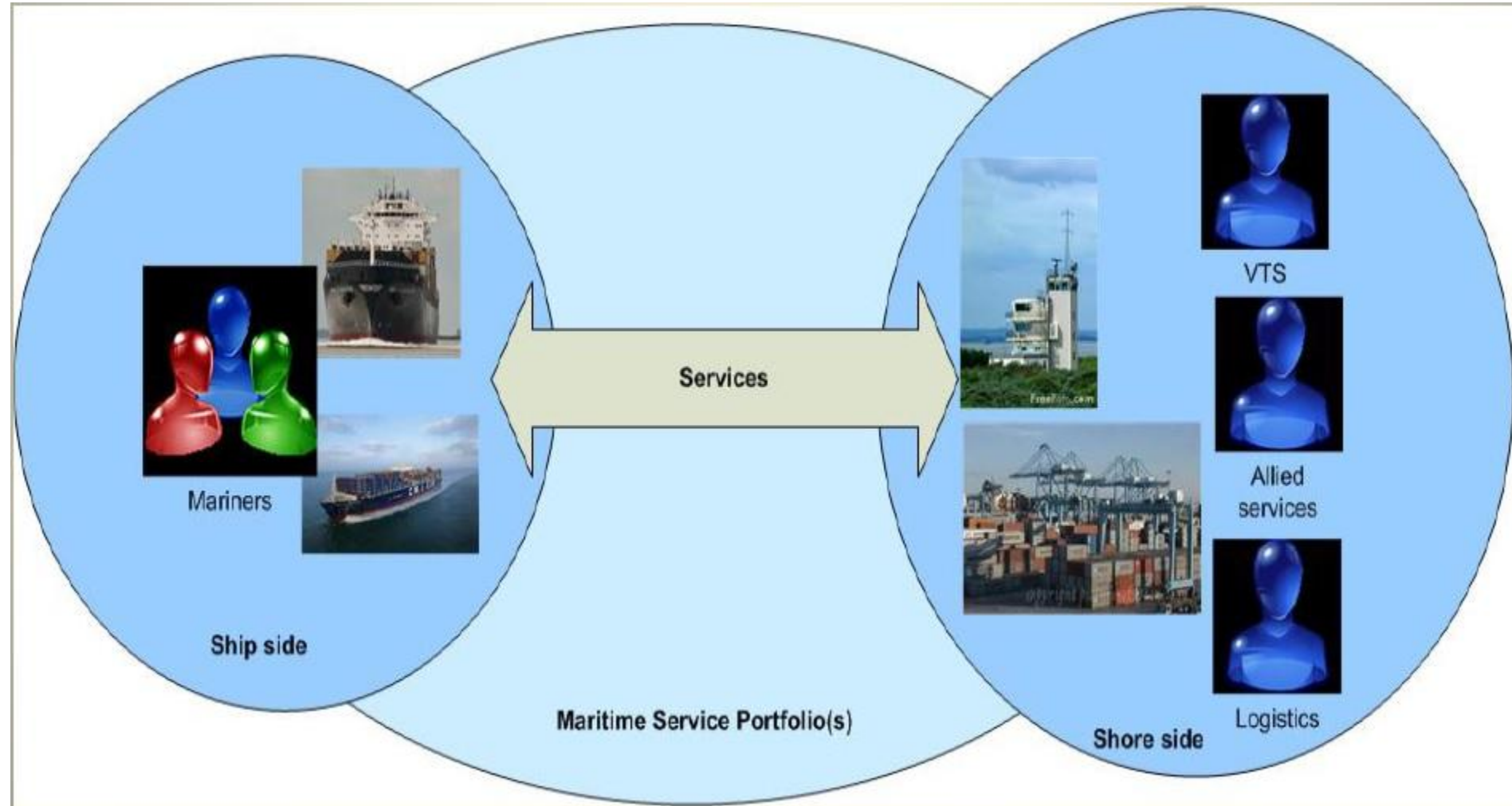# E-Navigation
Concept and Test Beds

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Director Maritime Industry

NIOHC14 - 27 February 2014, Bangkok

The e-Navigation areas
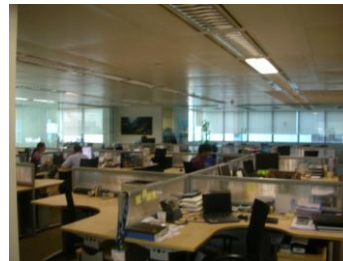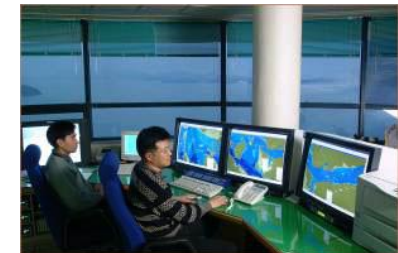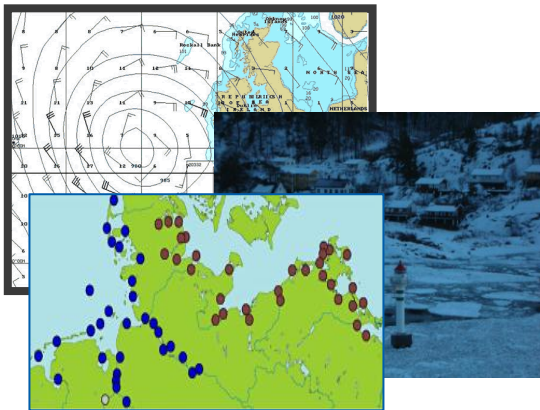
Key Aspects of e-Navigation

