

**ORBCOMM<sup>TM</sup>**

CONNECTING THE  
WORLD'S ASSETS



**Global e-Navigation M2M/VDE Component**

**VDE Contribution from ORBOMM & Demonstration Recommendations**



## ORBCOMM & VDE

- ORCOMM operates a constellation of satellites in the VHF spectrum for Machine to Machine (M2M) transmission and reception, as well as AIS reception.
- eNavigation requires M2M
  - No intervention by a human operator to enable the communication
- VDE, VHF Data Exchange is M2M
  - May connect information directly to a system
  - Can be displayed to an operator
- ORCOMM recognizes that VDE has tremendous opportunities for ensuring all vessels, whatever size or class, can share the same safety of navigation information
  - Fishing Boats, Pleasure Boats, Yachts, and the largest vessels afloat





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## ORBCOMM

- Has operated satellites for 20 years
  - AIS Payloads
  - VDE (M2M) Payloads using 137-150 Mhz spectrum
  - 16 earth gateway stations
  - Spectrum is in the VHF band but designated for satellite use
  - M2M is global
    - Land and Maritime. No distinction
  - Maritime is able to use satellite VDE for data outside the former maritime voice band



## Advantages

- Advantages of not using spectrum originally intended for terrestrial maritime
  - There is no limitation of use anywhere in the world
  - Spectrum does not require masking as IALA VDES
  - Higher probability of communication and detection of messages
  - Does not suffer from, nor create interference to the current voice or AIS channels
  - Leads to reduction of the amount of traffic on the current Maritime VHF data Link

## Advantages (cont.)

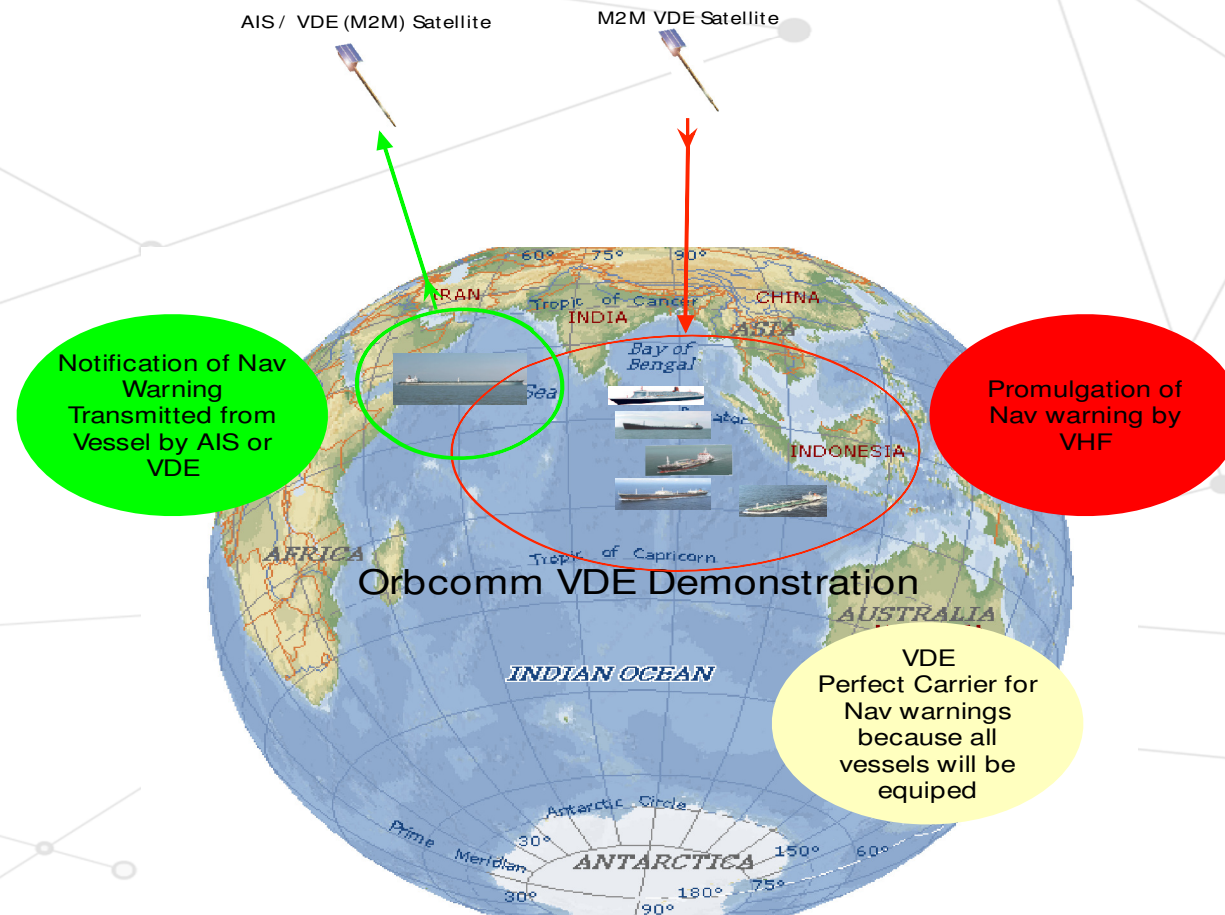
- More possibilities for innovative terrestrial VDE usage
- Terrestrial peer group management and networking techniques are highly efficient, and will be inclusive for all vessels, and will require spectrum to be so
- No unwanted voice transmission on parts of the IALA sought spectrum by current voice users
- Spectrum is VHF, can use existing ships' antenna
- New receivers will be required by ships for use of VDES, allowing for the spectrum range to be built into new ship sets

