e-navigation……the implications for ports!

A PRESENTATION FOR THE E NAVIGATION UNDERWAY CONFERENCE

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- ➤ Themes for this presentation:
- ➤ About IHMA
- ➤ What is e navigation?
- ➤ What does it mean for ports
- ➤ What does it mean for Harbour Masters
- ➤ Future e-navigation issues for ports
- ➤ Summary

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- ➤ What is the International Harbour Masters Association?

- An international association of Professional Harbour Masters

- Global representation – over 250 members in 40 countries

- Not for profit organisation

- Non Government Consultative status at IMO

- Works closely with other maritime organisations (IMPA;IALA;NI;BIMCO;PIANC) on specific projects of mutual interest (e.g. ports of refuge; ship and port equipment)

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- ▶ What skills and knowledge do our members have?

- Most have specific marine qualifications and experience

- Many have been port customers in a previous career

- They manage risk every day

- They are the custodians of a ports Safety Management System (SMS)

- Through IHMA they have access to a network of global H/M contacts

- Their business is managing port safety – a key part of e-nav. SIP

- They are a key manager in the ports management structure

- Their performance is directly linked to a ports performance

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▶ In summary;

▶ The Harbour Master is the leading marine professional in a port and is responsible for the ports marine safety management system.

▶ He/she is risk averse and expert in managing marine risks

▶ Many H/Ms are also Port Security Officers

▶ They are responsible for the marine environment in their port

▶ The H/M is also increasingly commercially aware and instrumental in ensuring a port operates efficiently but above all safely

….all of which means that the H/M must be "plugged in" to e-navigation!

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- So what is e-navigation?

Standard definition:

The harmonised collection, integration, exchange, presentation and analysis of maritime information on-board and ashore by electronic means to enhance berth to berth navigation and related services for safety and security at sea and protection of the marine environment'

What word is missing from the above?

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▶ I prefer this:

▶ " *Obtaining accurate, up to date information which can be easily understood and easily shared to make sure ships and* ports *can cooperate effectively and go about their business to mutual benefit, safely and securely whilst protecting the marine environment"*

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- ▶ Key phrases:
- • ……..maritime information on-board and ashore

- • ………berth to berth navigation

- • ………safety and security

- • ………protection of the marine environment

……all of the above relate to ports and the role of the Harbour Master

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▶ Could e-navigation prevent this?

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► ...or this?

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- ….or this?

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- ……or this?

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- ▶ …and what about this?

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▶ Almost certainly! …..and even if prevention was not possible….e navigation principles could mitigate the effects

- Better systems
- Better equipment
- Better information
- Better communication
- Better training
- Better people

…….so where do ports interface with the above?

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► Better Systems:

- VTS/LPS

- Hydrographic Survey Systems

- Access Control

- PIMS

- MSMS

- EMMS

- Traffic Management Systems

- Security Systems

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- ▶ Better Equipment:
- • VTS – radar, AIS, VHF/UHF radio,
- • Access Control Systems….CCTV, Face ID, RZ's, Pass Control
- • Fit for purpose marine plant and equipment (tugs, moorings, survey equipment, pilot vessels, dredgers, PPU's)
- • A to N…….lights, buoys, beacons, marks etc.
- • Personnel Communication (i-phones,tablets,radios, pagers etc.)

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▶ Better information:

- Accurate

- Up to date

- Standardised

- Relevant and supportive of decision making

- Easily Accessible

- Easily Understood

.........IHMA initiative AVANTI(Access to Validated Nautical Info.)

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- ▶ Better communications:
- Smooth data exchange afloat and ashore and between the two
- Standard marine vocabulary/standard terminology
- Clear radio communications policy
- Clear and published port management hierarchy structure
- Up to date Contact list
- Easy to access comms. Systems
- Web sites/portals

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► Better Training:

- Systems are operated and maintained by people…..the human/machine interface is critical

- People must be appropriately qualified and properly trained

- Training is not a "one off"…..it should be an ongoing commitment

- It must be relevant…..not training for trainings sake!

