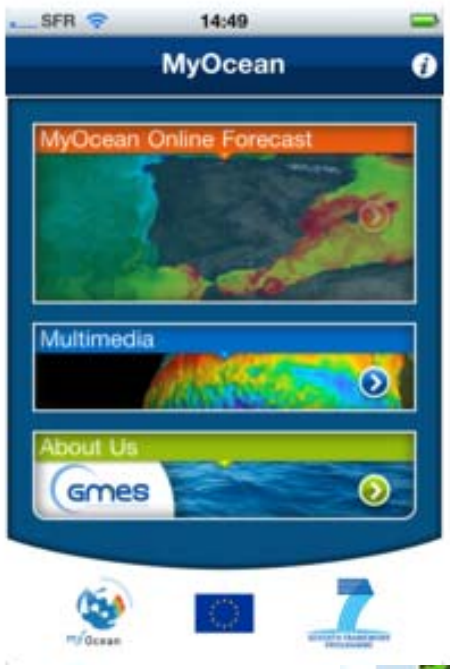
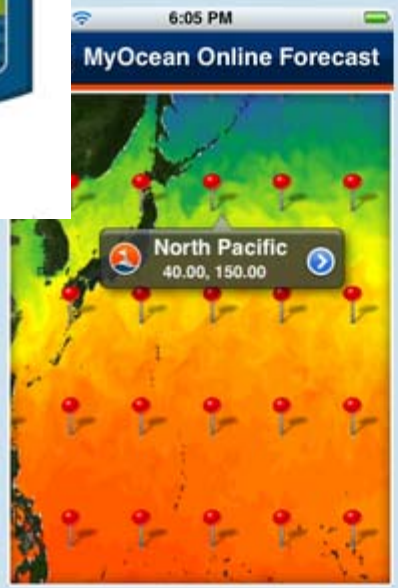
The daily forecast of oil spill scenarios from Concordia

The ship contained 2500 Tons of oil (API 17) which are supposed to spill out in 72 hours

