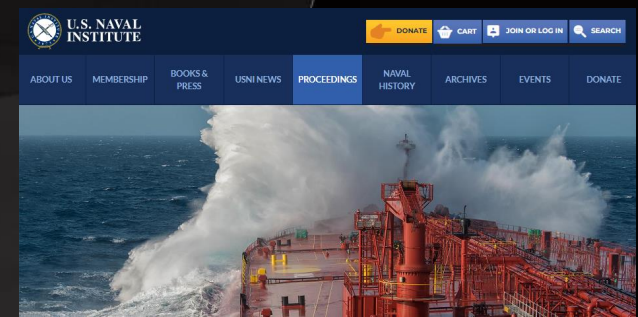# Fighting Shadows and Ghosts

A Conceptual Framework for Identification Deception Tactics (IDTs) and MARINE Approach

Dr. Giangiuseppe Pili, Alessio Armenzoni (and Gary C. Kessler)

Intelligence Analysis Program, James Madison University

Who is Giangiuseppe Pili?

Assistant Professor
Intelligence Analysis
Program
James Madison University

Senior Associate Fellow
NATO Defence College
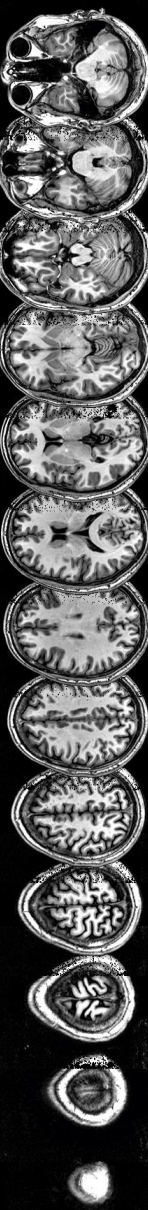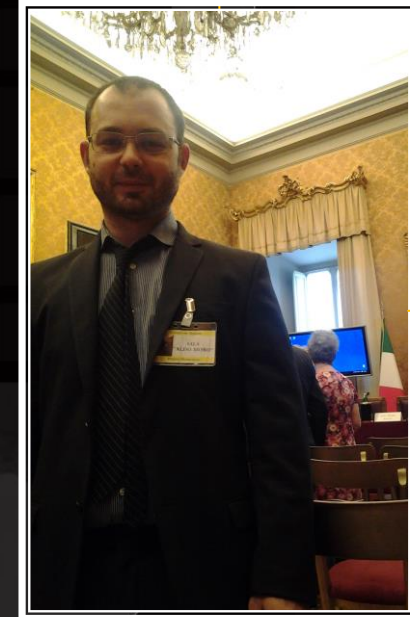
Associate Fellow (PNP)
Royal United Services
Institute (RUSI)

Regional Director
International Association
for Intelligence Education

External Member
Intelligence Lab & Italian
Society of Intelligence –
Calabria University

Credits & Partners

- **Alessio Armenzoni** – Associate Fellow, Open Source Centre - London

- **Gary C. Kessler (PhD)** - President of Gary Kessler Associates

- Partners & Credits – US Naval Institute, NATO Defence College, Royal United Services Institute, Open Source Center... among many others.
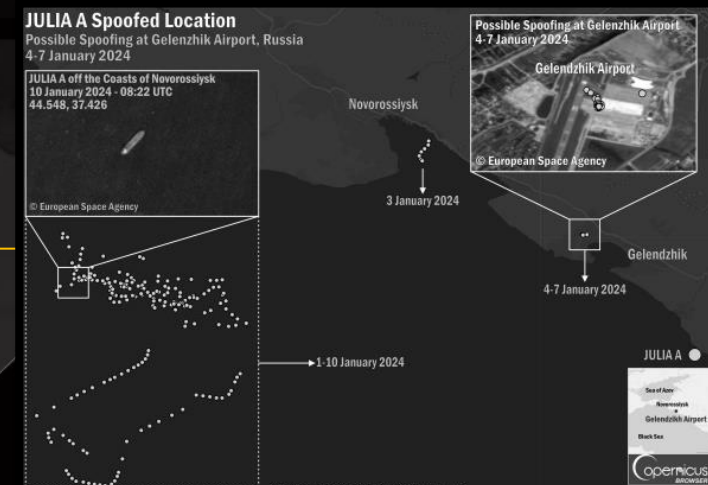
Structure of the Presentation

