MARITIME SAFETY & SECURITY ALLIANCE

Not-for-profit, Community Interest Company

APPG Cyber Security Brief

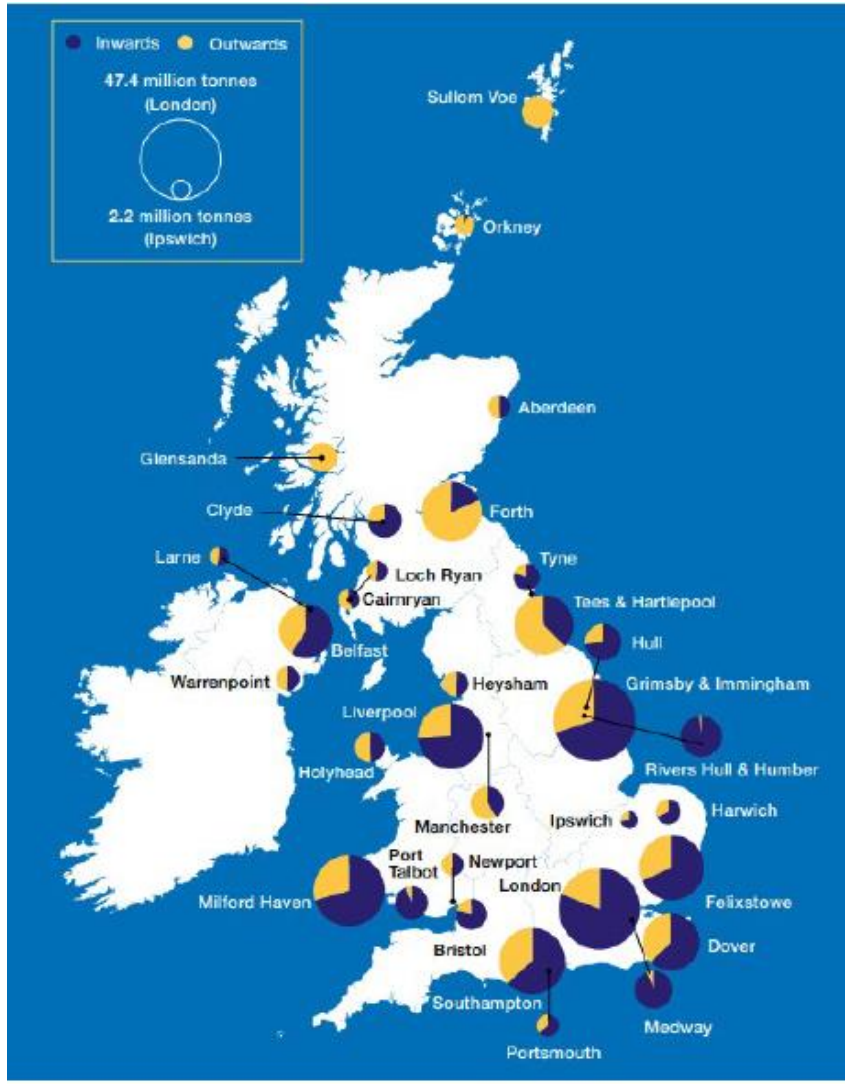
7 November 2022

www.mssalliance.org

CONTEXT WORLD & UK MARITIME

The UK maritime sector employs 185,000 people
Contributes nearly £40 billion to the country's economy

	World	UK	UK share
Fleet	60,000	956	0.02%
Ports	19,200	120	0.05%
Port Calls	1.6 mil	85k	0.05%
Crew	1.2 mil	21k	0.02%
Cargo By Sea	90%	90%	



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THE GLOBAL/LOCAL PROBLEMS: LACK OF ACTIONABLE INFORMATION

The Maritime Physical & Cyber Crime reporting problems

1. **Poor MARSEC Incident Reporting**

   Too many national/niche reporting channels & centres
   No agreed format of forms or terms for incident
   Lack of a Maritime reporting Culture

