



A maritime strategy by « Connect by CNES »
Answering to more and more Needs and Uses

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5

Priorités



Ariane



Sciences



Observation



Défense



Environment



Territories



Digital Divide



Maritime



Energy



Mobility



Data



Health



Agriculture



Tourism



Navigation



International



connect *by* cnes



• • • cnes • • •

- Boost french economic, societal and environmental development
- Foster industrial and technical innovation

- by expanding the French community of space ecosystem and application users



AI Energies Robotics Building on the Moon Space Logistic COM&NAV Infrastructures Mobilities Health Mining

- and by creating and providing added value using spatial data and innovative space services within our 3 fundamental businesses:

Earth Observation, Telecommunications, Navigation



Agriculture, Forests, Risks

Maritime, logistic ...

Health



Startups
and
SME's



Large
industrial
groups



Public
Institutions



International

NE^KT

Expertise / Patents



Incubation / Ideas



connectbycnes.fr

Les Assises
économie de la MER

Promotion

connect
by
cnes®

Training



kinéis



Funding

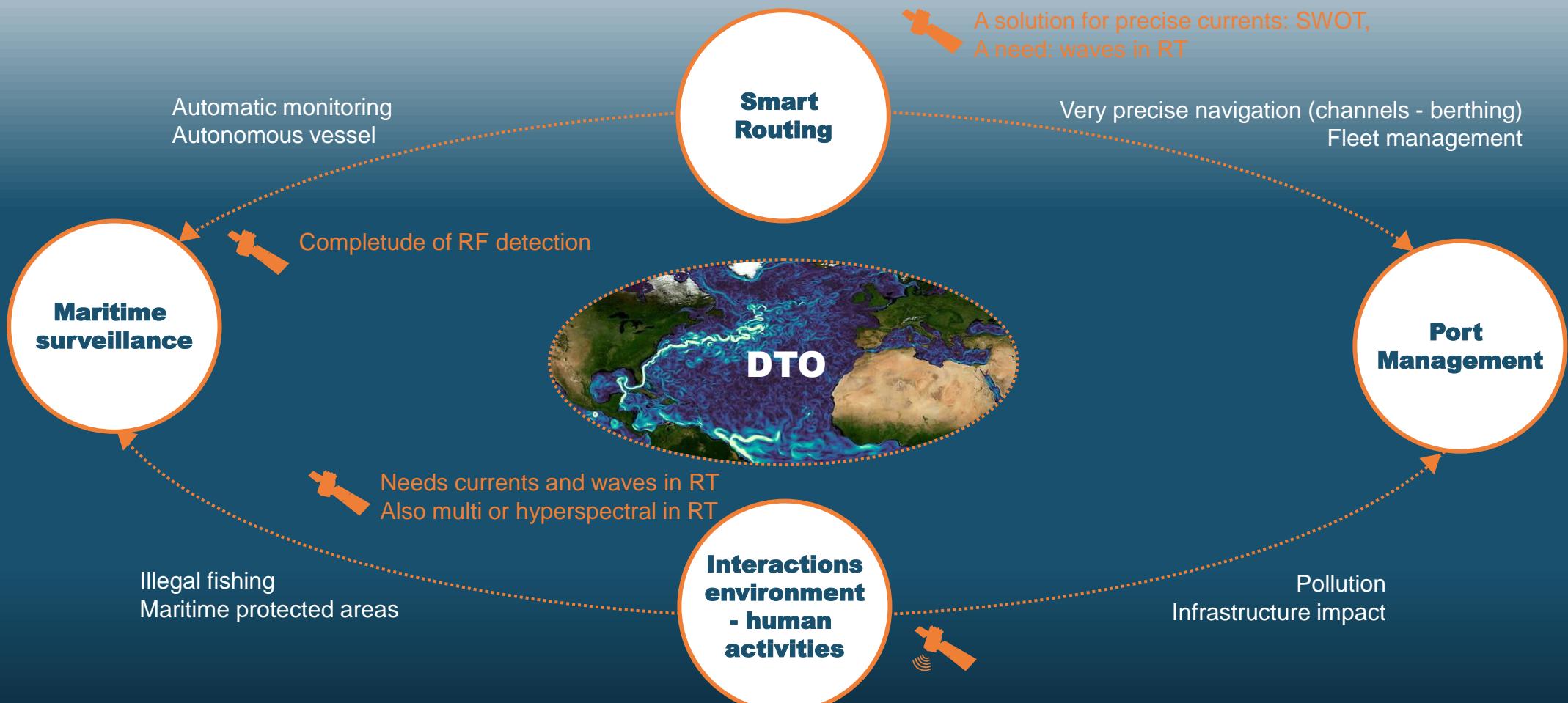
T_{TVS}
Techniques et Technologies des Ville-Sous-Sol
2022

Copernicus Academy & Copernicus Relays

AMBASSADEUR^S
DU SPATIAL

THE MARITIME PLANET





Smart Routing

The best energy, the one that is not consumed

Marine environment implementation (waves, winds, currents)

Operating systems control

Energy efficiency

Greenhouse gas reduction

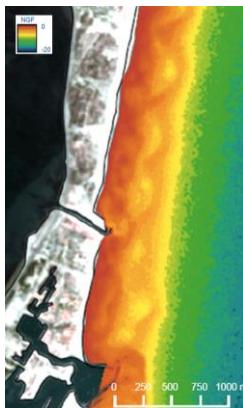
Optimized supply chain

Preventive/predictive maintenance

Automatic zone surveillance & monitoring

Traffic management / Synchronization with port pilots

Advanced Dynamic Positioning (Oil&Gas + EMR)



Environment <> human activities

Biodiversity vs infrastructures

Impact of investments

Pollution monitoring

Sustainable use of resources

Submersion risks ...



