

# CLS

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## Seafood and Fisheries Emerging Technologies Conference - 2019

### *Hybrid Tracking Solution for Small-Scale Fisheries Monitoring and Resource Management*



Inès GUTH – 2019, 15th February



- 🐟 Collecte Localisation Satellites (CLS) – Fields of expertise
- 🐟 Small-Scale Fisheries (SSF) - International context and guidelines
- 🐟 SSF knowledge gap
- 🐟 CLS proposed SSF tracking solution
- 🐟 Future challenges





# Collecte Localisation Satellites Fields of expertise

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# Collecte Localisation Satellites (CLS)



- Subsidiary of the **French Space Agency (CNES)** & the **French Marine Research Institute (IFREMER)**



- **30-year expertise in:**
  - Satellite-based data collection and earth observation
  - Systems, applications and value-added services development



**23 Offices and Subsidiaries**  
**750 people (100 PHDs)**

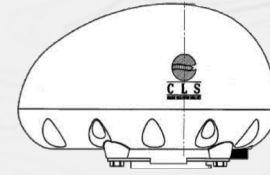




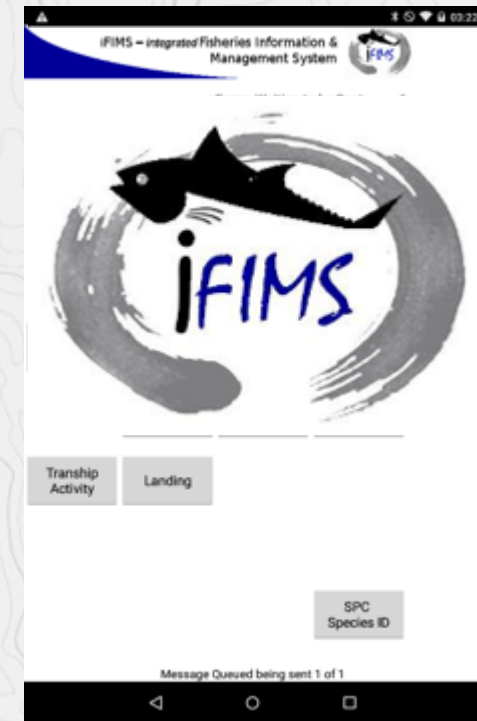
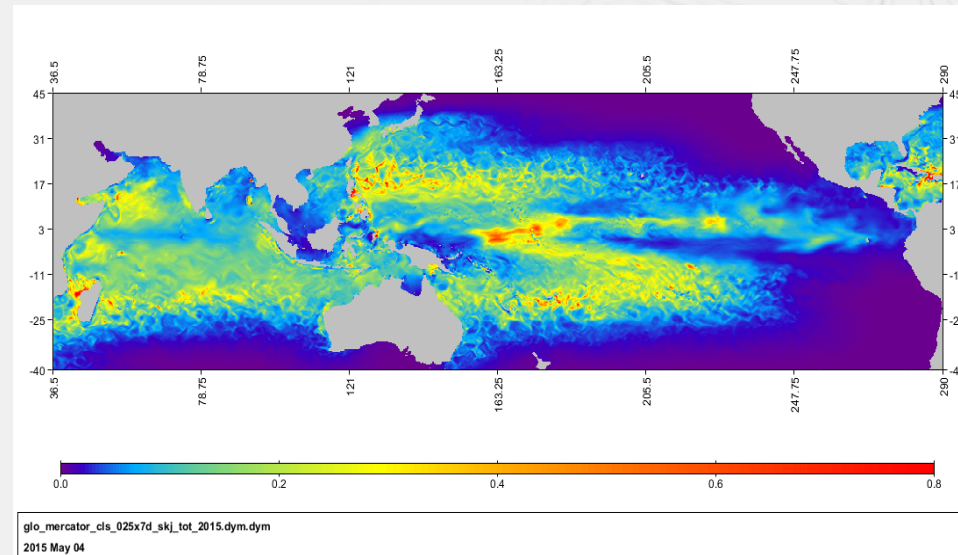
# CLS background in the fisheries



