



HarborMax Co., Ltd.

# Company Introduction

## Bay of Smart Service

**Harbor** MAX

Marine Digital Communication & Service

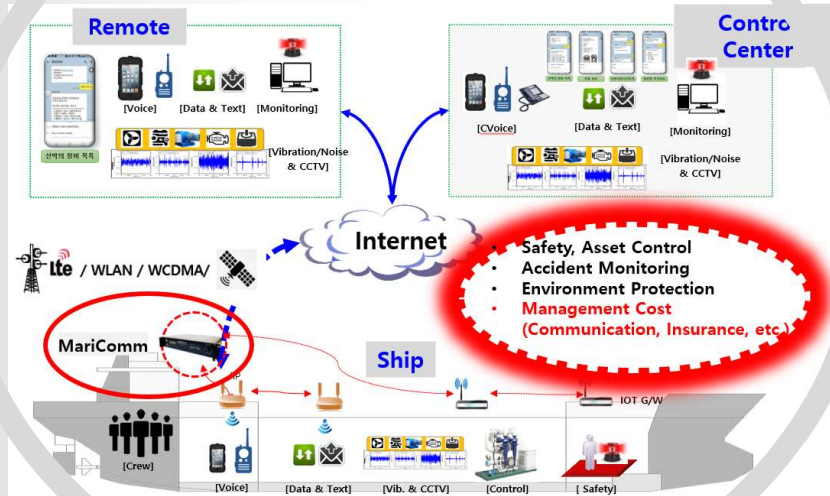
# 1. Company Summary



# 01. Total Marine Service

- Over 20 Years Global Service for Shipping Companies
- Leading Smart Port Service through ICT Integration

**Over 20 Years  
Global Service**



Customers

- BP Shipping: More than 100 Vessels
- TVL: New Mobile & 5G Service
- Yang-Ming: Network, VSAT
- Wan-Hai: Network, VSAT



Services

- SI, ICT, Ship Networking
- VSAT, Inmarsat, VHF, Gyro Compass
- Control for Engine, Boilers, Steering System



Contents

- AI Voyage System
- Ship Management System
- Emission Monitoring & Reporting
- Smart Service & Supply System

## 02. Structure

- Research Institute Corporation of Korea

<b>Company Name</b>	HarborMax Co., Ltd.	<b>President</b>	Heewook Kang
	Research Institute Corporation, Reg. No. 106		
<b>Capital</b>	250,000 USD	<b>Employee</b>	8
<b>Main Service</b>	IT Solution and Communication Service for Marine & Shibuilding ( <a href="http://www.harbormax.com">http://www.harbormax.com</a> )		
<b>Head Office</b>	Room 209, 23rd Student Hall Bldg., Bu-kyung University, Sinseon-Ro 365, Nam-Gu, Busan, Korea  Tel: +82 51 626 9451 / Fax: +82 51 626 9459 e-Mail: <a href="mailto:info@harbormax.com">info@harbormax.com</a>		

# 03. Key Technologies

- Ad-Hoc based 3G, 4G, 5G, WLAN and Satellite Bridge Unit **MariComm**
- **Global Data Roaming Shipset LTE Router and Shore WiFi Repeater**

## Harbor MAX

### MariComm Compact

SIZE: 190(W) x 123(D) x 67(H)  
 Weight: 0.94Kg  
 Power: AC 100~240V(50~60Hz)  
 PoE : 24Vdc 4Port (1000BASE-T)  
 Storage : 128GB  
 Other : VGA, USB 3.0, Web Server, SSH