2. **Poor MARSEC Information Flow**

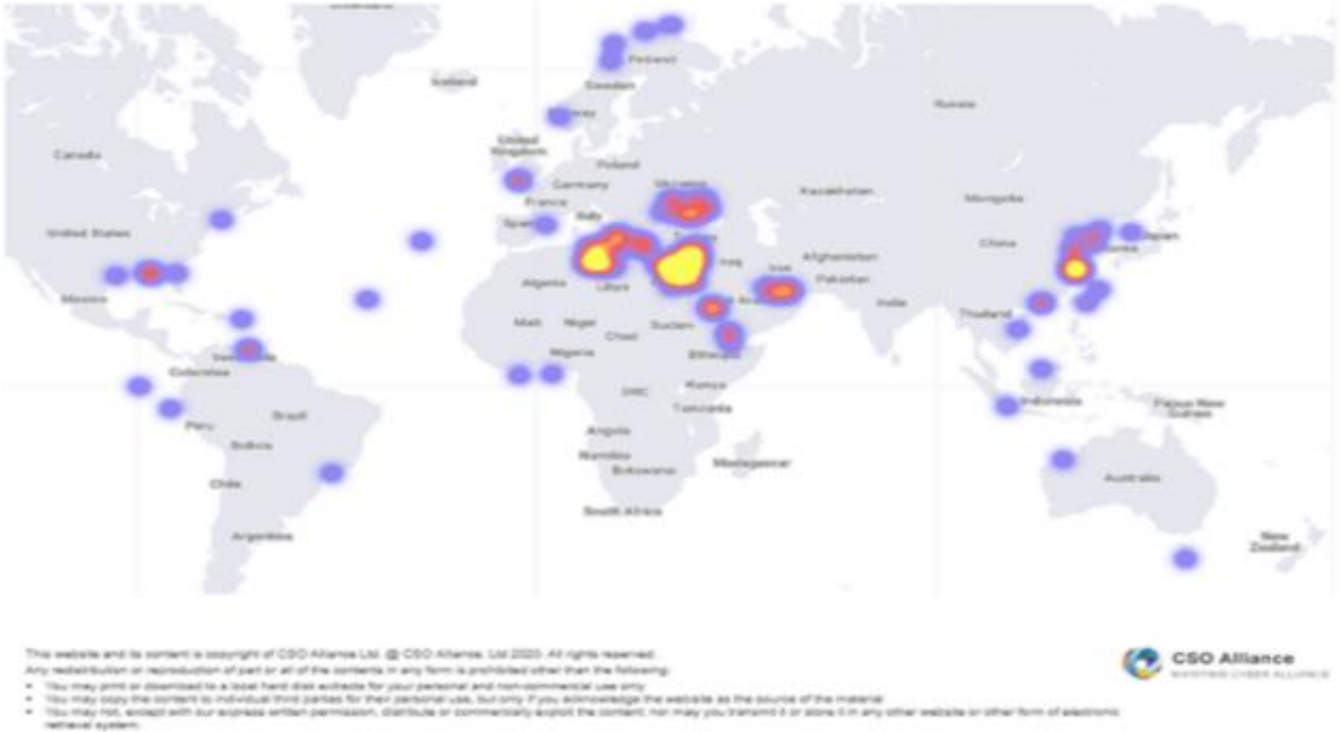
   No effective sharing of the information collected from Captains & Crews
   Poor speed and dissemination between Militaries/Intelligence community IMB/Sea
   No sustained campaign or rational to increase incident reporting

3. **Poor MARSEC Security Narrative**

   Regular informal feedback from military for CSOs to pass to Captains and Crews
   Sustained security narrative to educate on the dynamic risks and help secure security budgets
   Vetted, verified security narrative for CSOs to pass to Management then Company Boards to Shareholders

KEY EVOLVING THREAT: GNSS-PNT INCIDENTS WHERE IS IT HAPPENING ?