- **20,000 VMS** daily reporting to Flag States, RFMOs, Secretariats
- Development & integration of **ERS** such as iFIMS/PNA e-lodge
- **+30 FMC** worldwide: Flag States and RFMOs
- **SEAPODYM** – stock assessment model



**THEMIS**  
CLS APPLICATIONS



# CLS – service provider to:



Pacific  
Community  
Communauté  
du Pacifique





# CLS background in surveillance



**CLEANSEA NET**  
(Satellite Synthetic  
Aperture Radar correlated  
with LRIT, AIS/SAT-AIS)

Oil spill (42 km)

Radar echo



**RPAS DC**  
**Remotely Piloted Aircraft System Data Centre**  
**Real Time Operations Centre**







# Key numbers



REF: FAO & UN



**50%** of Global Fish Catches



**+80%** of the World's Fishing Vessels



**50M** Fishermen



**5.8M** SSF Fishermen earn less than \$1/day



# United Nations and FAO (2015)



- UN: Sustainable Development Goals (No. 14) to be achieved by 2030
- FAO: Voluntary guidelines for Securing Sustainable Small-Scale Fisheries



**14** LIFE BELOW WATER

**SDG 14 TARGETS:**

**14.1** By 2025, prevent and significantly reduce marine pollution of all kinds

**14.2** By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts

**14.3** Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels

**14.4:** By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices

**14.5:** By 2020, conserve at least 10 per cent of coastal and marine areas

**14.6** By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing

**14.7** By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources



SSF are important: they need protection and control







# SSF knowledge gap

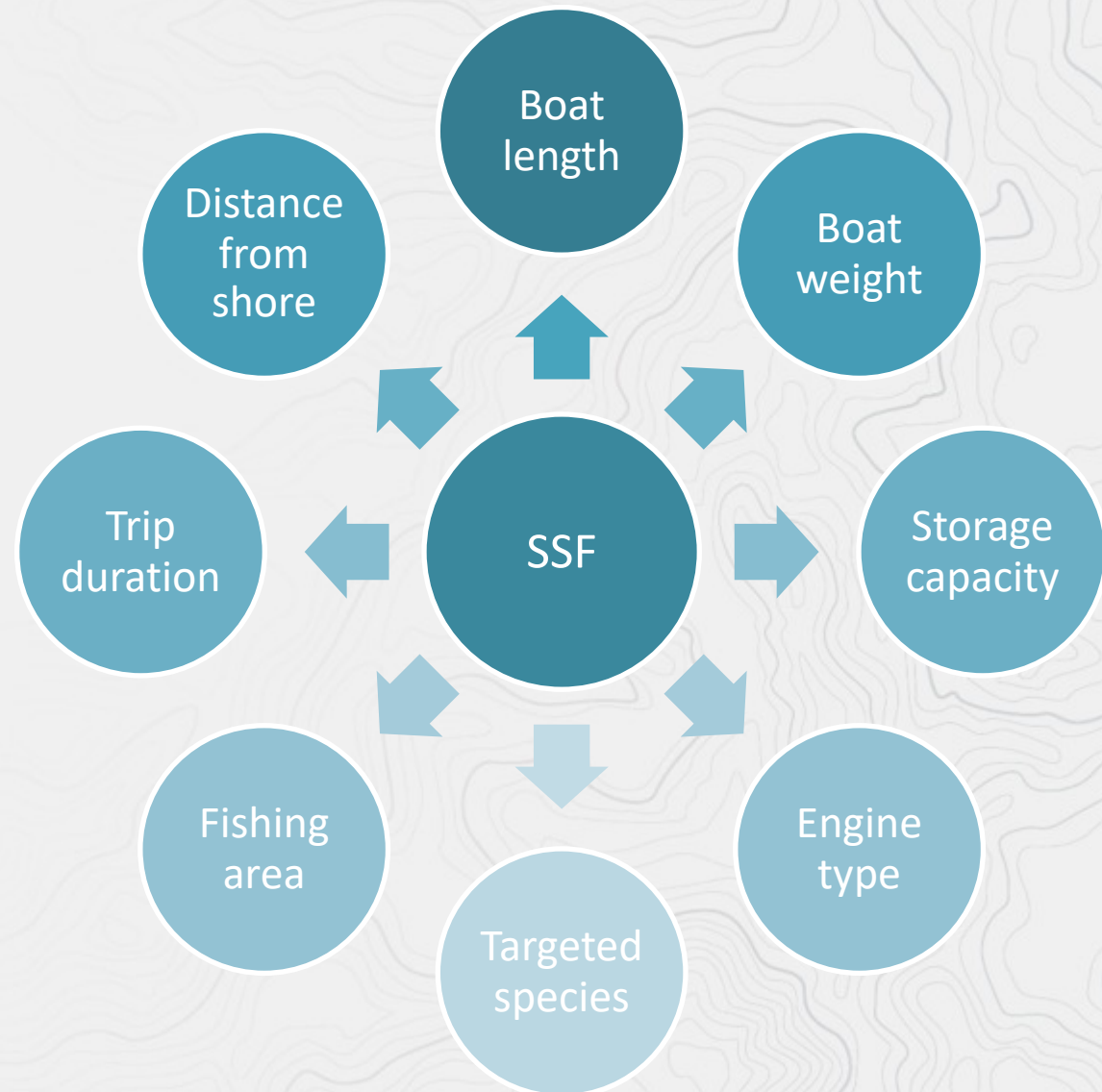
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# Great diversity of SSF



