

MARITIME NAVIGATION

NEXT-GEN.

Back to the Future

14th. PNTAB Meeting Dec. 10-11, 2014

Washington

The Omni Shoreham Hotel

Refaat Rashad

GPS- a Component of the Global Critical Applications

Surveying & Mapping

Precision Agriculture



Aviation



Communications



Power Grids

Oil Exploration



Fishing & Boating



Personal Navigation

WORLD MARITIME GPS USERS

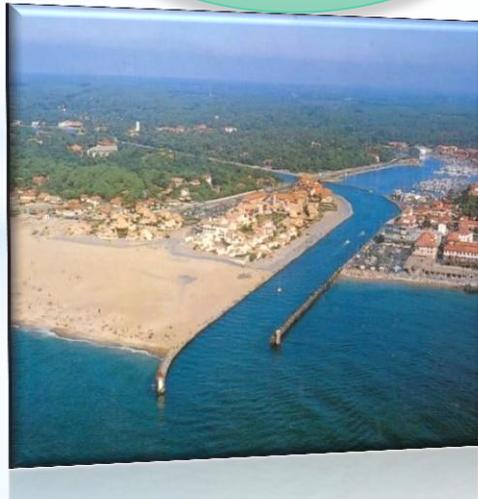
Overseas



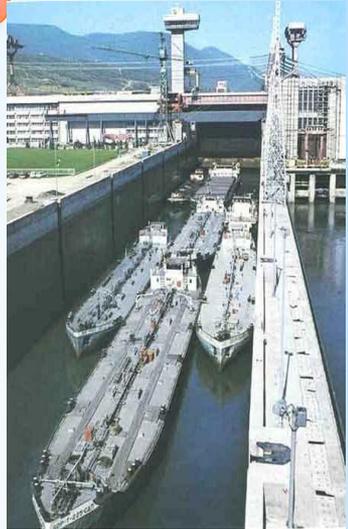
Ports



Approach Channels

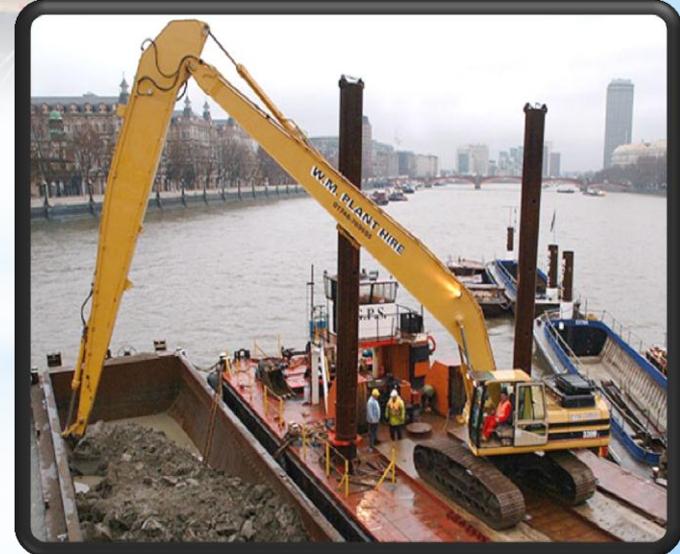
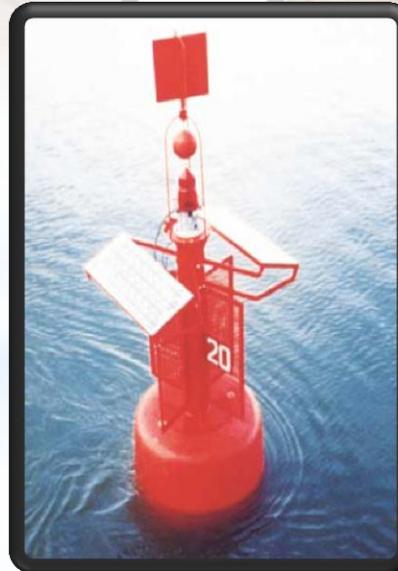
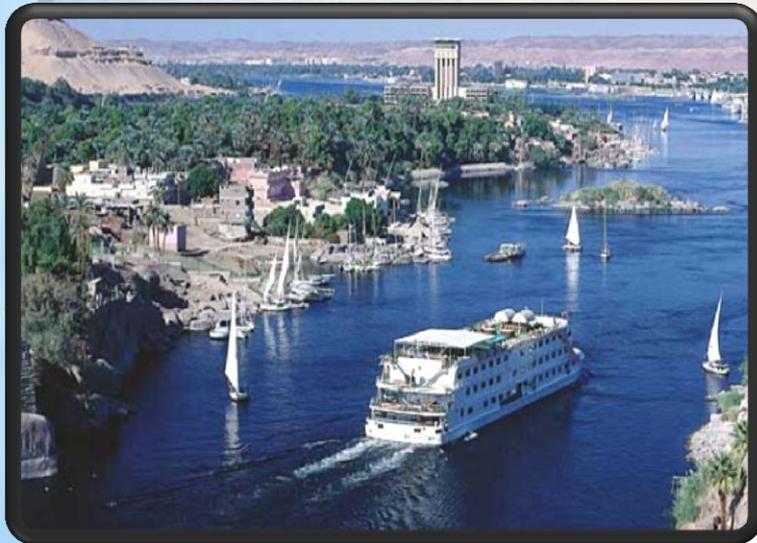