## Harbor MAX

### MariComm Standard

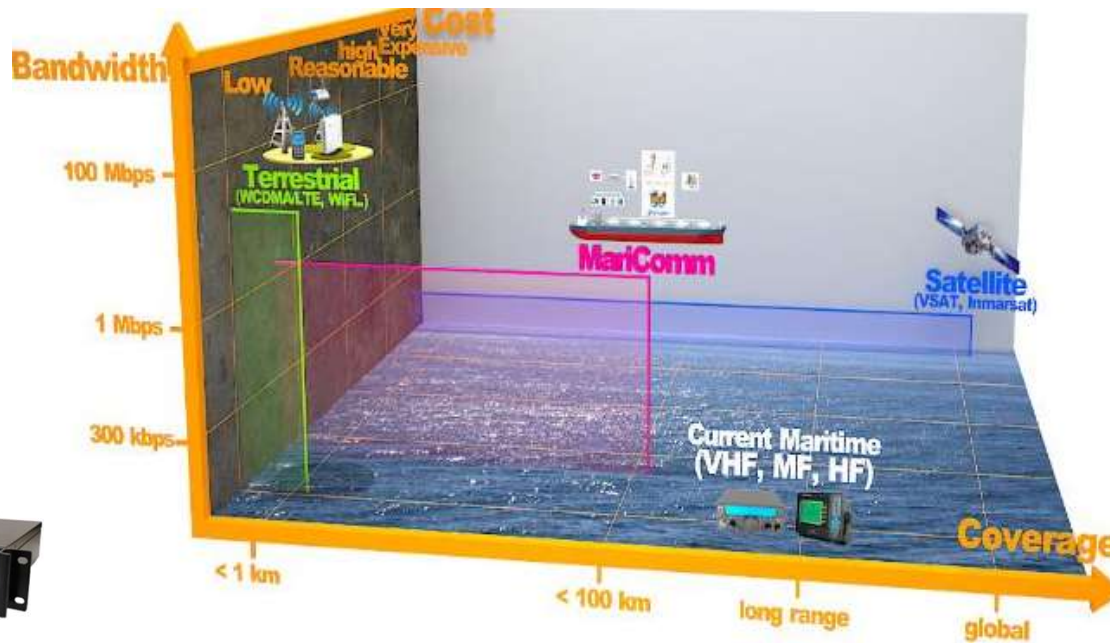
SIZE: 210(W) x 234(D) x 72(H)  
 Weight: 1.83Kg  
 Power: AC 100~240V(50~60Hz)  
 PoE : 24Vdc 7Port (1000BASE-T)  
 Storage : 128GB  
 Other : VGA, USB 3.0, Web Server, SSH



## Harbor MAX

### MariComm Deluxe

SIZE: 428(W) x 280(D) x 67(H)  
 Weight: 4.25Kg  
 Power: AC 100~240V(50~60Hz)  
 PoE : 24Vdc 7Port (1000BASE-T)  
 Storage : 128GB  
 Other : VGA, USB 3.0, Web Server, SSH



## Harbor MAX

### 4G LTE MARITIME OUTDOOR STATION

- ⊕ Plug & Play
- ⊕ High Speed
- ⊕ High Gain Antenna
- ⊕ ~100Km Coverage



## Harbor MAX

### LTE/WIFI SELECATABLE OUTDOOR ROUTER

- ⊕ Plug & Play
- ⊕ High Speed
- ⊕ High Gain Antenna
- ⊕ ~100Km(LTE)
- ⊕ ~10Km(WIFI) Coverage
- ⊕ Free WiFi For Harbor.