Digital twin
Theoretical Ship Performance

Real Ship

Port & Offshore management

Traffic management

Pollution alerts

Infrastructure monitoring

Sediment displacement

Safe autonomous rendez-vous

Natural hazards





SENTINEL 1, A & B

Imagerie : Radar (SAR band C)

Résolution spatiale : 5 – 20 m

Revisite : 6 jours

Date de lancement :

04/2014, 04/2016

SENTINEL 2, A & B

Imagerie : Optique – 13 bandes spectrales

Résolution spatiale : 10 m

Revisite : 5 jours

Date de lancement :

06/2015, 03/2017

SENTINEL 3, A & B

Altimétrie / T° et couleur de l'eau

Date de lancement :

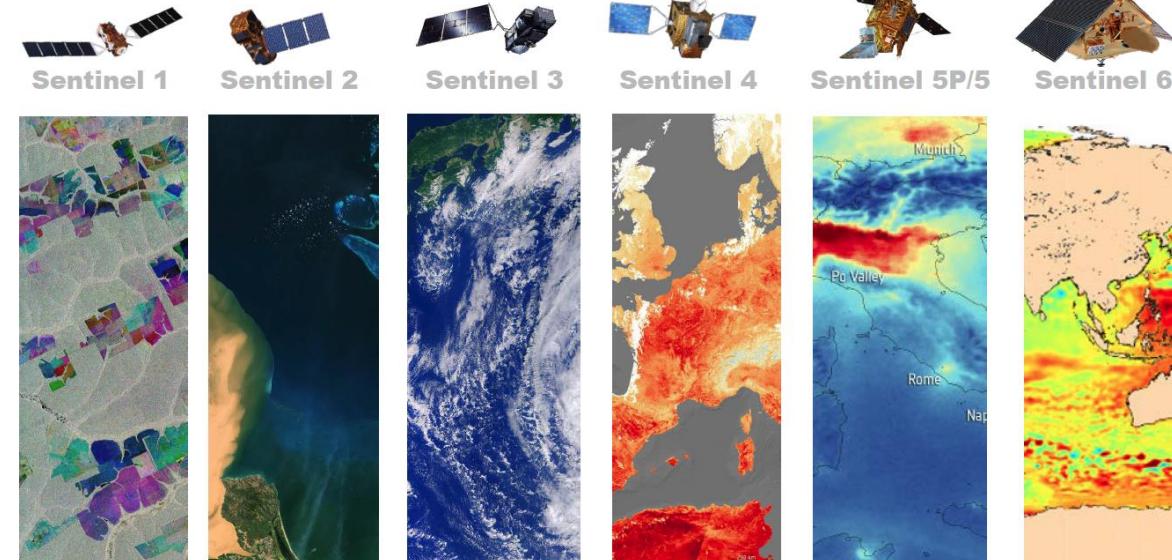
02/2016, 04/2018



C3S : ECMWF

ECVs, projections, indicateurs

Aide aux politiques d'adaptation et
d'atténuation



Copernicus
Marine Service

CMEMS : Mercator Ocean

Etat physique et biogéochimique
des océans à l'échelle globale et sur
6 bassins régionaux



EMS (Crises / Urgences) : JRC
Cartographie rapide des dégâts,
Gestion post-crise



Land Monitoring
Service

CLMS : EEA & JRC

Composante pan-européenne, locale
(atlas urbain, ...) et globale (variables bio-
géophysiques sur l'ensemble du globe)



Services Sécurité

- ✓ Surveillance maritime : EMSA
- ✓ Surveillance des frontières: FRONTEX
- ✓ Support aux actions extérieures: SATCEN



Atmosphère
Monitoring

CAMS : ECMWF

Qualité de l'air à l'échelle
européenne et Composition
chimique de l'atmosphère

SENTINEL 4

Météorologie / Climatologie / Sondage
atmosphérique

Géostationnaire : MTG-S

Date de lancement :

2023

SENTINEL 5

Climate, air quality & Ozone/UV
(O3, NO2, SO2, HCHO, CHOCHO ...)

Low Earth Orbits : MetOp-SG

Date de lancement :

2023

SENTINEL 6, A & B

Altimétrie – Jason Continuity Satellite

Date de lancement :

11/2020, 2026



Space is a key issue to move towards a smarter hence a greener maritime industry with EO as a significant driver for more innovative & responsible downstream services benefiting both the industry and the marine environment and so forth the decision makers.

In that respect, joining all forces implementing this strategy at either National or European level is essential for CNES and the space industry at large.

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