Ship

Owner/Operator

PSC

HOs

Customs…

VTS – Coastal State

Tide Stations…
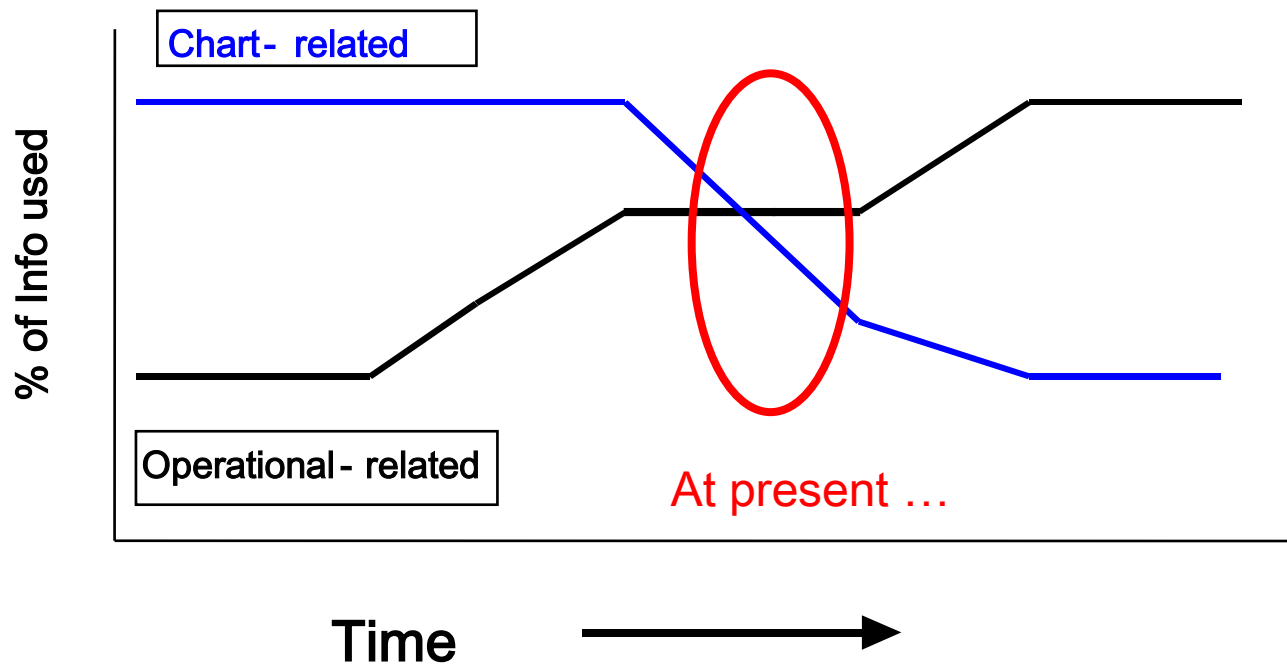
Data Service Provider

Ports

Vision: Change of Information content

Trend in Display of Navigation-related Information on ECDIS

Chart- related

% of Info used