- **Part 1** - The Story Behind the Research

- **Part 2** – MARINE – Taxonomy & Methodology

- **Part 3** - Lesson Learned
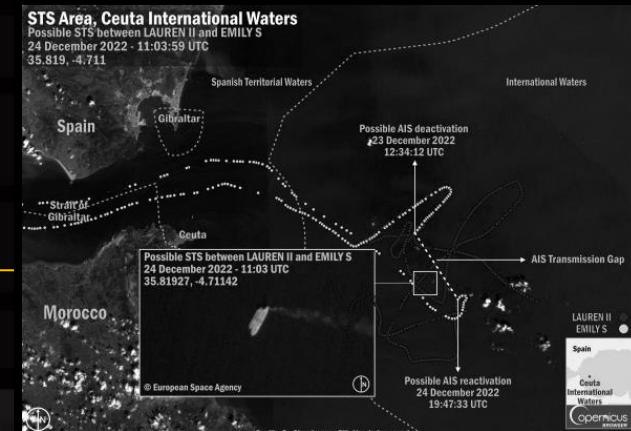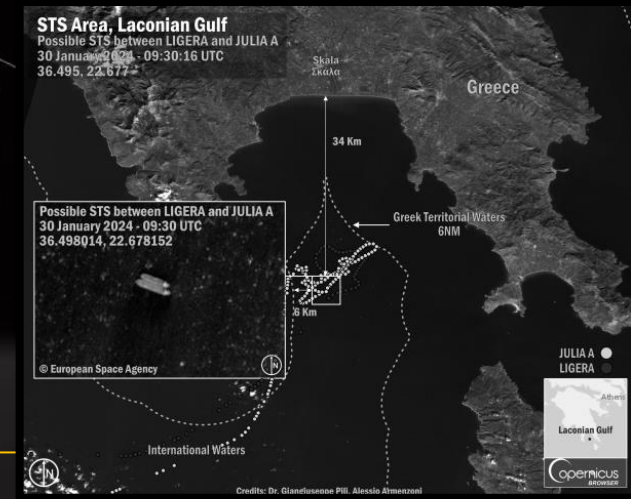
Part 1
The Story Behind the Research

The Story of Oil, a lot of Oil

- Russia's economy shifted from peacetime to wartime, leading to a 5.5% GDP increase in Q3 2023, largely due to oil and gas revenues.

- Loopholes and resourcefulness allowed Russia to continue exporting oil, with the proceeds funneled into its military-industrial complex.

- Russia redirected oil flows to China and India, which eventually reach Western countries after refinement, despite sanctions.

- A "shadow fleet" of ships is facilitating sanctioned oil smuggling through ship-to-ship transfers, evading international sanctions.

Route of Ligera (IMO: 9237072)
1 September 2023/29 February 2024

Laconian Gulf
2 STS transfers
11 January 2024 &
30 January 2024

Departed from
Shanhou Chujia
25 September 2023

Arrived In Venezuela
19 February 2024

LIGERA possibly involved in a STS
24 February 2024 - 15:17 UTC
11.814-70.340 (Venezuela)
© European Space Agency

LIGERA Loitering at Laconian Gulf
January 2024
Credits: Dr. Gianclusanee Pili, Alessio Armenzoni

LIGERA Malaysian Coasts
9 October 2023 - 03:06 UTC
1.889-104.690
© European Space Agency

Where is the Russia Oil Moved?

- Where there is a will, there is a way, and where there is a (sea) way, there are Russians.