- “dynamic and evolving sub-sector that is not homogenous within and across countries and regions” (FAO)
- No agreed standard definition



# What we do not know



**Spatial and Time Distribution**



**Safety Issues**



**Fishing Zones**

**Fishing Effort**



**Catches and Discards**



**Impact on Eco-system and Marine Resources**



**Operations at Sea**

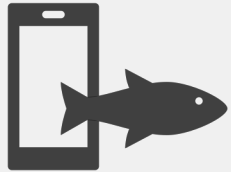




# How to get this information



**Vessel Monitoring System (VMS)**



**Electronic Reporting Systems (ERS)**



# Benefits of VMS/ERS



## Flag States/Regions

Fishing activity monitoring (licenses, quotas, protected marine parks, behaviour at sea, etc.)



## Fishermen

Safety



## Scientific community

SSF fishing footprint and stock assessment





# Limits of traditional VMS technologies







# CLS proposed SSF tracking solution

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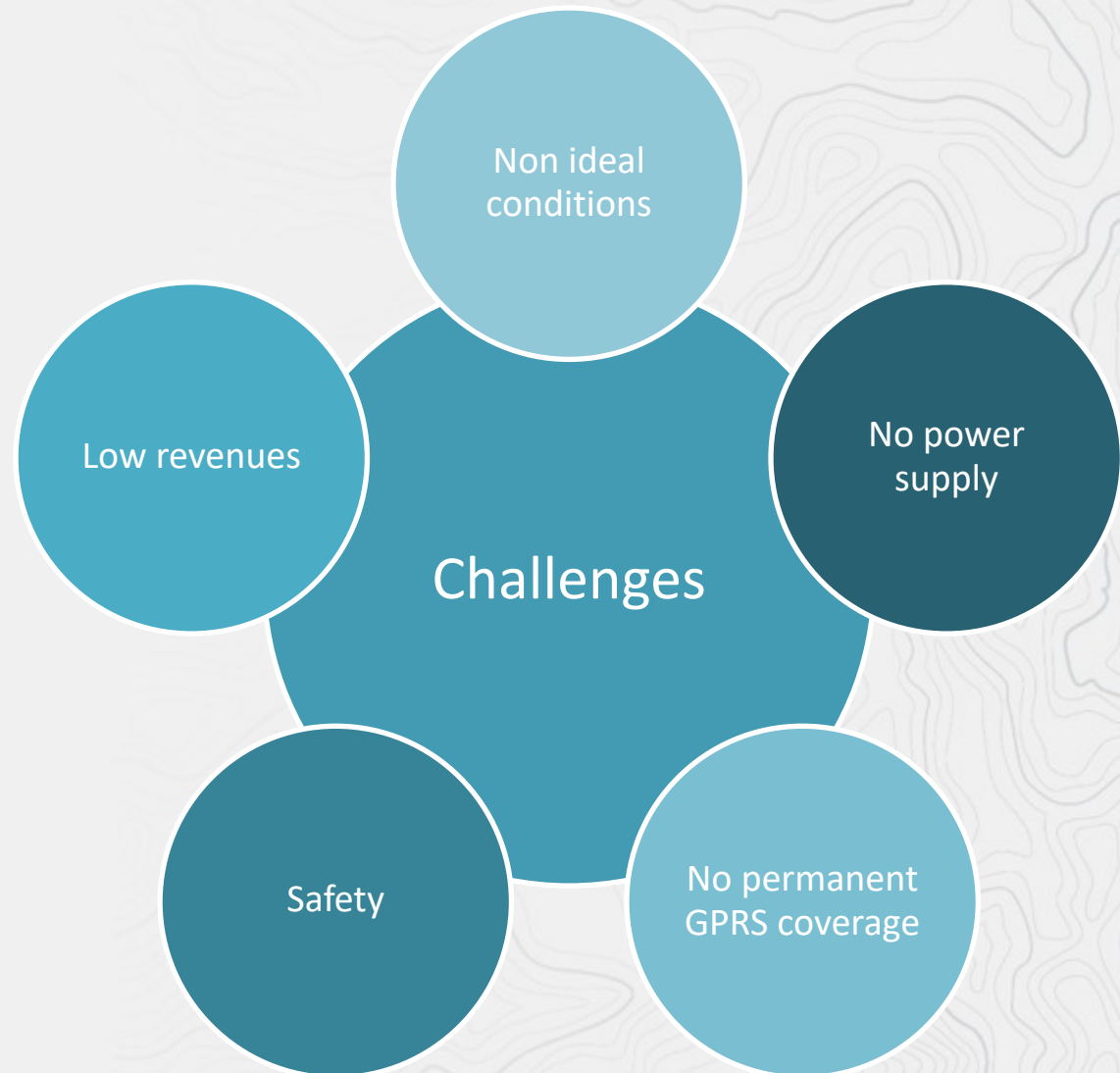
# Market survey



- Safety of fishermen
- Automatic + tamper-proof position reports
- Affordable hardware and communication
- Reliable and tamper-proof
- Rugged for marine environment
- Fixed on-board (sealed) or detachable
- Vessel/crew identification



# SSF challenges



# NEMO: Hybrid Satellite transponder



## GPRS/Satellite

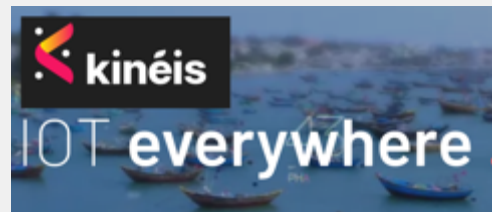


2G/4G/NB-IoT



ARGOS (interim-now)

KINEIS (from 2022)



- **Global & seamless coverage**
- **Affordable – H/ware & Airtime**





# NEMO – Characteristics & features





## Fishermen incentive

- Weather alerts
- Navigation and mapping
- Electronic forms for catch reports/notes
- Messaging



# Future challenges

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# Future challenges



VMS/ERS on SSF raises some **technical challenges**:

- Data management & Big Data technologies
- Data intelligence and processing



And **social challenges**:

- Perception of SSF fishermen towards monitoring





Thank you !