## Harbor MAX

### 4G LTE MARITIME OUTDOOR STATION

- ⊕ Plug & Play
- ⊕ High Speed
- ⊕ High Gain Antenna
- ⊕ ~80Km Coverage



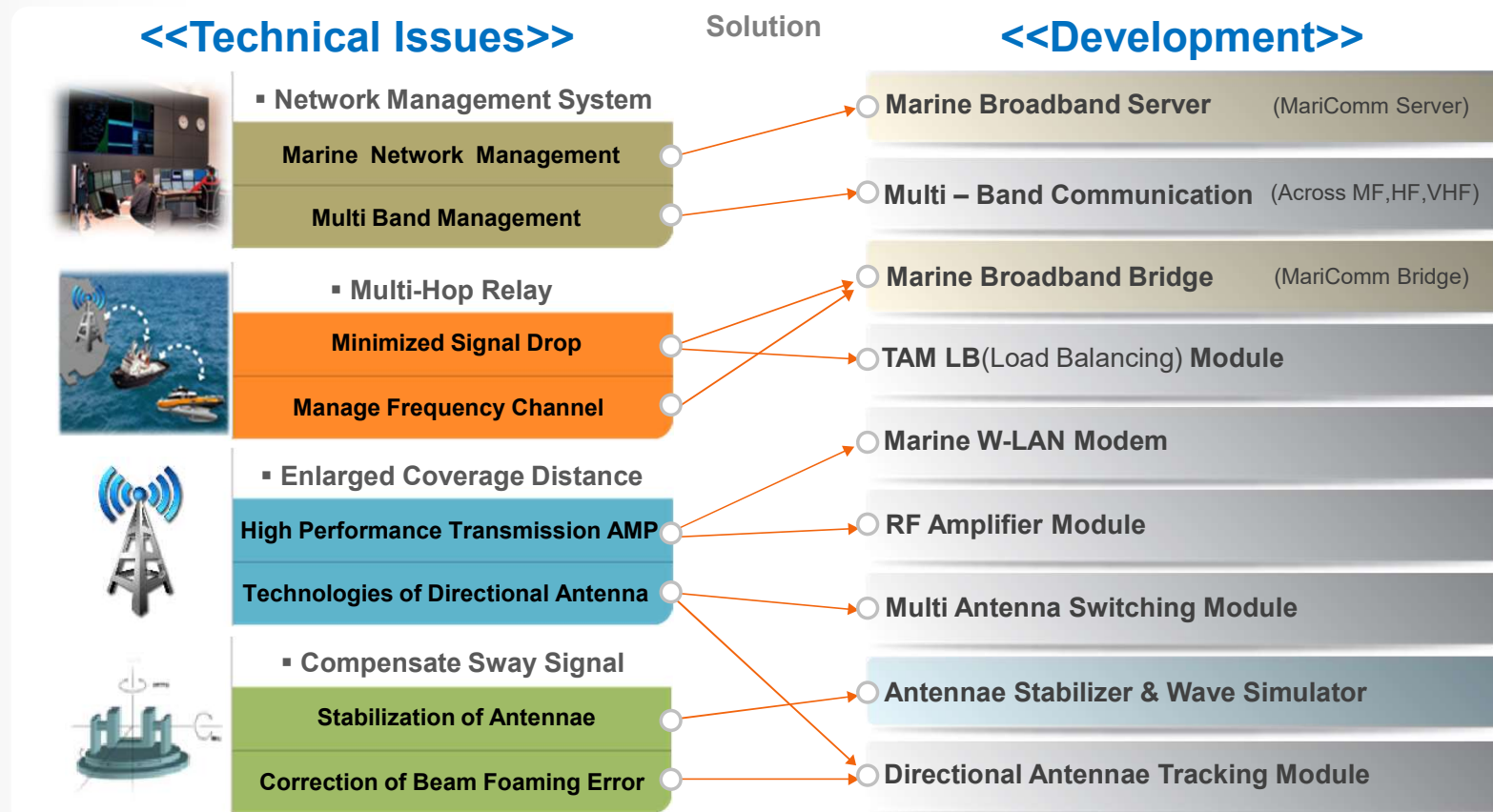
The Novel Maritime Broadband Communication System that enables Digital Data (Internet) Services over 100KM from the Shore based on the System Bridge and the Load Balancing Technologies

# 04. Technical Background

- All the problems for the Terrestrial Communication System to be serviced at Sea was solved
- Load Balancing & System Bridge Technologies and Others

## MariComm

- Difficulties of Infra Structure
- Long Distance Coverage
- Compensate Ship Movement