- Several sheltered locations in international waters have been identified: Ceuta (near Spain), Hurd's Bank (near Malta), and the Laconian Gulf (near Greece) are the main sea-transshipments hubs in the Mediterranean Sea.

- There are several other sites around the Med and the Eastern Hemisphere

- The evasion of sanctions through illicit STS transfers has also been documented in Venezuela, Iran, and North Korea.
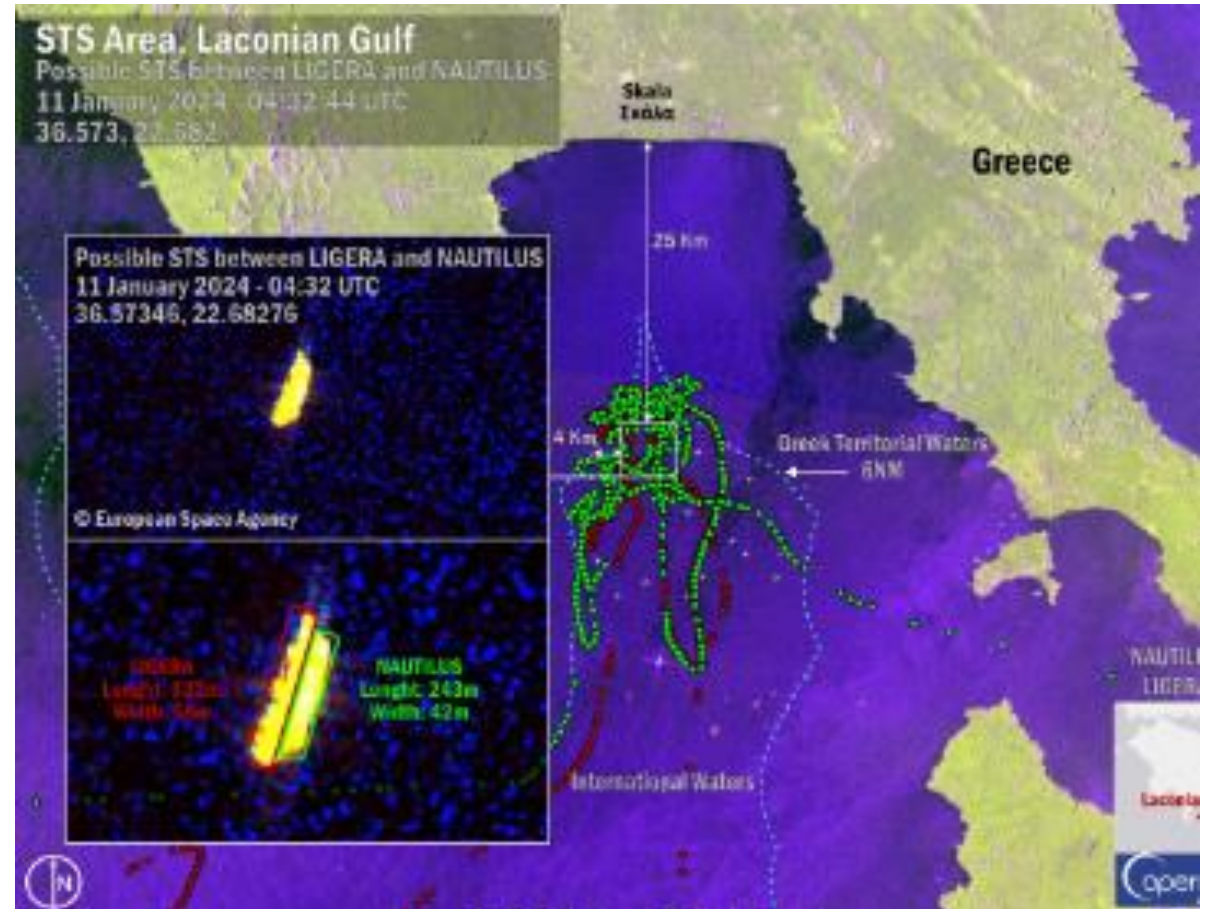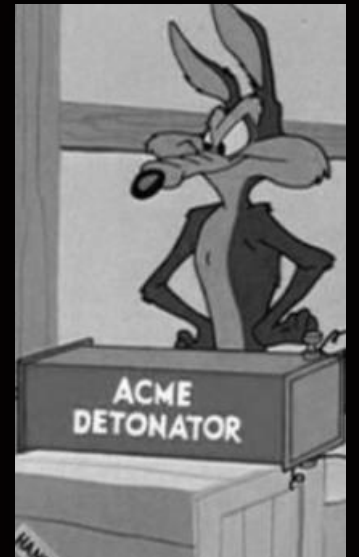
Understanding the Tradecraft