GNSS Incidents Against Ships and Ports

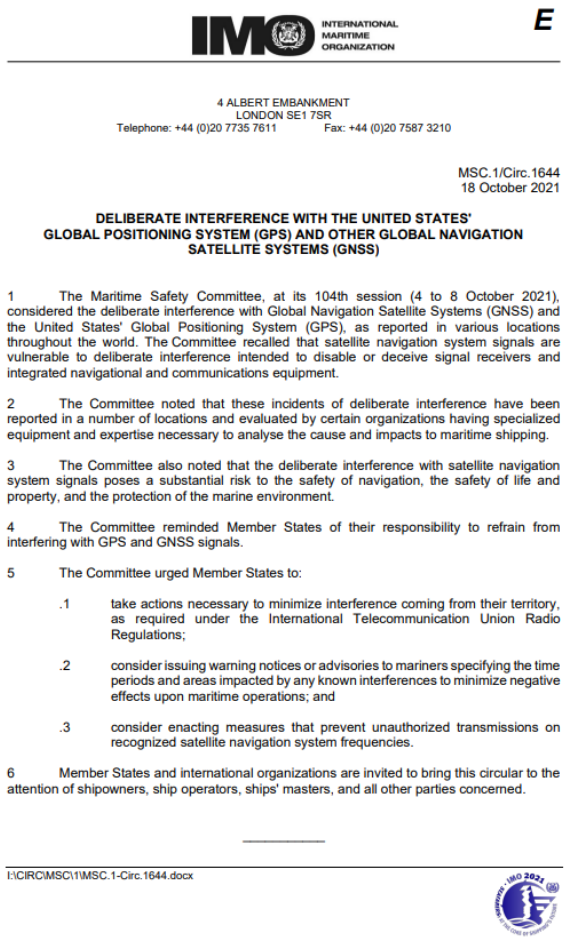


Focus on Suez Canal

Source: Maritime Cyber Alliance

IMO – GPS & GNSS JAMMING: POLICING & DATA IS REQUIRED

IMO Circular MSC.1/Circ.1644
18 October 2021



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MSC.1/Circ.1644
18 October 2021

DELIBERATE INTERFERENCE WITH THE UNITED STATES' GLOBAL POSITIONING SYSTEM (GPS) AND OTHER GLOBAL NAVIGATION SATELLITE SYSTEMS (GNSS)

1 The Maritime Safety Committee, at its 104th session (4 to 8 October 2021), considered the deliberate interference with Global Navigation Satellite Systems (GNSS) and the United States' Global Positioning System (GPS), as reported in various locations throughout the world. The Committee recalled that satellite navigation system signals are vulnerable to deliberate interference intended to disable or deceive signal receivers and integrated navigational and communications equipment.

2 The Committee noted that these incidents of deliberate interference have been reported in a number of locations and evaluated by certain organizations having specialized equipment and expertise necessary to analyse the cause and impacts to maritime shipping.

3 The Committee also noted that the deliberate interference with satellite navigation system signals poses a substantial risk to the safety of navigation, the safety of life and property, and the protection of the marine environment.

4 The Committee reminded Member States of their responsibility to refrain from interfering with GPS and GNSS signals.

5 The Committee urged Member States to:

.1 take actions necessary to minimize interference coming from their territory, as required under the International Telecommunication Union Radio Regulations;

.2 consider issuing warning notices or advisories to mariners specifying the time periods and areas impacted by any known interferences to minimize negative effects upon maritime operations; and

.3 consider enacting measures that prevent unauthorized transmissions on recognized satellite navigation system frequencies.

6 Member States and international organizations are invited to bring this circular to the attention of shipowners, ship operators, ships' masters, and all other parties concerned.

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Winter of 2019, RNT Foundation organised 14 different maritime organisation to petition the US Coast Guard to raise the issue of deliberate GPS and GNSS jamming to the International Maritime Organisation (IMO)

1. "Take actions necessary to minimize interference coming from their territory, as required under the International Telecommunication Union Radio Regulations;
2. Consider issuing warning notices or advisories to mariners specifying the time periods and areas impacted by any known interferences to minimize negative effects upon maritime operations; and
3. Consider enacting measures that prevent unauthorized transmissions on recognized satellite navigation system frequencies."