Narrow Waterways



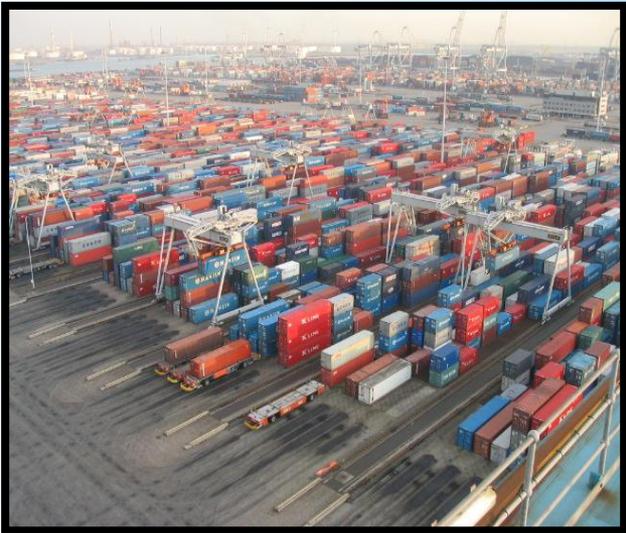
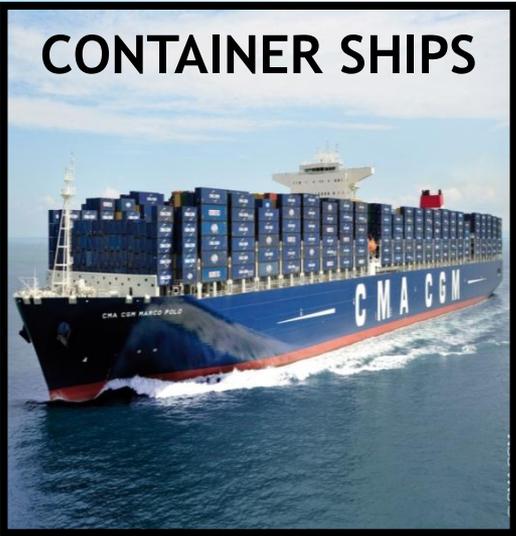
Surveying and offshore operations