Operational- related

At present …

Time

Vision: Change of Information content

Trend in Display of Navigation-related Information on ECDIS

Chart - related

% of Info used

Operational - related

Time

The Future
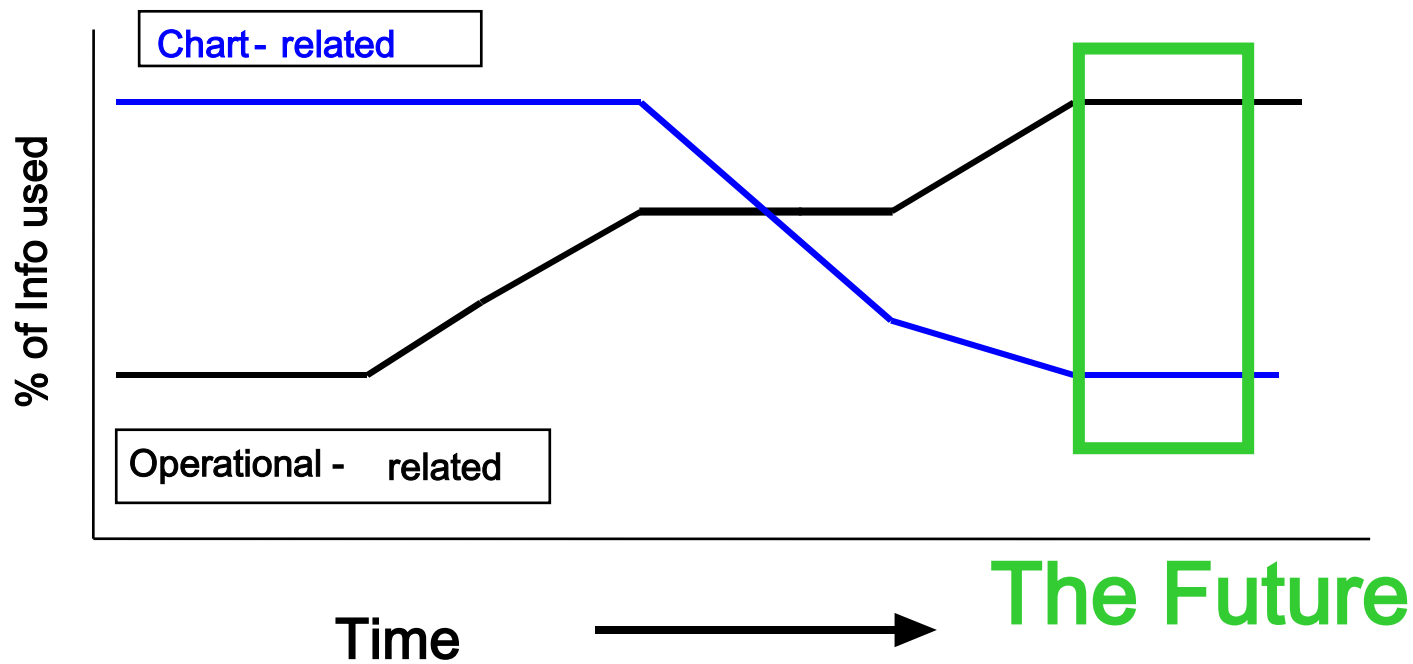
e-Nav Data Integration Concept