- After years of following illicit activities at sea, including North Korea and Russia's operations, we realised that there is no universal framework.

- Every single operation is different, but without finding common methodologies there is no way to fight back what is a clear violation of international law and safety and security of navigation at sea.

STS Area, Ceuta International Waters
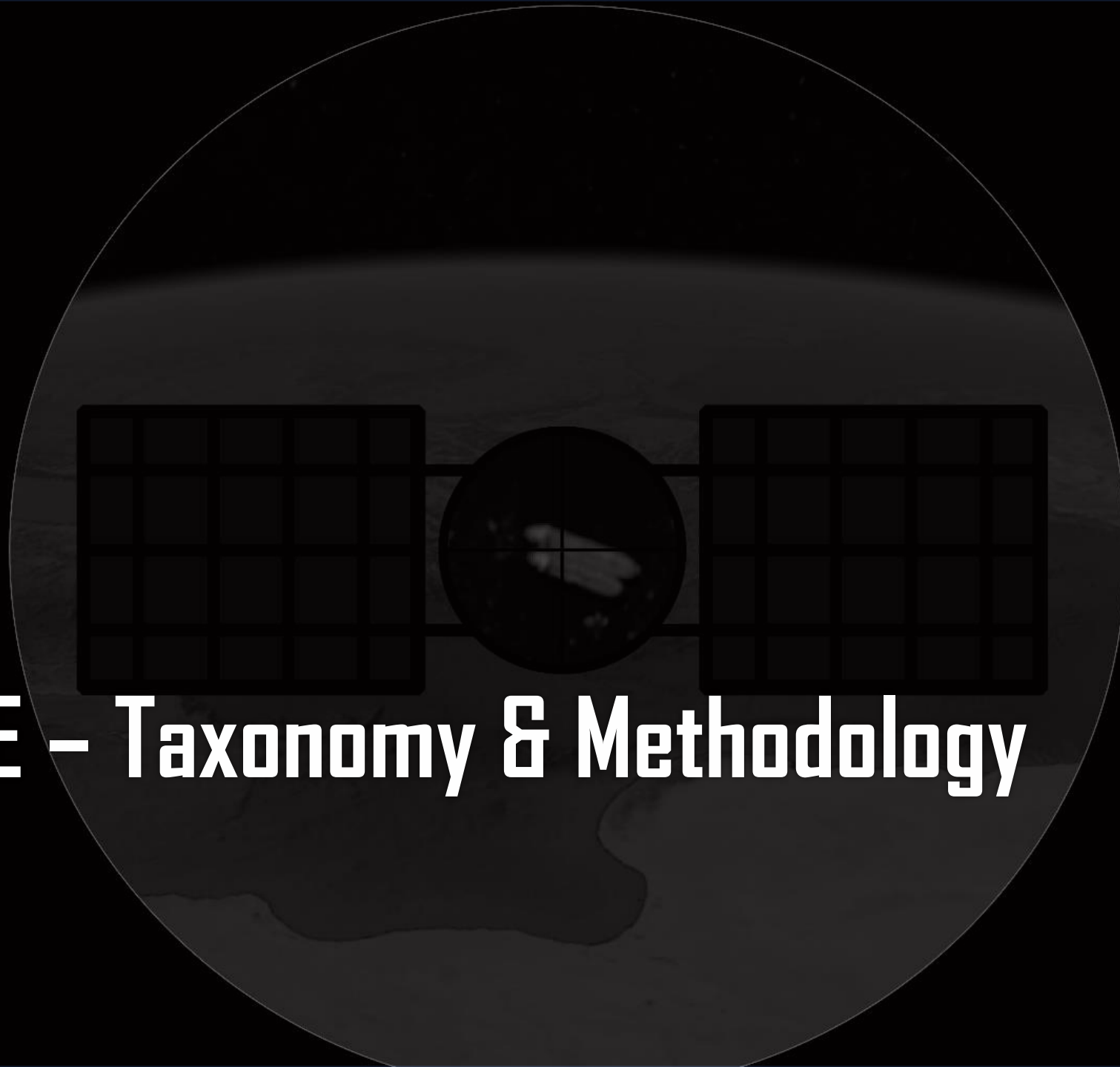Possible STS between LAUREN II and EMILY S
24 December 2022 - 11:03:59 UTC
35.819, -4.711