GPS is playing an increasingly important role in the management of ports

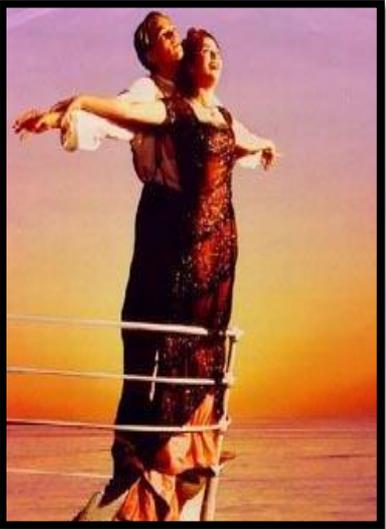


Heavy left carriers

CONTAINER SHIPS



CRUISE LINER



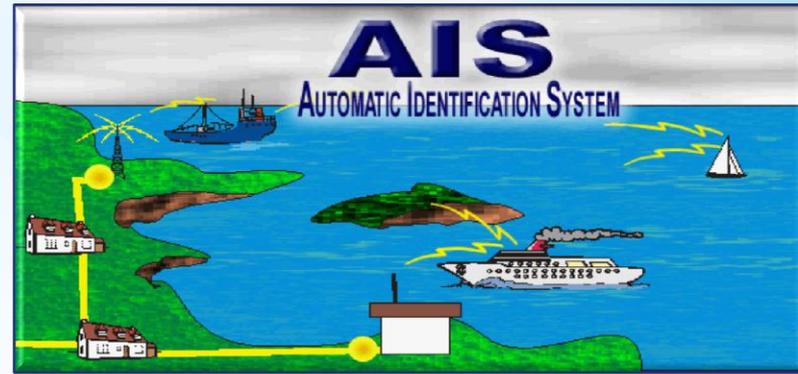
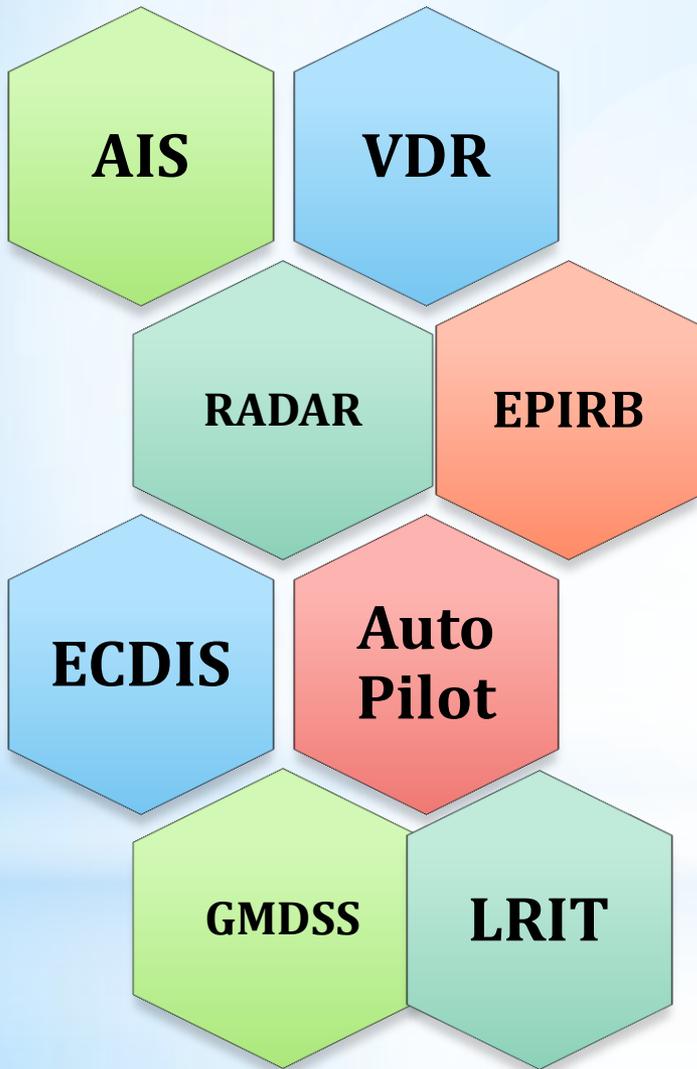
GPS is Already Central to the Maritime Navigation

- *The maritime market includes merchant vessels, and vessels operating on inland waterways. Leisure vessels are by far the largest category with millions of devices.

All sea-going vessels of 100 gross tons or more are vessels that are required to comply with the International Maritime Organization's Safety of Life at Sea (SOLAS) are mandated to carry an Electronic Radio Navigation System.

- * **The efficiency and the safety are the key issues of the maritime transport.**