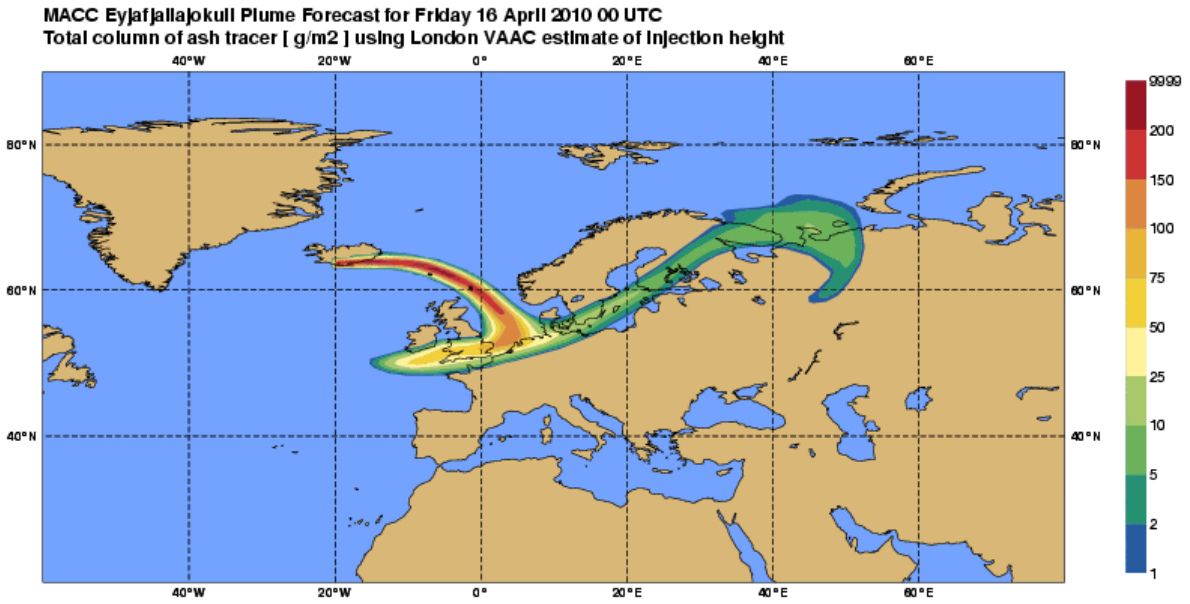


MyOcean iPhone app



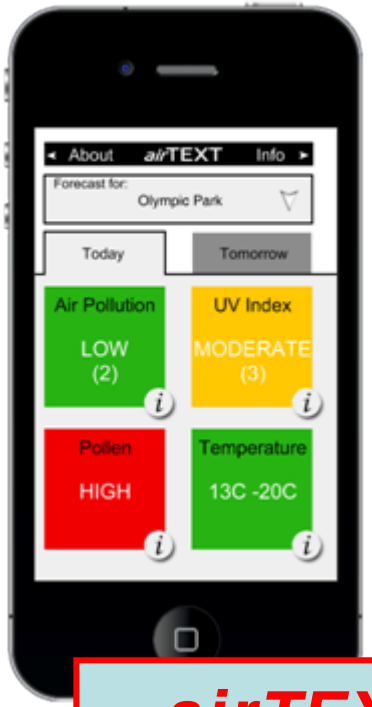


Volcano Eyjafjallajökull case



Launched for 2012 Olympics, London

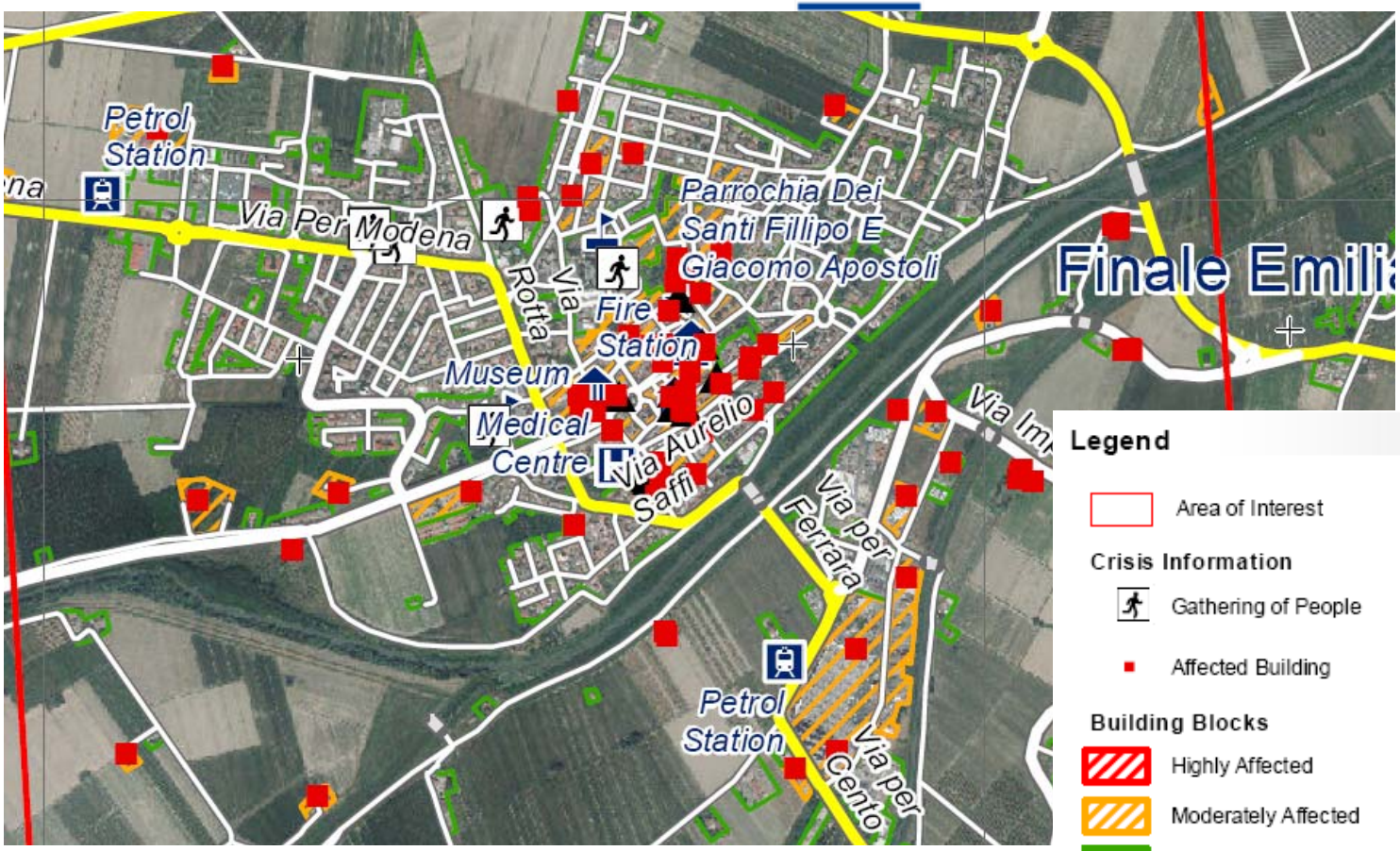
obsAIRve



airTEXT

Japan tsunami

Italian earthquake



Legend

Area of Interest

Crisis Information

Gathering of People

Affected Building

Building Blocks

Highly Affected