We received many calls and follow ups...
But the sanctions did not stop the traffic as yet

Part 2
MARINE – Taxonomy & Methodology

A Methodology is Needed

- At the end of the day, analysts and experts all talk about replicability and scientific methods, but the reality is that their job conducts them in differentiated, distinct endeavour.

- Rarely universal methods (to not be confused with platforms and software) are discussed in the scientific and analytic communities.

- Since I started working on North Korean illicit movements of oil, this is what I always looked for and never found!

MARINE
Methodology for Analyzing Russian OIL Naval Exchanges

1. AIS Data and Anomalies Monitoring
2. Identification Deception Tactics (IDTs)
3. Suspicious Vessels Identification
4. Cross-Analysis of Vessel Legal Status

Repeat for other Vessels

5. Oil Prices' Informal Assessment
6. Confirmation with Satellite Acquisitions
7. Repeat for other Vessels
8. Third-Party Check and Validation

Credits: Dr. Giangiuseppe Pili, Alravia Assessment

A Taxonomy for Intelligence Analysis and Maritime Domain

Identification Deception Tactics (IDTs) involve any method, including electromagnetic, physical, or bureaucratic measures, used to deceive or conceal the identity, activities, and characteristics of maritime vessels or the entities behind them.

Physical Deception Tactics (PDTs) involve altering a vessel's physical identity, cargo, or route to deceive or misrepresent its identity, activities, and characteristics.

Bureaucratic and Managerial Deception Tactics (BDTs) involve altering documentation or certifications related to a vessel or its associated companies.
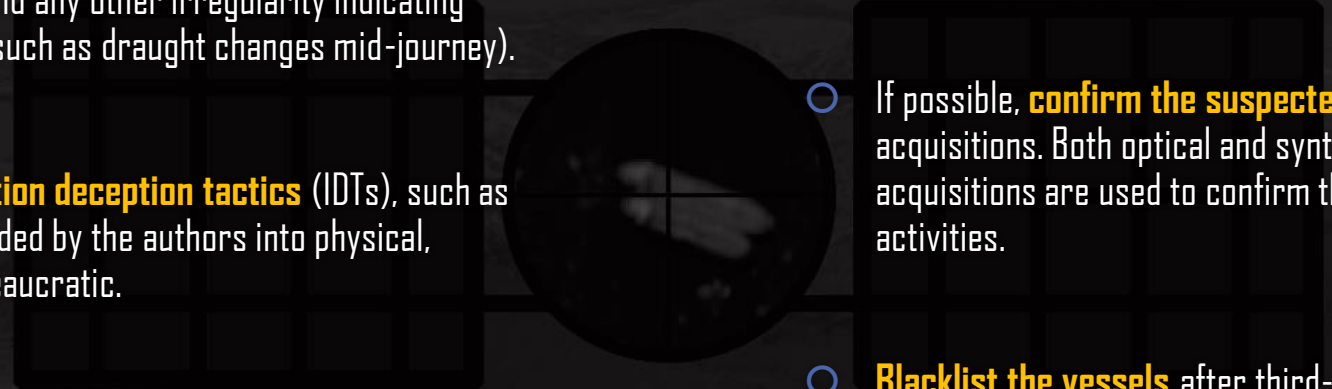
MARINE
Methodology for Analysing Russian oil Naval Exchanges

- We have designed a "Methodology for Analyzing Russian oil Naval Exchanges" (MARINE).