## VDE Receivers

- ORBCOMM currently manufactures and sells its own VHF M2M transceivers and chipsets, on a large commercial scale
- No technical reason other manufacturers of future vessel VDES systems can not include the frequencies operated by ORBCOMM
- This would minimize development and integrations costs as well as reduce schedule and risk

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# Demonstration





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## Demonstration

- ORBCOMM is seeking other interested parties to demonstrate VDE using its AIS / VDE and M2M satellite payloads
  - Maritime safety message will be promulgated by a vessel
  - Broadcast to vessels within or in accompanying NAVAREA
  - Ship set will be provided to vessel for reception



## Demonstration Data

### Data - Meteorological Services and Warnings / Navigational Warnings

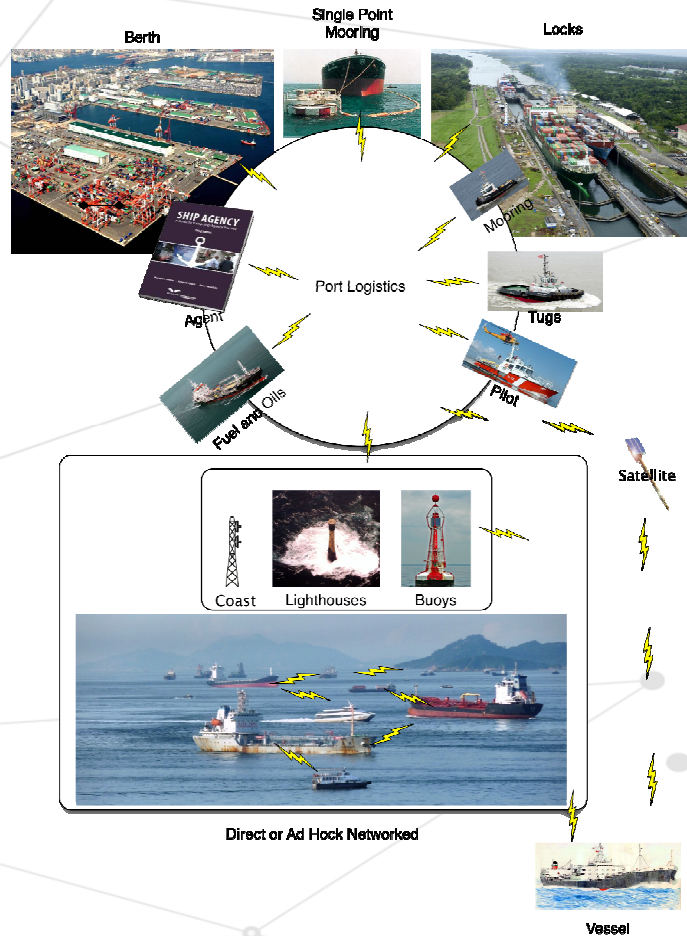
- The message will be alphanumeric coded text, or graphic
- Provide information to a specified vessel
- Provide information to a shore authority (ship to shore)
- Provide to ships in the area (ship to ship) based on region or route

## Demonstration Data (cont.)

- Interface – For demonstration purposes the message would be formed by an operator as a plain message, however if templates are available this could be considered as an option.
- The message will be language independent, data libraries are not yet available so International code of signals will be used to code and decode the message

## ORCOMM – IALA Members

- Urges Members to:
  - Amend current guidelines to accept spectrum that is outside of the designated terrestrial voice and AIS
  - Discuss and study how ORBCOMM's VDE, the spectrum sought by IALA and other VHF satellite operators, can work together
  - Consider how to utilise the terrestrial spectrum most efficiently for the integration of all vessels into a single, safe e-navigation system for World Navigation
  - Study the quantity of information that will be required for the use of VDE to serve e-navigation based on codification using data libraries and alphanumeric messages



# Sample Candidates for VDE



THANK YOU

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