SHIP'S EQUIPMENT DEPEND ON GPS



* MARITIME USER REQUIREMENTS

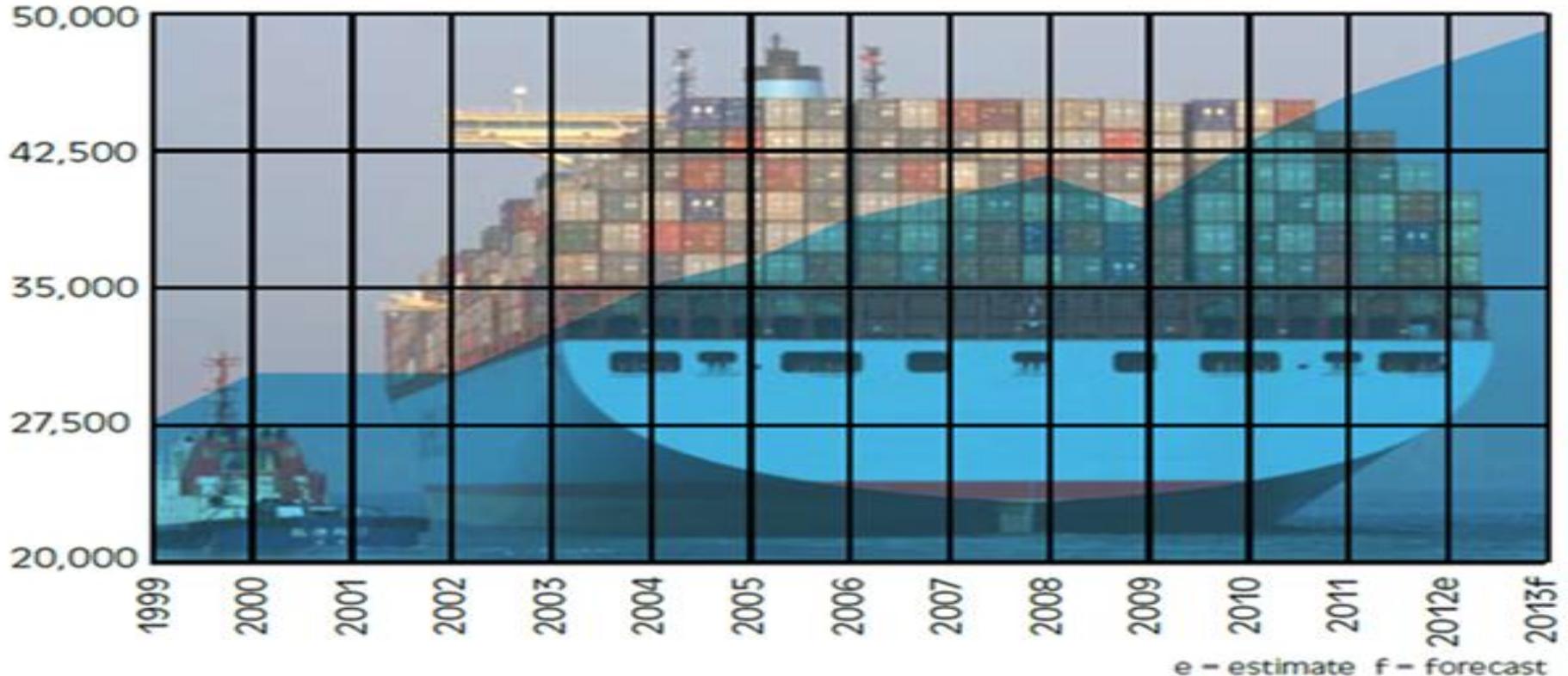
- * Availability
- * Accuracy
- * Reliability
- * Continuity
- * Accessibility
- * Integrity

This requirements are provided by the GPS and Augmentation systems

Why Maritime

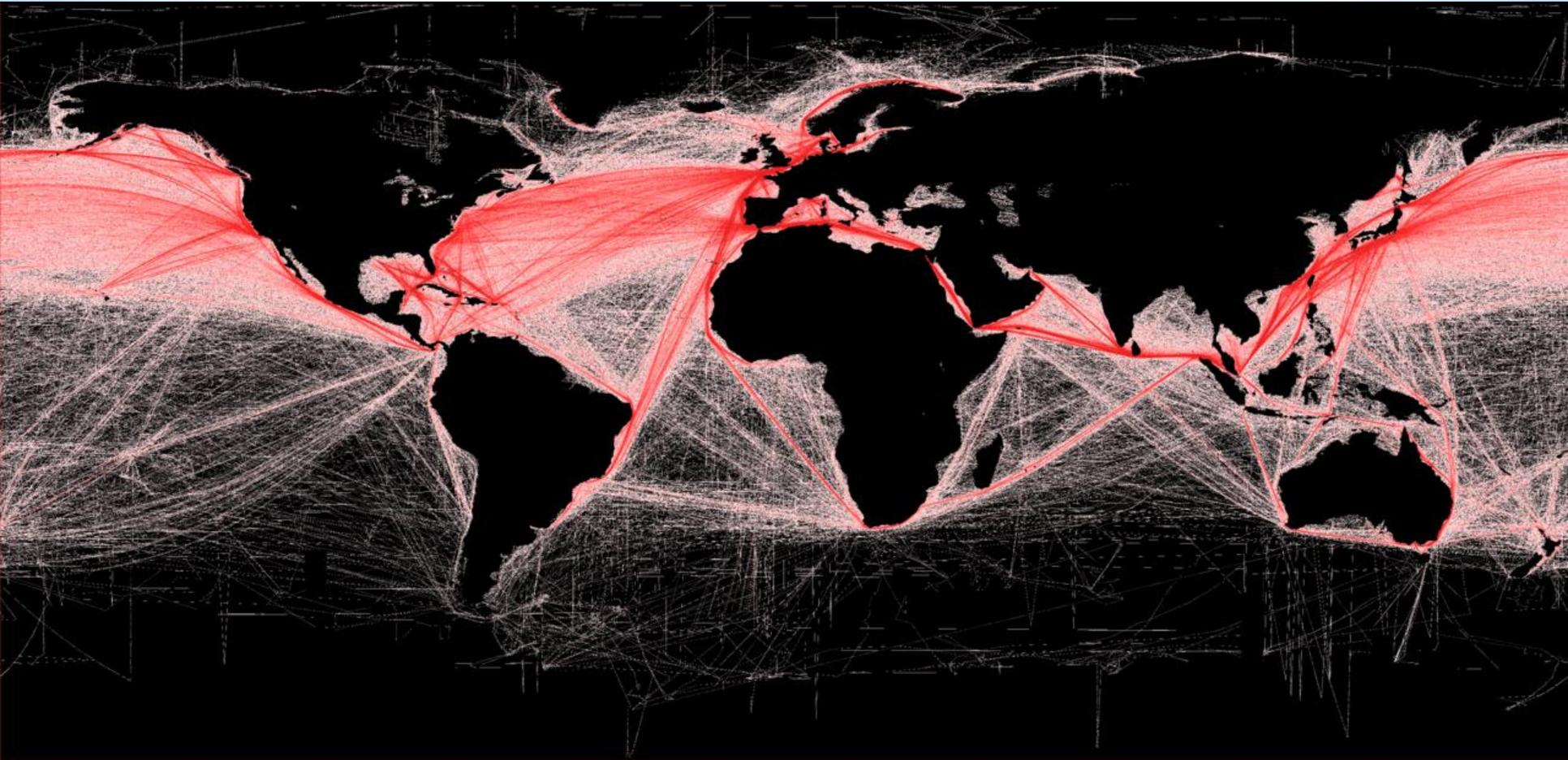
World seaborne trade (billion tonne-miles)