Source: Resilient Navigation and Timing Foundation

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JAMMING: EVIDENCE OF IMPACT - EVERY DAY

RoRo Ferry

Full navigational shut down for a period of
around 20 minutes on three separate occasions

STATEMENT OF FACT

GPS signal completely lost whilst alongside Fishbourne (all satellites lost, red traffic light condition, with no radar positional or speed input), during Fishbourne channel passage until the Kemps buoy and intermittent thereafter. Shoreside or onboard vehicle GPS jammer suspected as whenever signal returned, it was with a HDOP of 1.0 or 1.1 with DGPS correction and RAIM status okay.

Cruise Ship

Departure from an Italian port delayed as jamming disrupted bridge operations
Passenger was found in line of sight of the bridge holding a jamming device

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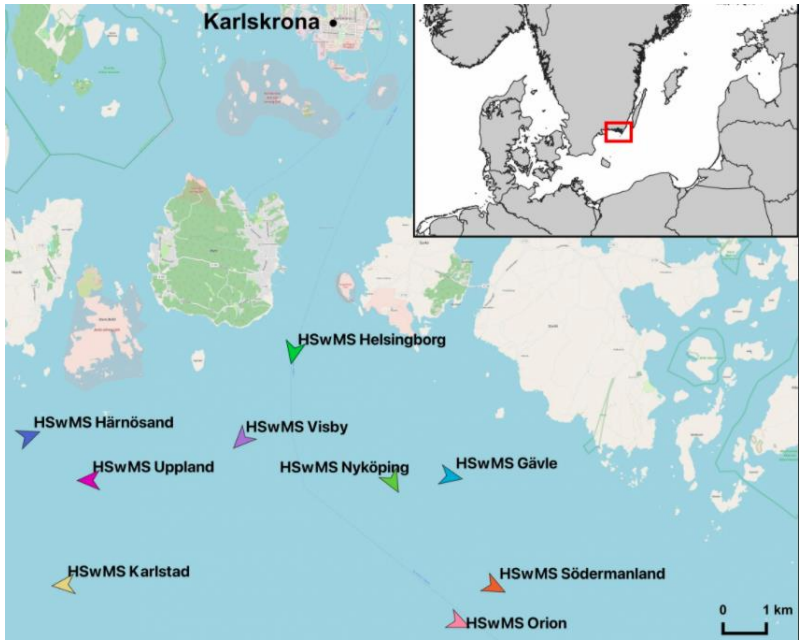
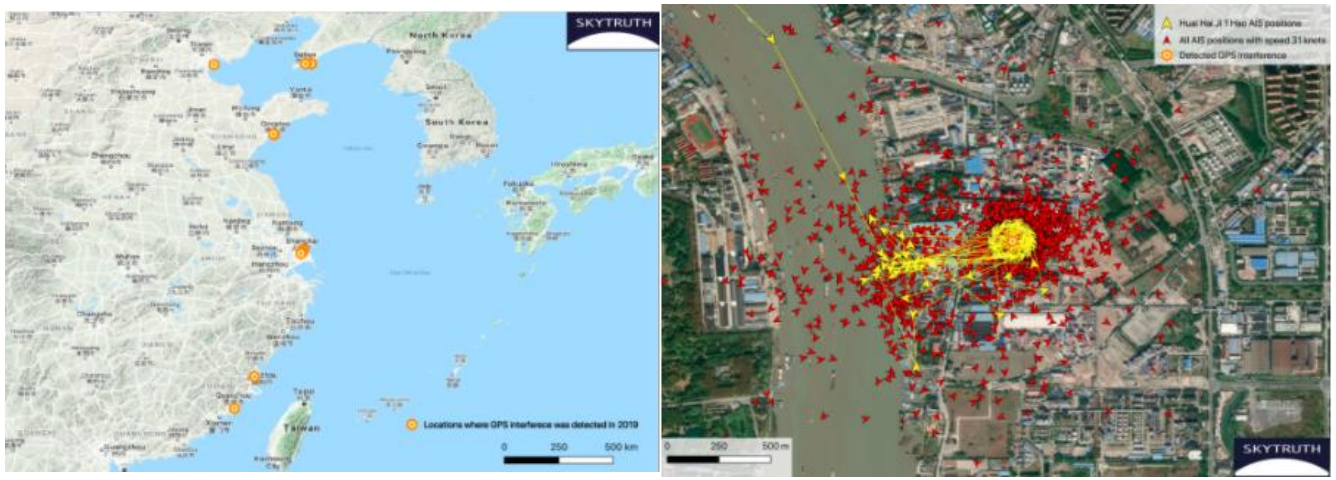
SPOOFING: EVIDENCE OF IMPACT - EVERY DAY