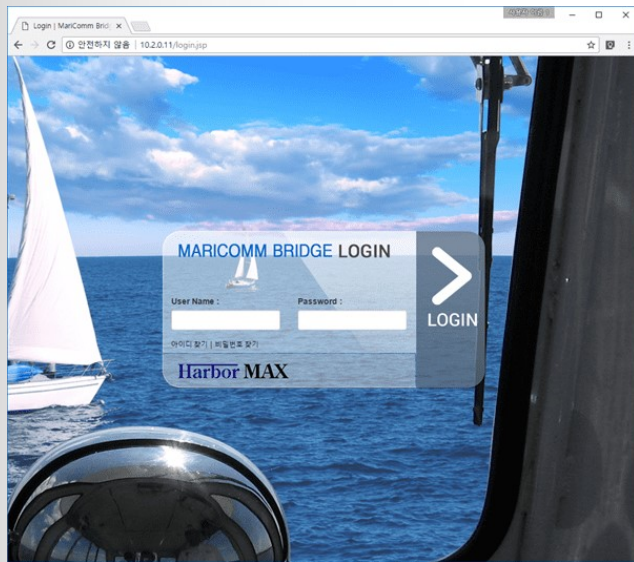




## 2. Application & Service

# 01. Extended Service

- Providing Connectivity System for Various 3rd Party Application
- Specialized Maritime Broadband Communication Technologies for various Remote Monitoring System

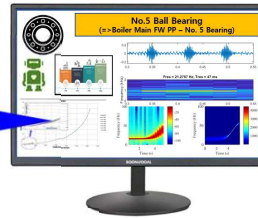


A collage of various maritime monitoring and diagnostic interface elements. At the top center is a 'Ship's Condition Monitoring' dashboard showing a 3D model of a ship and various sensor icons (MOTION, DCS, GYRO, SPEED, RUDDER, RPM, WIND). To the right is an 'Engine Monitoring' section with a 3D engine model and a list of diagnostic methods: Status Analysis (Service Portal, Total Status Monitoring, Technology Advice, Failure analysis), Reasoning Engine (Hidden Markov, Neural Network, JPMIA, Bayesian, FMEA, Decision Tree), and Reasoning Engine (Hidden Markov, Neural Network, JPMIA, Bayesian, FMEA, Decision Tree). Below these is a 'SERVICE CENTER' section with 'STAR RANGER' and 'MAGELLAN' logos. At the bottom is a detailed dashboard for 'MariComm 245265' showing a map with a 'WARNING AREA', various gauges (heading 176.30°, speed 0.73 kn, direction 175.21°), and engine status indicators (0.1 G/E N/V STOP, 0.2 G/E N/V STOP, 0.3 G/E N/V RUN). The bottom navigation bar includes 'NAVIGATION', 'MAIN ENGINE', 'REPORT', 'RESULT', 'ALARM', and 'FAULT DIAGNOSIS'.



# 02. Total Management System

- Multiple Remote Ship Management System
- WEB based PMS that provides the Maximum Efficiency at the Minimum Cost



## Predictive Maintenance

- AI based Anomaly Detects and Operation Time
- Major Machinery of the ships
- Linked with Thermal Sensor & CCTV



## Ship Management

- Purchase Management
- Maintenance Record and Parts Control
- In and Out Bounding Management