Moderately Affected

Not Affected

Not analyzed due to cloud haze

Transportation

Primary Road

Secondary Road

Local Road

Bridge

Points of Interest

Transportation

Institutional

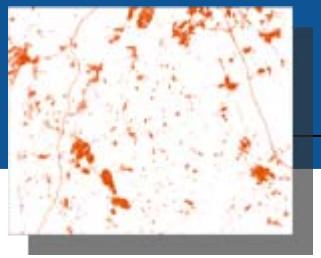
Educational

Medical

Religious

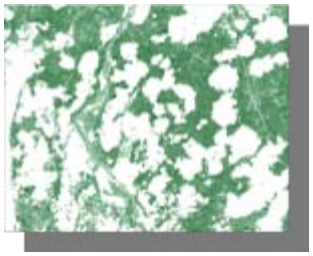
Other

5 HR layers under development (GIS model approach) Example from Alpine test site

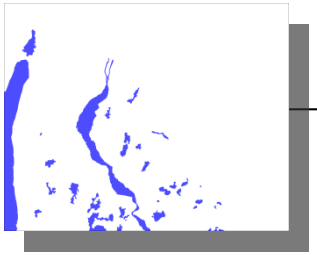


Imperviousness

Vegetation Intensity

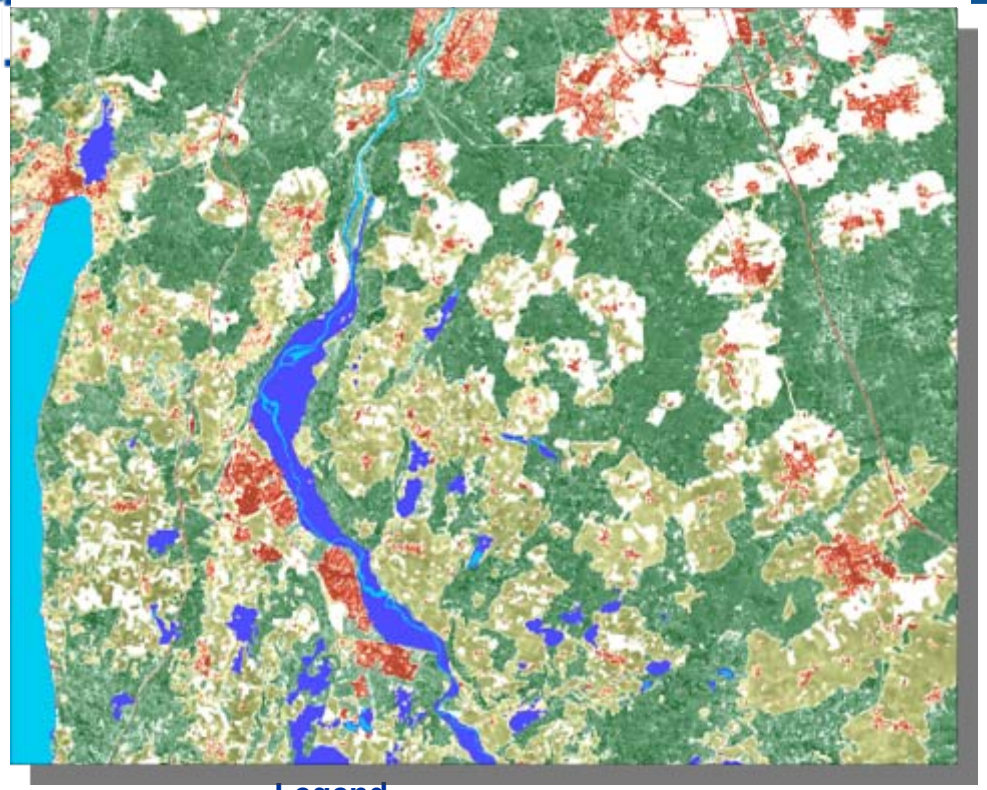


Forest Crown Cover Density



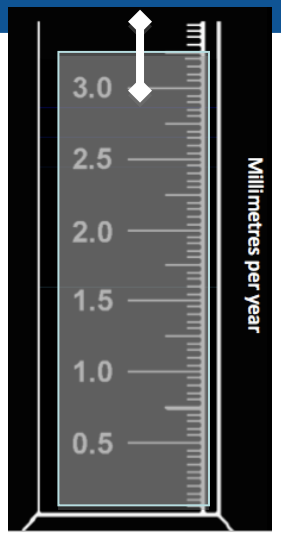
Wetlands

Water



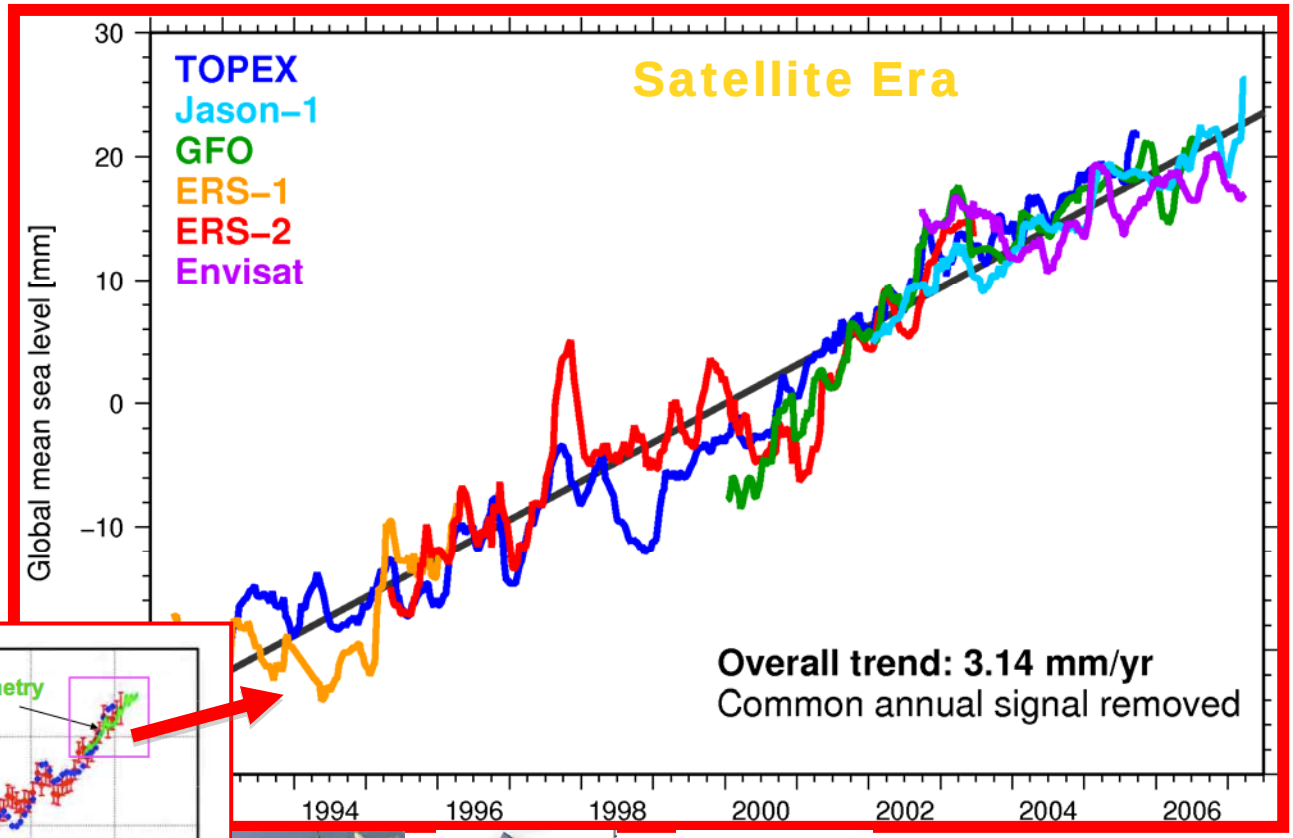
Legend

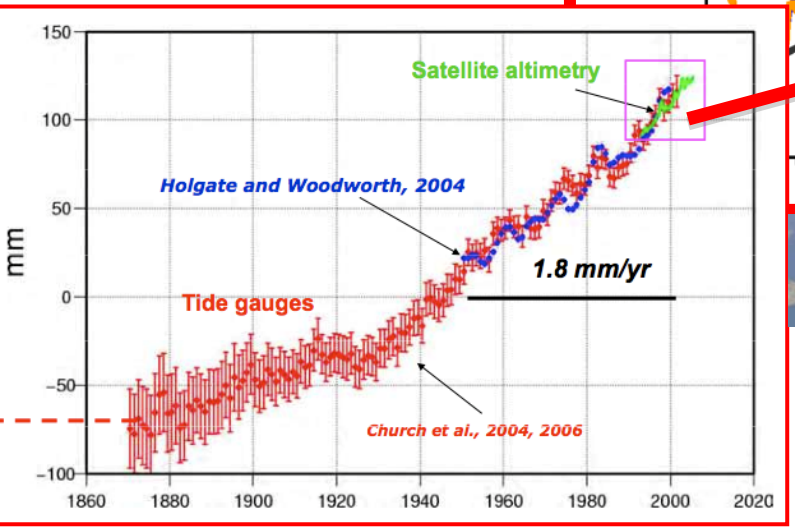
- Degree of Imperviousness (in %)
- Vegetation Intensity Indicator
- Forest Crown Cover Density (in %)
- Wetlands
- Water
- Other (e.g. Agriculture)



Trend
+3.1 mm/yr
±0.7 mm/yr

Budget Period
1993-2003
(IPCC AR4, 2007)





Downstream sector analysis

A number of non-Space sectors benefit from the programme.

Copernicus can be seen as a driving force creating highly skilled job opportunities and can have indirect effects on the wider economy by 2030.

Downstream activities can adapt Copernicus products to regional needs.