China 6 Cities 20 locations
Shanghai Multiple vessel spoofed
Vessels reporting 20-31 Knots

Source SkyTruth





173 NATO Warships spoofed to date

False data of 9 Swedish Navy appearing at sea when moored in port 4-5 Feb 2021 Source SkyTruth

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THE NEED: REPORTING & SHARING OF INCIDENT DATA

Maritime Incidents

Physical crime

Cyber Crime

24/7 Live feed

Anonymised

Verified

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How: The Platforms

- Industry security professionals working together in bespoke, secure online environment
- Share & collaborate on latest threats, crime trends and risk mitigation
- Support P&I Clubs, Flag States, Classification Societies, Shipping Associations, Military, Government

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WHY: THE 'ECHO CHAMBER'

SHIPPING

Global **1,200 Company and Cyber Security Officers** responsible for 60,000 ships 1.2 million seafarers.

UK **150+ Company and Cyber Security Officers** responsible for 956 ships 21,000 seafarers.

- Who are these CSOs & CISOs?
- How do they gather security information (pay of it or just use open source and from whom?)
- How do they process / add any value to the information they collect?
- How and to whom to they send it i.e.

  To Captains and Crews and vitally

  To their Management and so onto the ship owner boards and shareholders

Develop a new, discrete & sophisticated security messaging channel

PORTS

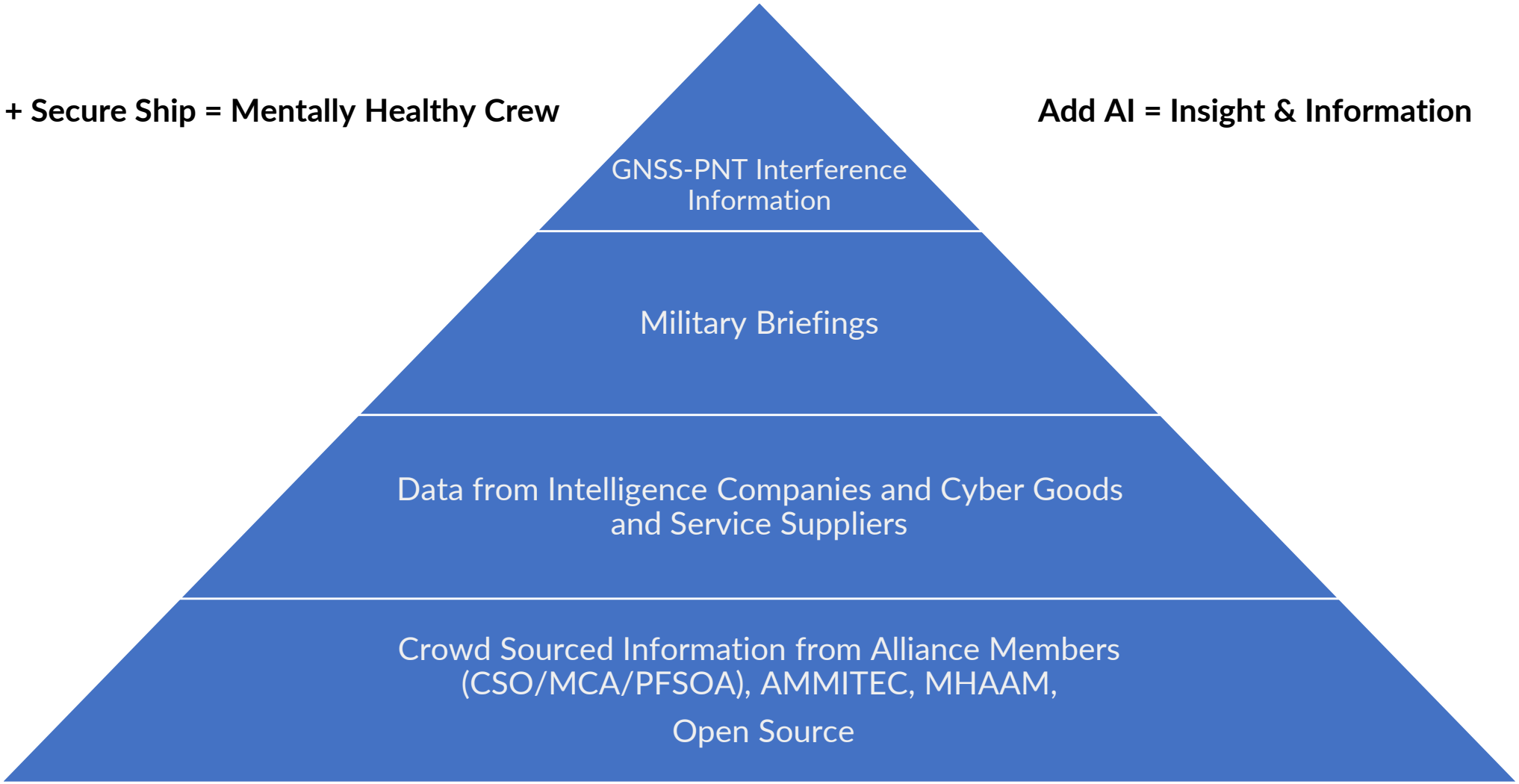
Global 7,500 Port and Facility Security Officers of 20,000 Ports and Terminals