Data Production   Data Integration   Data-Product Implementation   Information Visualization

Publication Features Object DB

Independent Feature Objects DB

Cartographic Feature Objects DB

Synchronize — Data

Shore originated Real-Time data

Ship sensor Real-Time data
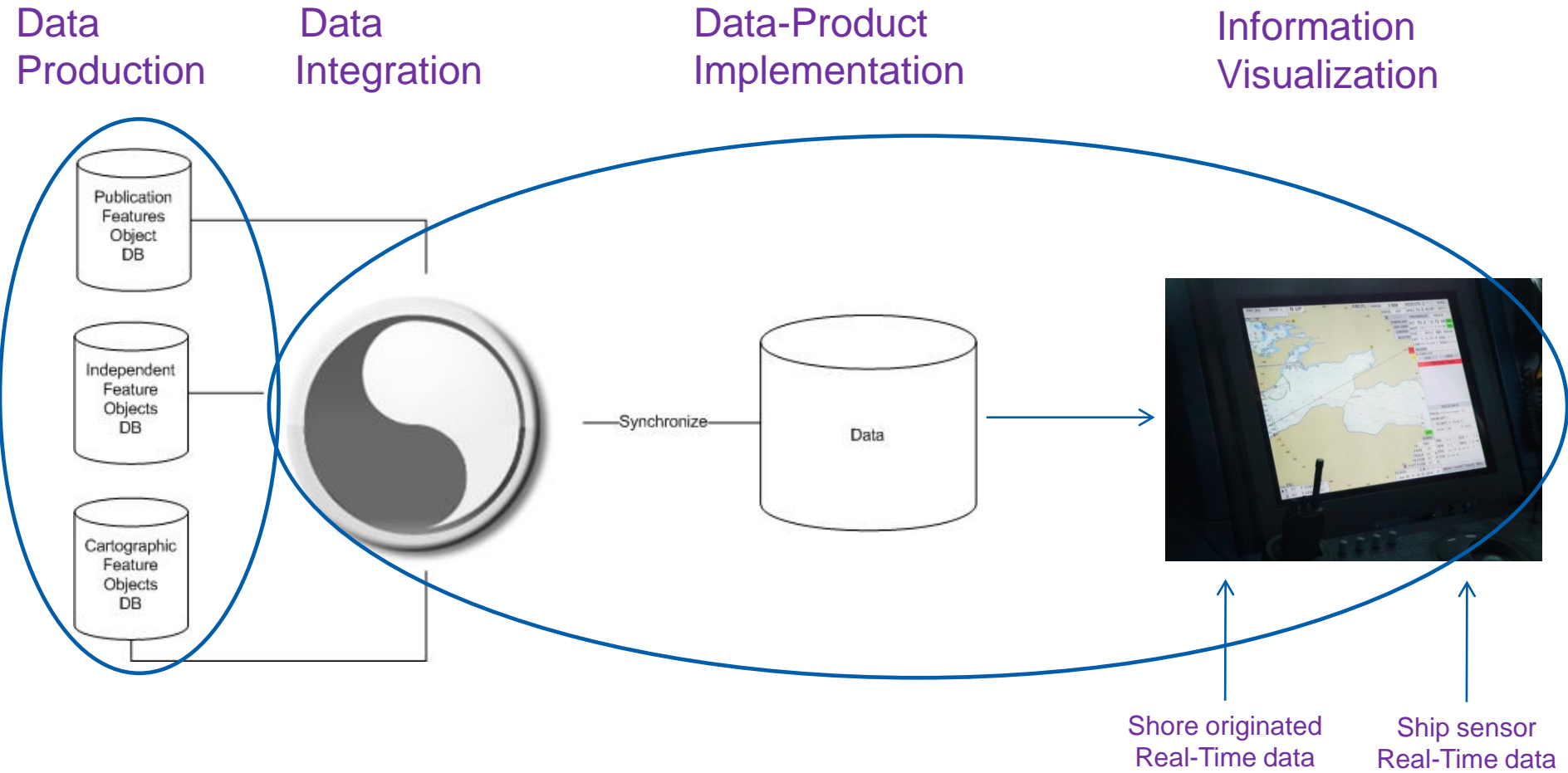
The Data and Information Diagram
Multi Dimensional Data Integration