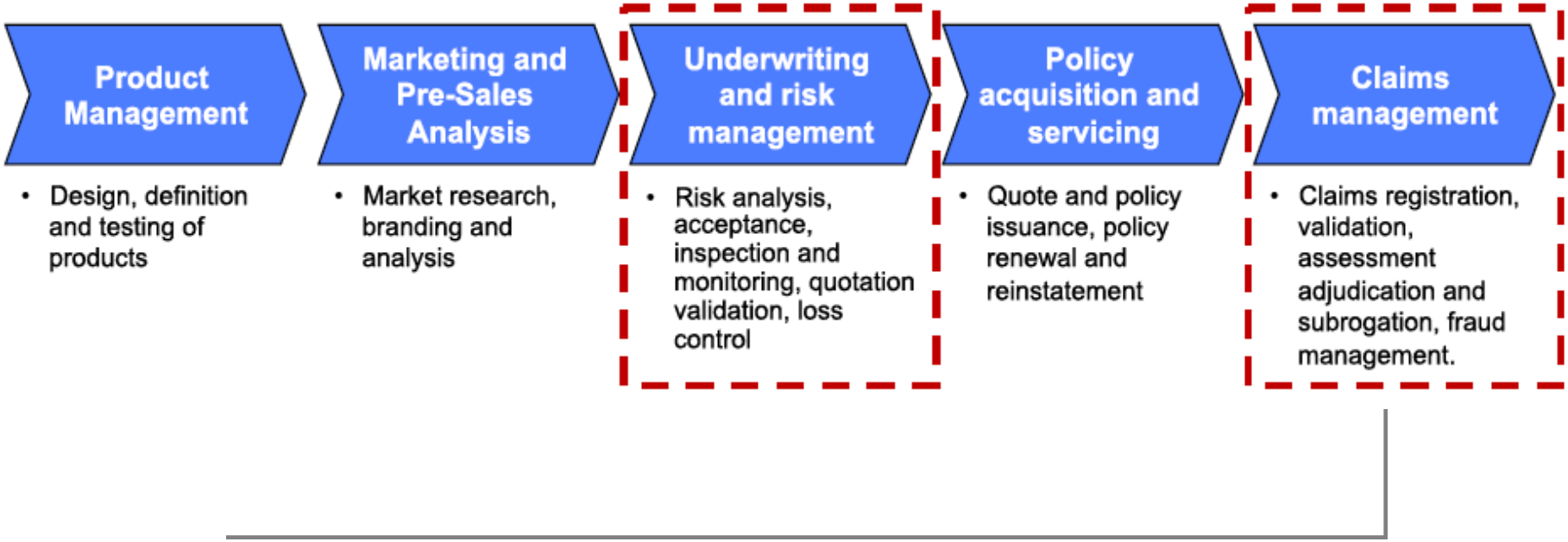
Agriculture Value Chain and EO Contribution

Contribution by EO downstream service:
Precision Farming

Deciding Crop Type, Land Area…	Planting	Growing	Harvesting and Storing	Post-Harvest Management
▪ Geolocation of data on soil and past crop ▪ Mapping variability ▪ Decision about crop type, land area…	▪ Optimisation of seed density	▪ Optimisation of field inputs (water, fertilisers, pesticides)	▪ Gathering crops from the field ▪ Quality control and food safety	▪ Packaging ▪ Transportation ▪ Marketing

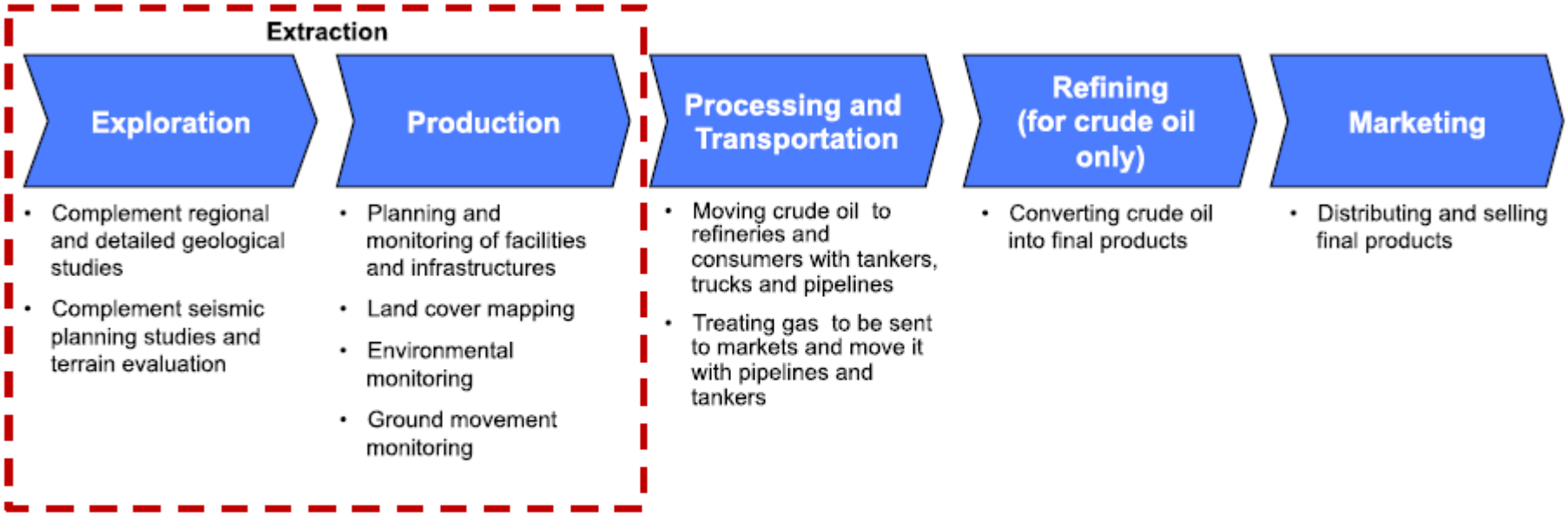
Case study: commercial precision farming "FARMSTAR"