UK 120 Port and Facility Security Officers for Cargo Ports

The Methodology: Online real time Information flow

Safe Ship + Secure Ship = Mentally Healthy Crew

Add AI = Insight & Information



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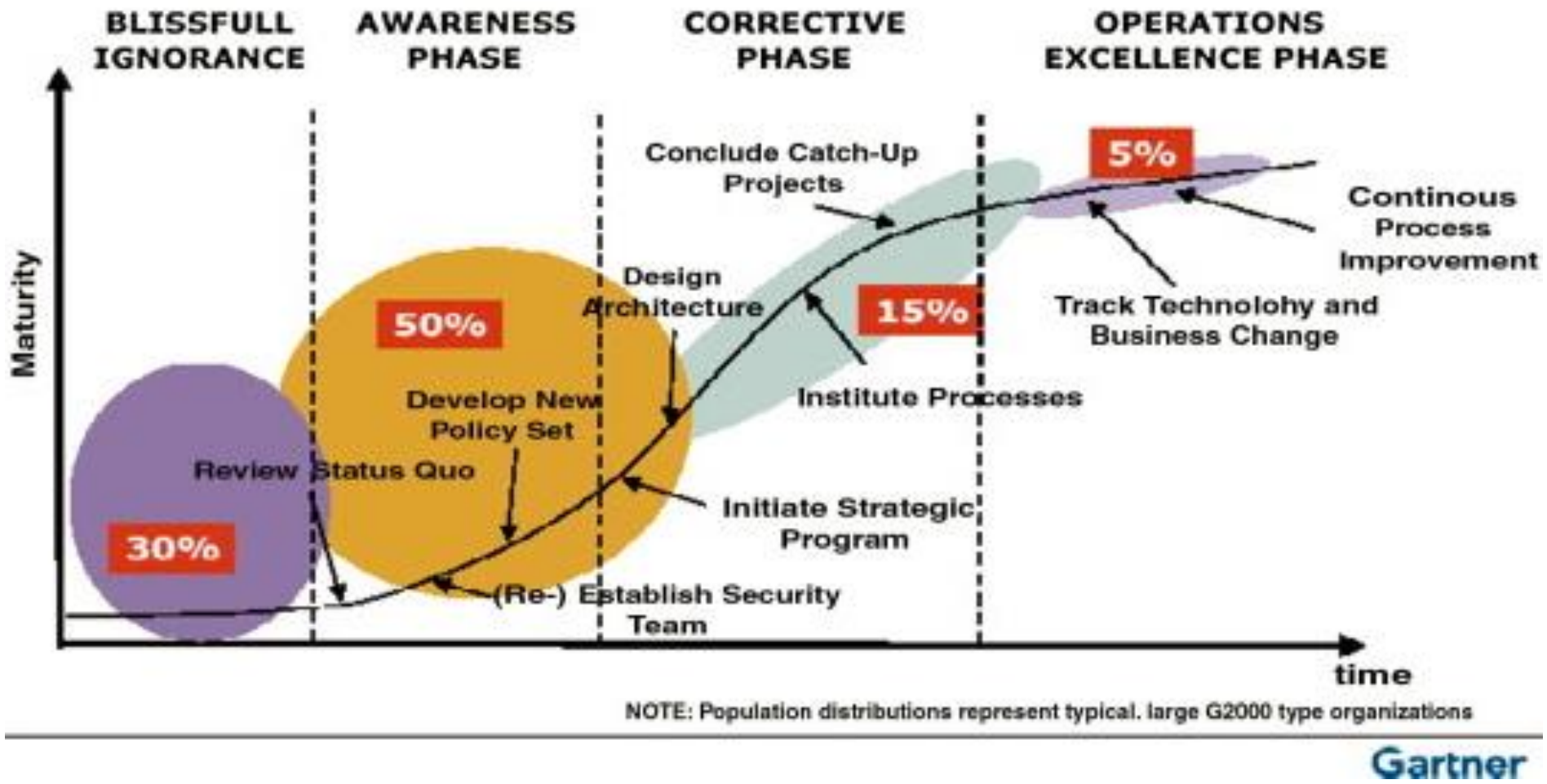
WE ARE AT THE BEGINNING: IT IS WORKING.....

Subject: Re: Thoughts please - Update on 'off the record' Military Briefing to help CSOs

Hi Mark
It is really good to have a short concise summary of activity and threats / status in high risk areas
clear indication of what the military (Friend or fow) are doing is very helpful when having to present information to senior management

More info on what protection there is or is not in the area is always going to be useful when making decisions

SUPPLY CHAIN VULNERABILITY: THE PLAN



Supply Chain Vulnerability: Cyber Risk Assessment

BIMCO Survey: 77% of respondents would cancel a contract due to cyber concerns

IASME CONSORTIUM

Maritime Cyber Alliance

MARITIME CYBER BASELINE

Marsh

Collect Data – Peer review

NIST Scorecard – Dashboard / Risk Transference

Cyber analytics - KYC / 'Kite Mark'

CHIRP Confidential Human Factors Incident Reporting Programme

FIRST Improving Security Together

AMMITEC Association of Maritime Managers in Information Technology & Communications

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PARTNERSHIP: A TEAM APPROACH

Key Maritime Cities

Tokyo
Singapore

Mumbai
Dubai

Athens
Limassol
Istanbul

Hamburg
Rotterdam
Paris

London

MarSec 21+
Virtual Conference & Exhibition

Government/Military - Naval Attache Brief

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WHAT IS OUR REQUEST?

60% of shipping companies own and operate less than 5 ships each – Part time CSO & CISO

- Cyber attacks are happening constantly and the **supply chain** is at risk.
- **Speed is of the essence** – we cannot wait for all the IMO members to agree on a concrete way forward on incident reporting
- We have the **information sharing capability and veracity** in place that companies want and need
- The industry needs **Government** to take a leadership role with standards that others can adopt.
  UK Government needs to step up to the plate.