- This is tailored for tackling the Russian smuggling operations at sea and used to produce the findings reported here.

- The method was tested with a suite of tools and data including Automatic Identification System (AIS) data, satellite imagery, and imagery analysis. Independent findings of specific STS locations were confirmed and new spoofing cases identified.
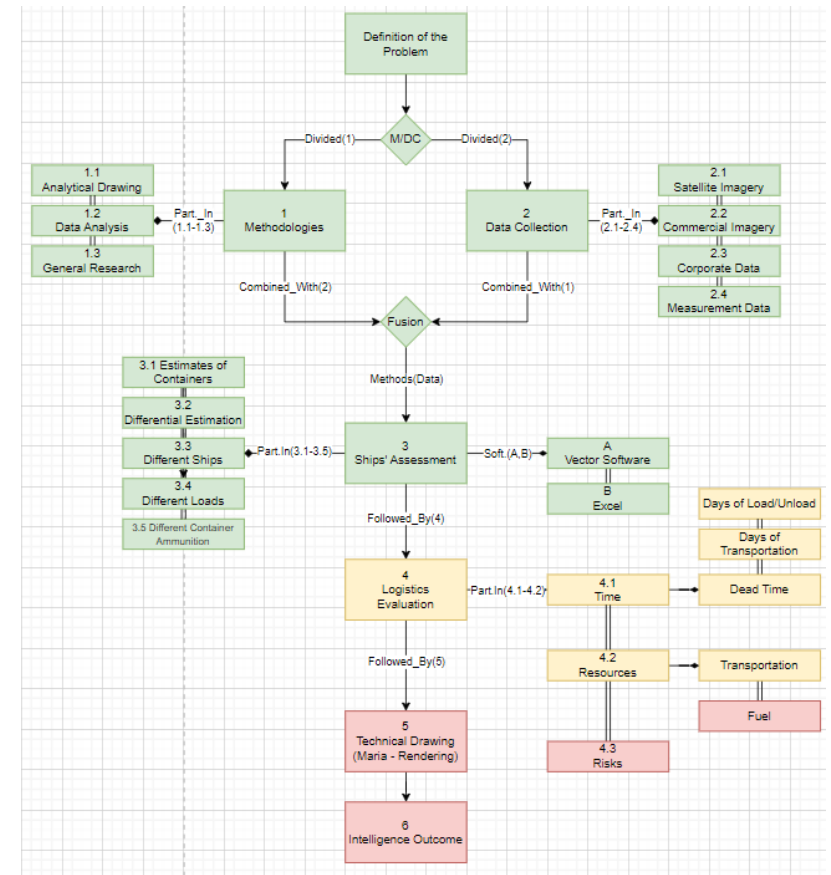
MARINE – Step by Step

○ **Monitor both real-time and historical AIS data** to find anomalies such as loitering, parallel sailing, anomalous movements, unexpected anchoring, sudden changes in direction, geometrical sea routes, and any other irregularity indicating potential illicit activities (such as draught changes mid-journey).

○ **Check for any identification deception tactics** (IDTs), such as AIS spoofing. IDTs are divided by the authors into physical, electromagnetic, and bureaucratic.

○ **Identify the vessels involved in suspicious behaviors**.

○ **Complete a crosschecking analysis on the vessels' identity**, insurance, ownership, and legal standing.

○ **Assess oil prices to determine possible instances of sanction violations** by examining fluctuations in prices before loading time.