- It must be SMART!

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- ▶ Better people:
- • Qualified
- • Competent
- • Motivated
- • Experienced ?
- • Understand and accept their role & contribution

……………*and remember that 80% of all marine accidents whether ashore or afloat are caused by Human Error!*

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▶ Lets take a closer look at some key people, their roles and responsibilities and the systems and equipment they operate and interface with:

- The Harbour Master………the leading marine professional in the port

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- ▶ H/M Role:
- Facilitate safe navigation in port
- Manages the collation and dissemination of information to all port users
- Is responsible for the day to day operation of the ports MSMS
- Represents the ports interests WRT safety, security, environmental responsibility and increasingly.....commercial and business awareness!

Ports are business entities...they exist to facilitate trade....and make money!

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- ▶ H/M Role e – Navigation resources:

- VTS…………..communicates with and tracks shipping
- Hydrographic Survey Charts……accurate survey data at appropriate intervals…..updating UKHO charts.
- Dredging Plant and equipment…..maintains charted depths
- Navaids…….light and mark safe channels
- Towage plant and equipment…….assisting vessels alongside
- Mooring Equipment…….vacuum mooring systems/QRH's
- Trained and competent people

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- ▶ The Pilot:

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▶ The Pilot:

- A highly qualified marine professional

- A highly technical role

- A key risk reduction resource…..grounding/collision/allision

- Key role is to ensure a vessel navigates safely into and out of port

- Has to establish Master/Pilot relationship quickly and clearly

- Has to agree passage plan with bridge team and communicate it quickly and effectively

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▶ What e – navigation resources are at the pilots disposal? :

- PPU

- VTS

- Ships Bridge equipment....radar/AIS/radio comms/ecdis

- Ships Bridge Team resources

- Port A to N

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▶ So what do ports need to look at in meeting the needs of e-navigation users?

- The provision of accurate, accessible, up to date information in a common data format to enable ship and port to share the information in order to facilitate, safe access/egress, safe berthing unberthing, plan loading/unloading, allocate resources efficiently

- The implementation of systems and equipment to receive and disseminate such information to all relevant users

- Trained and competent people!

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▶ Port considerations:

- e – navigation systems should support good decision making/enhance performance/reduce errors

- Control centres (VTS/Terminal Operations) need to support people and the key decisions they need to make

e.g. - analysis (rapid and objective)

- options (ranked)

- key information (relevant to the situation)

- risk (levels and controls)

……..*for staff to make the right call at the right time to deal with safety, security or environmental incidents*

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> Investment:

Ports should invest in e – navigation systems , plant & equipment if they want their business to grow, prosper and avoid costly delays, inefficiency and in the worst case……serious or catastrophic accidents

………and they should also invest in the right people with the right competencies and maintain and enhance their performance

