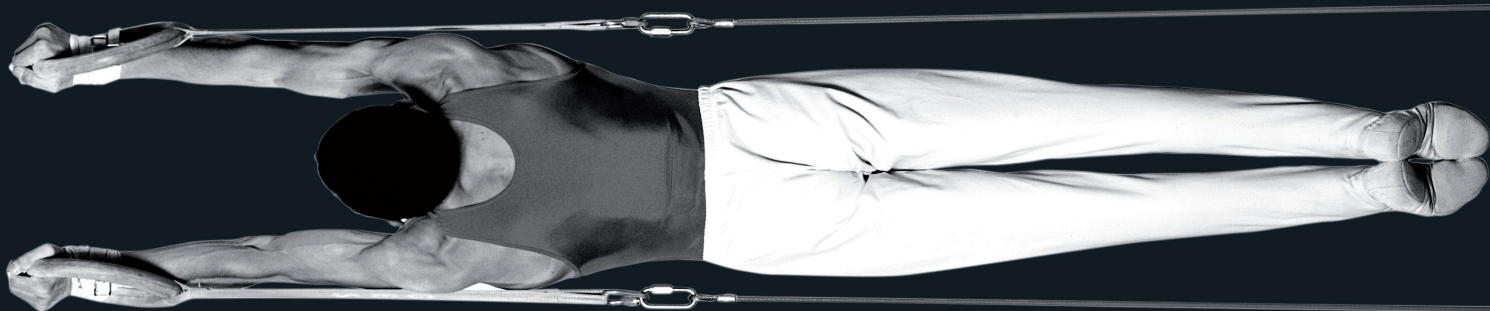# simons

SIMONS: SHIP MONITORING SUITE

simons is a ship monitoring system capable to detect and tracks ships by combining Earth Observation imaging and Cooperative streaming technologies. The suite is conceived as a background processing module that can be integrated / connected to higher level added-value systems / services. This modular vision extends to intra **simons** architecture where independent and highly efficient sub-modules are inter-linked. **simons** can work with any EO imagery and cooperative streams, and all the standard data formats are admitted. Outputs are provided by means of layers of information that are published through web services or an advanced GMV's visor called **socrates©**.

GMV
www.gmv.com

f www.facebook.com/infoGMV
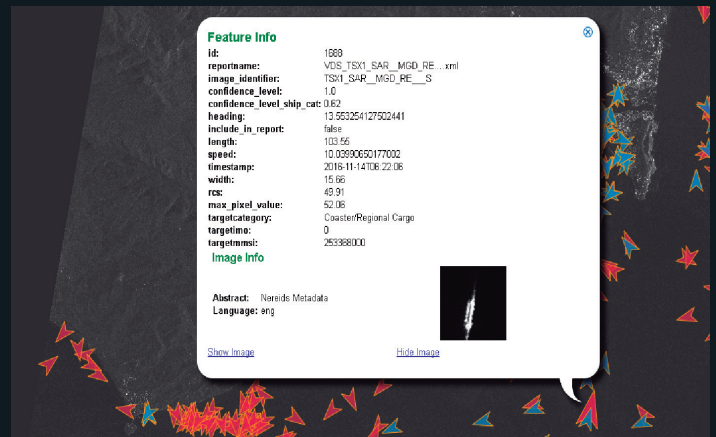🐦 @infoGMV

gmv®
INNOVATING SOLUTIONS

FEATURES
- Detection, categorization and tracking of ships
- Strategic Maritime picture
- Automatic & Modular Runtime

INPUTS
- EO SAR and Optical imagery
- Cooperative streams (T-AIS, S-AIS, LRIT, VMS)

PRODUCTS
- Real time picture
- EO-based ship analysis maps

Feature Info
id: 1688
reportname: VDS_TSX1_SAR__MGD_RE...xml
image_identifier: TSX1_SAR__MGD_RE___S
confidence_level: 1.0
confidence_level_ship_cat: 0.62
heading: 13.553254127502441
include_in_report: false
length: 103.56
speed: 10.0390650177002
timestamp: 2016-11-14T06:22:06
width: 15.66
rcs: 49.91
max_pixel_value: 52.06
targetcategory: Coaster/Regional Cargo
targettime: 0
targetmmsi: 253368000
Image Info