○ If possible, **confirm the suspected STS operations** with satellite acquisitions. Both optical and synthetic aperture radar (SAR) acquisitions are used to confirm the identified suspicious activities.

○ **Blacklist the vessels** after third-party check and validation.

○ **Repeat this process** for other ships identified as potential targets.

An Example of Intelligence Analysis

Analysis

- This imagery is used for measurement analytics and geospatial analysis in ArcGIS Pro to track the movements and locations of the SPARTA IV.

- The SPARTA IV's layout is also subjected to geometrical analysis to assess its volumetric characteristics and general capacity.

- Network analysis reconstructs the ship's possible military-related activity using various open sources.
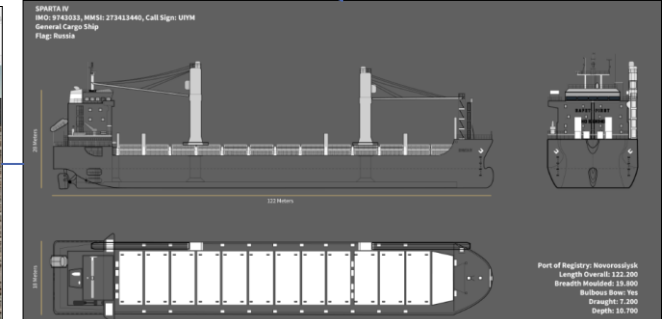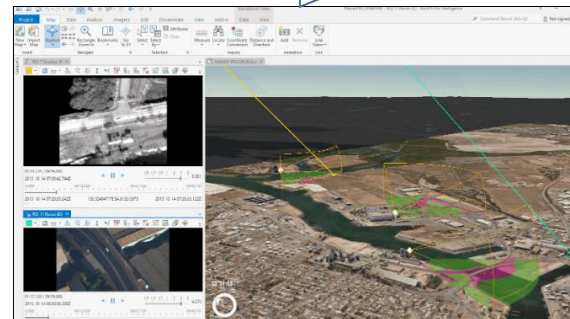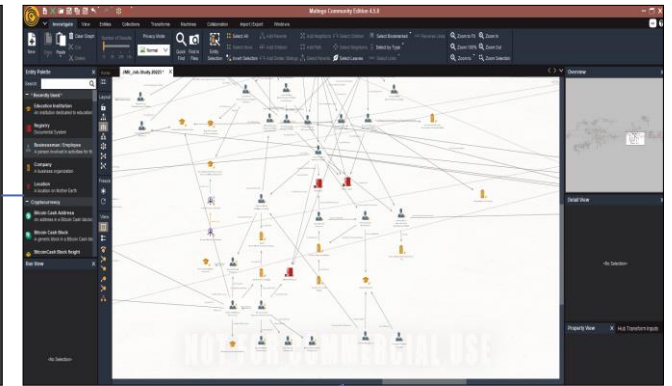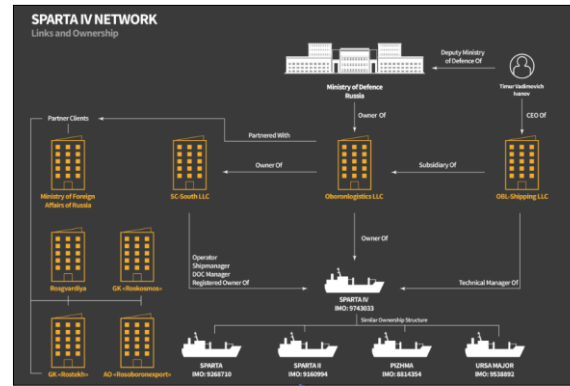
COSMOS – An Algorithm

- **COSMOS (Computational Ship-to-Ship Monitoring System)** is a proof-of-concept, anomaly-detection equation to be implemented into existing Maritime Situational Awareness (MSA) software algorithms that already display rendezvous, AIS deactivations and other anomalies.