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- and what about the future? What is on the horizon for ports?
- Autonomous shipping?
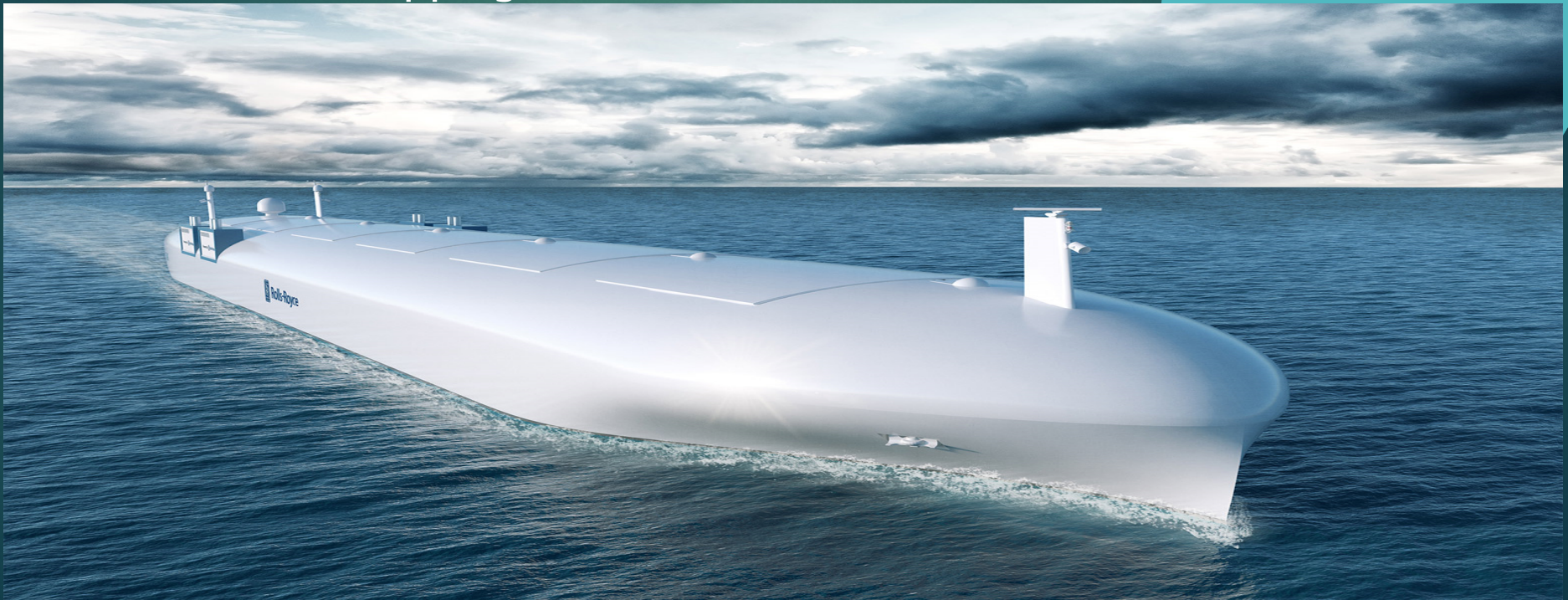
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Autonomous Shipping:

► Issues for ports:

• Communications

• Primacy

• Safe Anchorage

• Passage into port?

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- Human – Computer Interaction:

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Human – Computer Interaction:

- The study and design of the interface between people and computers

- HCI has developed rapidly on consumer devices such as smartphones and tablets

- By 2030 new HCI technologies will replace or augment current technology…both fixed and mobile

- They will be SMART and will be capable of recognising our requirements and our personal preferences

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▶ Cyber Security Systems:

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➢ Cyber Crime:

- Probably the biggest threat to port systems in the future

- The threat will move from software-code exploitation to manipulation of data, attacks on operational processes

- Are ports prepared?

- Is your PIMS vulnerable? Is your VTS vulnerable? Is your commercial data protected?

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▶ Energy Management:

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➢ Energy Management Systems:

- Rising cost of fuel and increasing environmental legislation on emissions will dominate merchant shipping costs

- LNG is touted as the fuel of the future….but ports will need to see demand before investing in supply technology

- New fuel technologies will emerge…..fuel cells and battery technology

- Ports will need to keep pace

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- ▶ Big Data Analytics:

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- ▶ Big Data Analytics:

- Volumes of data will increase from a wide variety of sources

- Speed of data transmission will increase

- Advanced computing technology and analysis techniques will be required to deal with the sheer volume of data arriving in ports

- Processing the data into what is useful and discarding what is not……will be extremely challenging

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Summary:

- e – navigation is still in its infancy...but will evolve fast

- Ports need to anticipate its implications and grasp the opportunities it affords

- The maritime industry is traditionally slow to embrace new technology......this needs to change!

- Communications will become more standardised and data exchange between ports and vessels will become more complex and more regular

- Ports and the key people in ports need to prepare and invest for the future

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Thank you for your attention