Abstract: Nereids Metadata
Language: eng

Show Image   Hide Image

PERFORMANCE

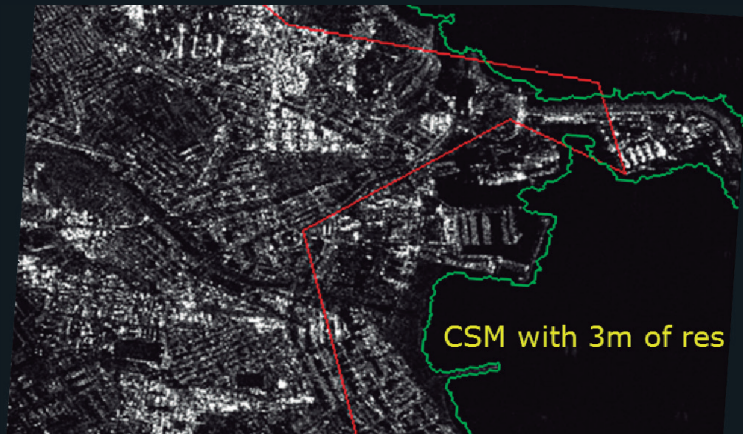| Quality descriptor	Value
Processing Time	From 5 to 10 min depending on image size
Probability of Detection	> 95 % for ships with length > 4*image res.
Absolute Length accuracy	~75 %
Relative Length accuracy	~90 %
Categorization rate	~70 % for ships with length > 12*image res.
AIS Fusion	Yes → large range of formats admitted
Band & Area restrictions	No → any band, sensor and area can be processed

OPERATIONAL CAMPAIGNS WITH GROUND-TRUTH

Contact
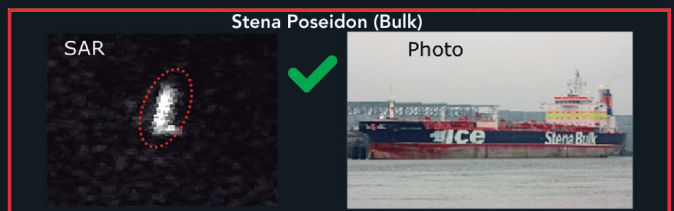Gerard Margarit: marketing.space@gmv.com, +34 91 807 2100

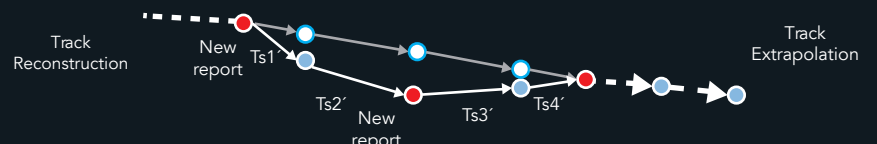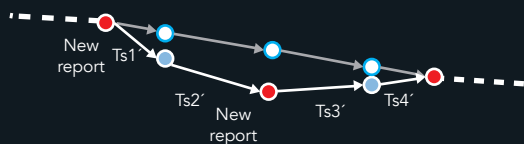## COASTLINE DETECTION → Wavelets + Geodesic Active contours; Only SAR

CSM with 3m of res

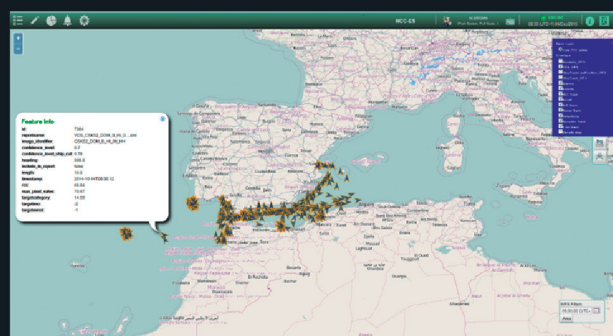## SHIP DETECTION → Wavelets; either SAR & Optical; confidence parameter

Scene Center: Lat 35.9810, Lon -5.5535

C [%]

CSM with 3 m of res

SPOT 6 with 5 m of res

SHIP CATEGORIZATION → Fuzzy Logic; only SAR; 8 categories

Omega Theodore (Oil Tanker)

SAR — Photo

Stena Poseidon (Bulk)

SAR — Photo

SHIP TRACKING → Fuzzy Logic; AIS+VDS; different functions; 100 pos/s

New report — Ts1 — Ts2´ — New report — Ts3´ — Ts4´ — Track Reconstruction

New report — Ts1´ — Ts2´ — New report — Ts3´ — Ts4´ — Track Extrapolation

VISOR → Feither web services or own advanced visor SOCRATES©; connection with IMDATE at EMSA and EUROSUR at Frontex

simons

simons has been successfully tested in a large range of operational campaigns with very diverse observational conditions and tracks of interest. In most of them, ground-truth has been available and *simons* performance has been accurately tested. Among them, specific relevant exercises worth mention due to the clear practical added-value that they provided, for instance the location of a small out-of-order boat with migrants whom health conditions were rapidly worsening or the location of a ship suspicious of conducting illegal fishing activities. Both cases served authorities to activate in-situ means that confirmed the information provided by *simons*.