- Moreover, it is intended to technologically complement the MARINE intelligence methodology.

Believe it or not…

○ Just few days after the release of the paper, researchers reached out for creating COSMOS!

○ And we were pretty pleased to help them!

In short - Dissemination

- **Impact**

  - Methodology Implementation, Algorithm Experimentation, Formal and informal Meetings with Major Stakeholders.

  - 2 Reports (MarCas, USNI)

  - Security Services Sharing

  - Media Impact: Aftenposten (NRW), International Maritime Organization (UN), Maritime Executive, Global Agora' (SKVK), Formiche (ITA).

Fighting Shadows and Ghosts – A Conceptual Framework for Identification Deception Tactics (IDTs) and MARINE Approach
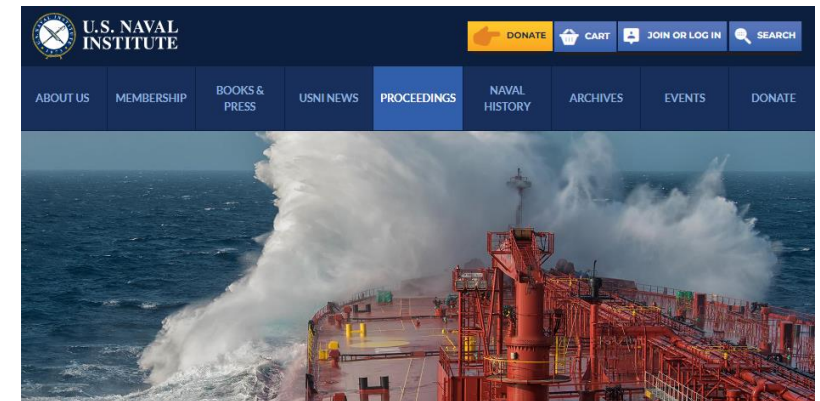
And more to come…

○ **So if anybody is interested, let us know!**

Part 3
Lesson Learned

Lesson Learned – United Intelligence

OSINT & Secret Intelligence - Cooperation

- Cooperation between secret intelligence and Open Source Intelligence is the only way to preserve a virtuous circle.

- Cooperation between OSINT and secret intelligence must increase.

  - OSINT operations are often counterintelligence operations, but to be offensive, they need to know "where to look at".

  - It can be done creating spaces and institutions to bring trusted individuals. This is critical.

  - OSINT can be the link between general state security and the open society, but this has to be accepted by the secret intelligence.

Lesson Learned

No Silver Bullets – Only Machine Guns' Bullets

- Data collection is not as critical unless is rich and composite. There is no silver bullet on the battlefield, there is no silver bullet on data collection.

- Artificial Intelligence is powerful and useful but it is not enough to substitute an analyst. It is part of an informational ecosystem in which it can be a force multiplier but not a game changer (the analyst will be more and more integrated with a suite of tools and he/she will be ultimate master/orchestra director. Good music is more that single instrument movements.

- Without solid and systematic analysis of the data collected the data is wasted. Only the ability of the human mind is able to see the forest out of the trees, even when automatically aggregated.

Lesson Learned

Not a Solo-Game – Coalition of researchers & Media Exposure

- More clear, transparent series of regulations immediately actionable can be elaborated.

- We need solid methods, common taxonomies, clear language, and real smart (not dumb-hyped) technologies integrated with us, the humans can really effect world history.

- A documentary with investigative journalists was directed based on the methods and checks we provided: this is the proof that even the techies can inform the information space.

- Only together we are stronger than our opponents that daily exploits the loopholes of our economies and regulations.

Special operations doesn't mean going in with all guns blazing. It means special planning, special care, fully briefed agents in possession of all possible alternatives. If you want James Bond, go to your library. But if you want a successful operation, sit at your desk and think. And then think again.

THE
SANDBAGGERS

We need to build a better (General, Universal) Intelligence Community as this is the present now:

The present: I don't like it, because I stand with the Future.

Thank you!