Non-Life Insurance Value Chain and EO Contribution



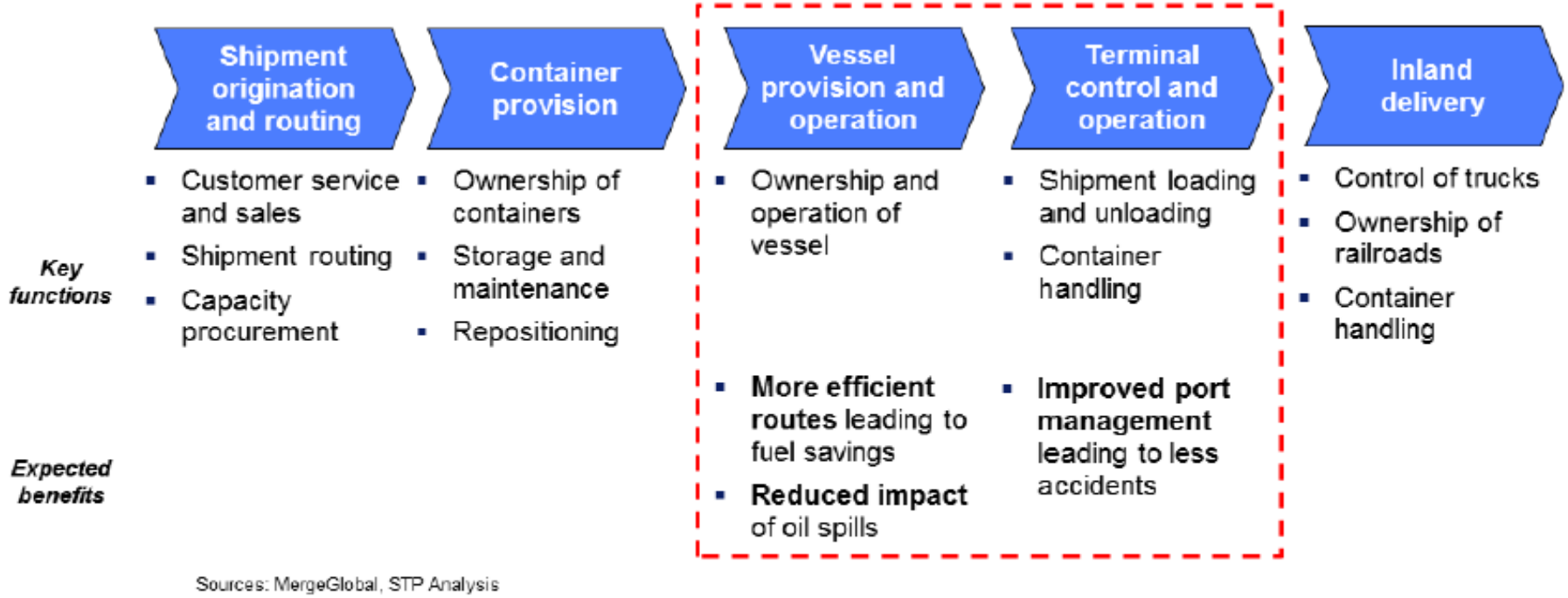
Case study: "PanGeo"

Oil and Gas Value Chain and EO Contribution



Case study: "Fugro NPA"

Water transportation Value Chain and EO Contribution



Sources: MergeGlobal, STP Analysis

Case study: "Sea Ice Routing"

Thank you for your attention!

DG Enterprise and Industry

http://copernicus.eu