Shore / **Ship**

Expanded Operational Information Agreement
- Port and "Cluster" Usage Proposal
- Port and "Cluster" Usage Acknowledgement

Operational Data exchange
- Automated Route Exchange
- Automated Ship Reporting

Operational Information Agreement
- Ship Route Proposals
- Ship Routing Acknowledgement

Ship Navigational Information Solution
- Static Data transfer and storage
- Dynamic data transmission and integration

The „Technology Transparancy Concept
Data originators and data users are „protected" of tech changes

Data Provision Framework

Data Integration Framework
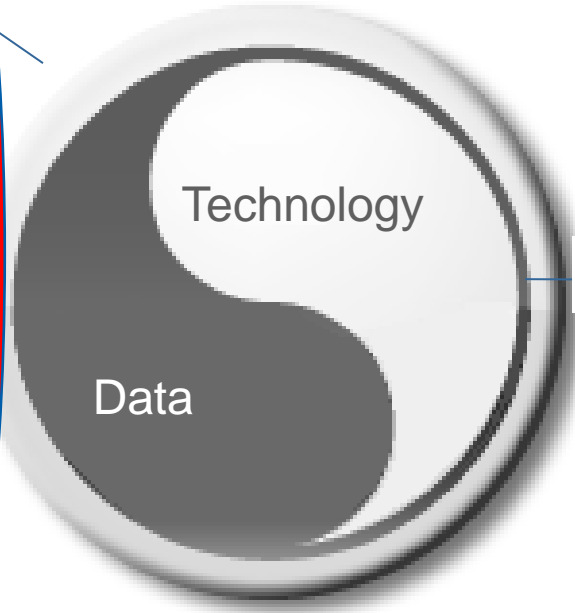
Information System Framework