Source: Clarkson Research Services



Sea-born Trade amounted to 8.7 billion Tons 2013
About 700,000 ships carry the world Trade

* MARITIME ROUTES



**A wide variety of vessels moves around the world
Maritime Transport Increasingly Relays on the GPS**

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- * In U.S over 300 commercial sea and river ports, handle more than **2 billion tons** of import/export cargo annually.
- * In 2011, oceangoing vessels made **68,036 calls** at U.S. ports.
- * The average vessel size per call was **53,832** deadweight tons.
- * In 2011, U.S. ports accounted for nearly 7.3% of global vessel calls and ranked second in terms of overall calls.

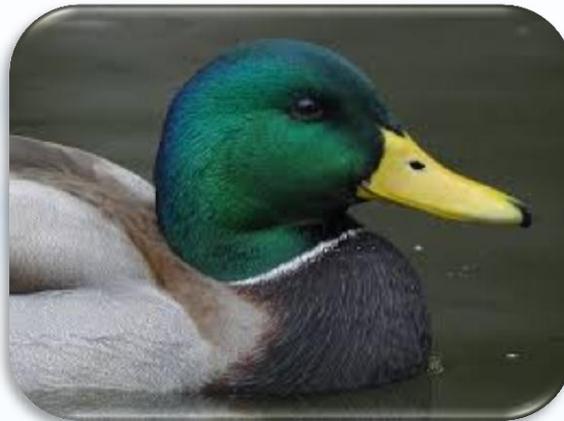


WITH GPS





**WITHOUT
GPS**



So , What is The Problem

OR

Where is The Question

*** Can The Maritime
Transport Withstand The
Jamming Or Outage Of
GPS ?**

**The Answer
is No**

***Back To The History
TO
Secure the Future***

**eLORAN is the Way
Ahead to Backup GPS and
Secure PNT**



- * **eLoran**, is the advanced system of the original long lasted of old loran-c system.
- * **eLoran** will be based on low frequency, strong signals with interference resistance capability, Pseudo Range measurement, and capable of prorogating, for hundreds of miles.
- * **eLoran** meets the: *Accuracy, Availability, Reliability, Continuity, Accessibility and Integrity* requirements for the PNT and can augment for GPS
- * **Loran** signal is 10,000 times stronger than the GPS signal
- * IMO and IALA have recognized eLoran as an independent backup system to the GNSS for Marine Navigation.

* Conclusion

- * e Loran is The Number One Candidate to Complement For PNT
- * And is The Genuine Backup System To Maintain The Success of
 - * The GPS



***Three messages I wanted to pass,**

1-*Maritime Transport is important for the nations economy,

2- *GPS is essential for the safety of marine navigation and

3- *eloran May Save The Day If GPS Signal Is Lost.

Thank You!