HO

ODP

HO

NDP

HO

ODP

HO

NDP

DSP hide format issues from Originators

Technology

Data

Delivery
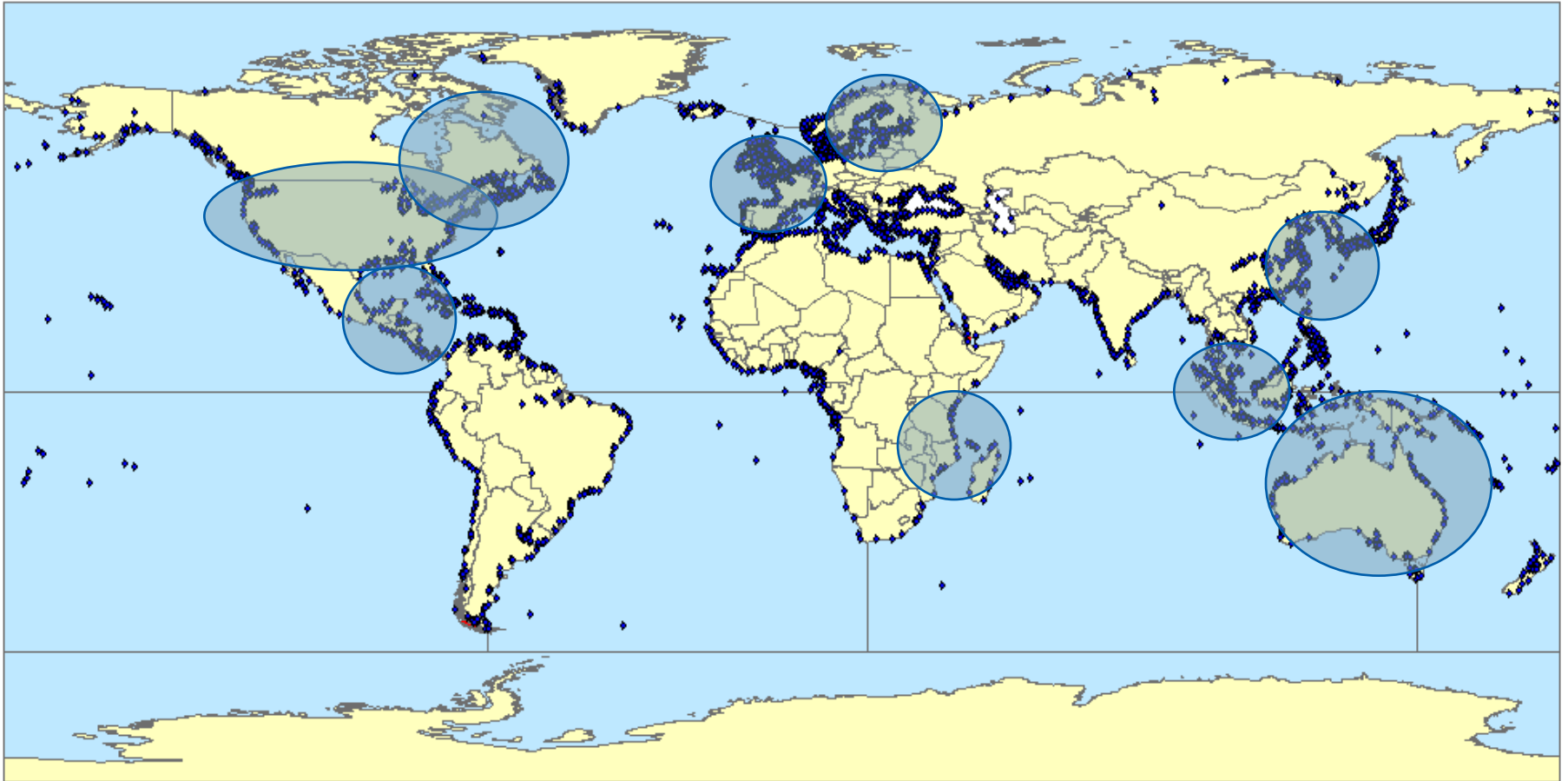
DSP hide integraion issues from Users

HO = Hydrographic Office
ODP = Official Data Provider
NPD = Non-Official Data Provider
DSP = Data Service Provider

8

Regional "Clusters" in e-Navigation

Ports around the world

JEPPESEN
A BOEING COMPANY
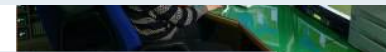
German Test Bed "TICON"
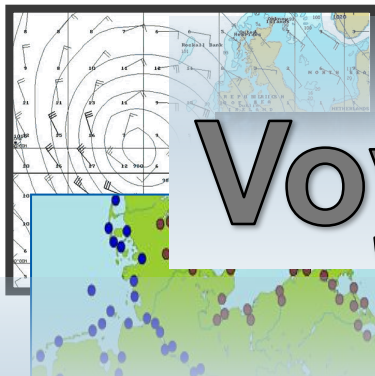
Navigational Safety

Owner/Operator

MSS Test Bed

PSC

Strait & Port Utilization

HOs

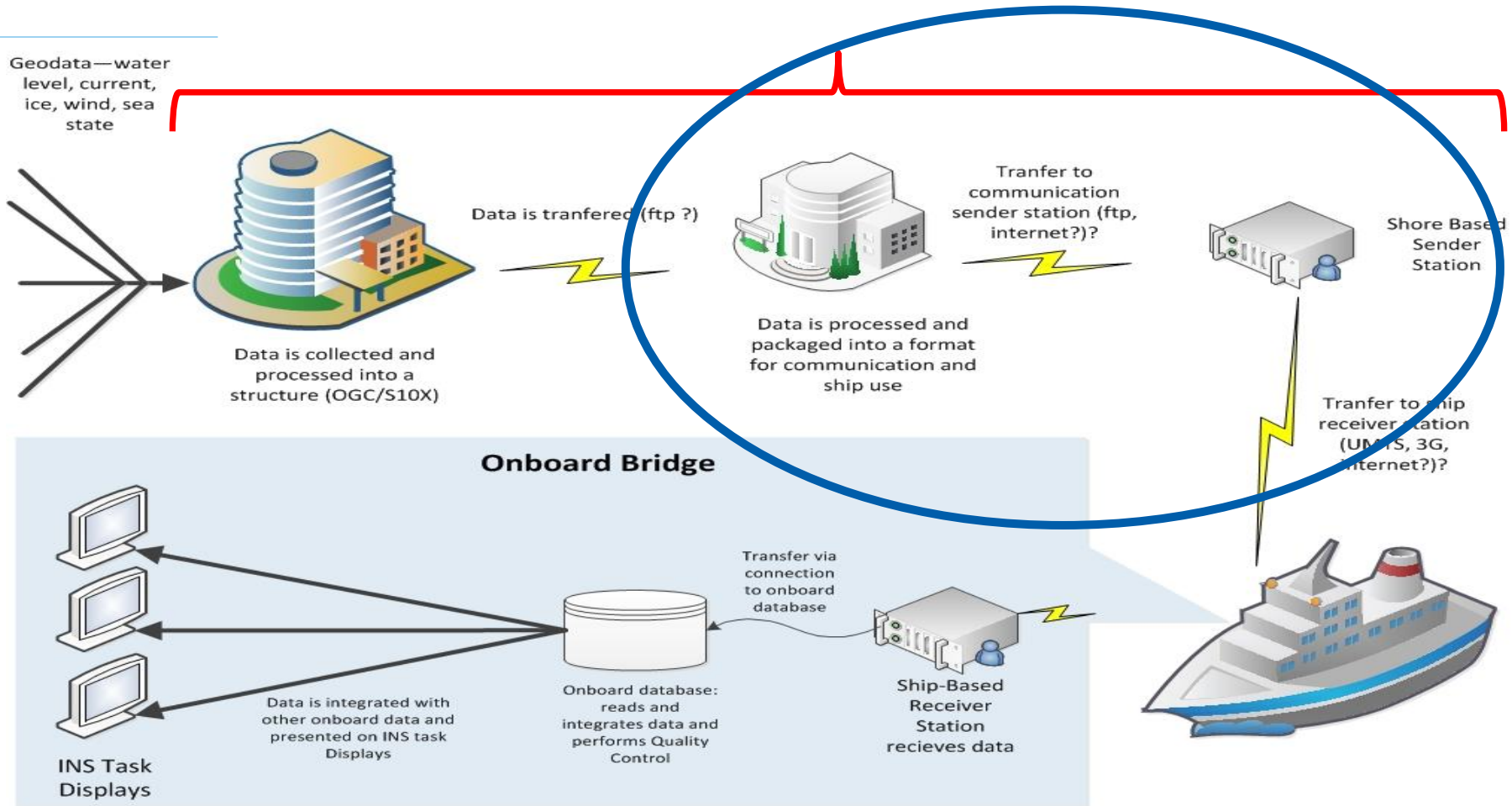Mona Lisa

Customs…

VTS – Coastal State

Voyage Optimization

Korea Test Bed

Coast State Responsibility

JEPPESEN
A BOEING COMPANY

Geodata—water level, current, ice, wind, sea state

Data is tranfered (ftp ?)

Data is collected and processed into a structure (OGC/S10X)

Data is processed and packaged into a format for communication and ship use

Tranfer to communication sender station (ftp, internet?)?

Shore Based Sender Station

Tranfer to ship receiver station (UMTS, 3G, internet?)?

Onboard Bridge

Transfer via connection to onboard database

Onboard database: reads and integrates data and performs Quality Control

Ship-Based Receiver Station recieves data

Data is integrated with other onboard data and presented on INS task Displays

INS Task Displays

Data Clearinghouse Tasks
- Conversion of data into S10x provision suitable for underway communication and onboard use
- Data consolidation, validation and verification

THANK YOU !

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