## Crew Management

- HR
- Salary and Duty Service System
- Major Job Management



## Integrated Monitoring

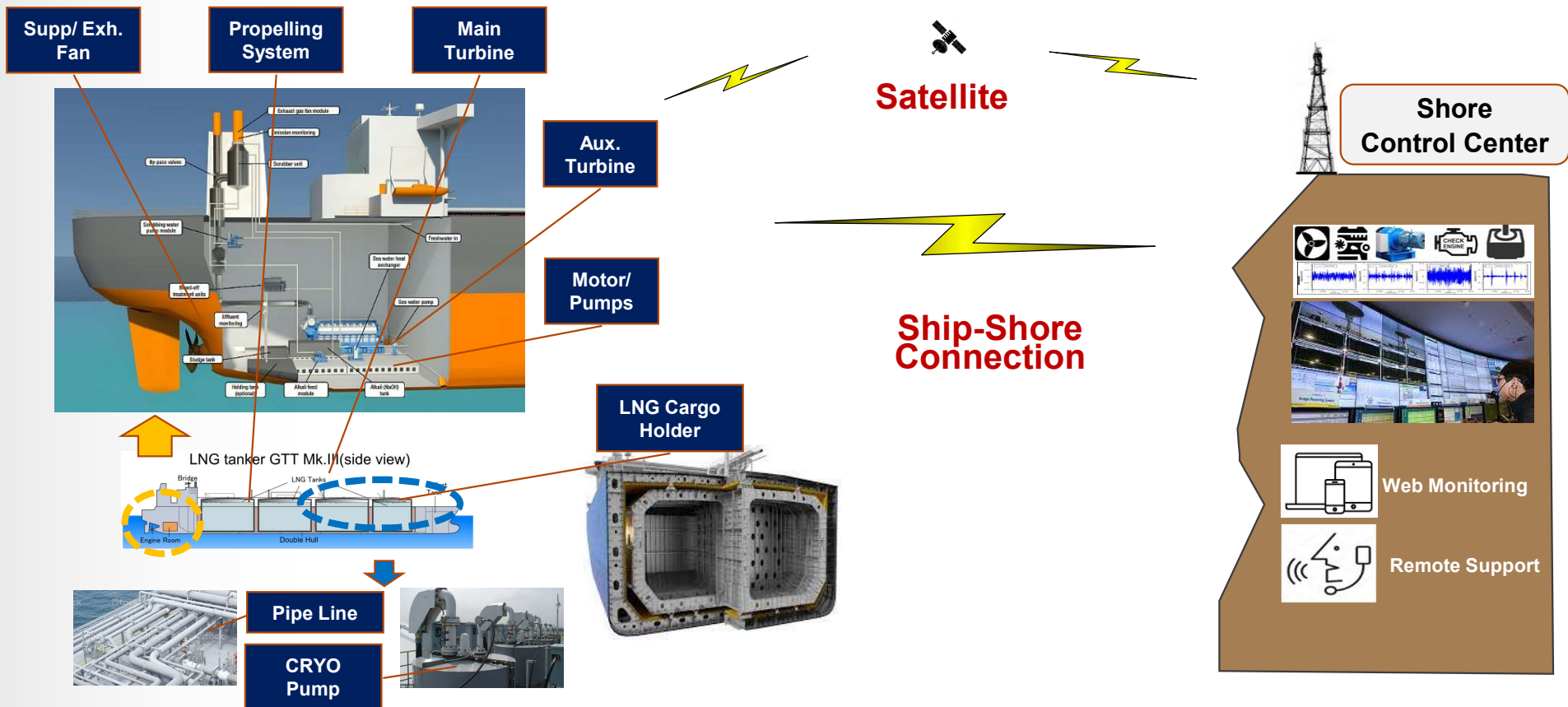
- Ship/Shore Management
- E-Mail / Auto Reports
- Web, Mobile App Extension
- Linked with Chatbot Messages



	<b>PMS</b>
	<ul style="list-style-type: none"> <li>■ Asset Management</li> <li>■ Inventory Control</li> </ul>
	<b>SUPPLY</b>
	<ul style="list-style-type: none"> <li>■ Procurement</li> <li>■ Logistic</li> <li>■ Budget</li> </ul>
	<b>QHSE</b>
	<ul style="list-style-type: none"> <li>■ Document Control</li> <li>■ Certificates Management</li> <li>■ Audit and Inspection Management</li> </ul>
	<b>CREWING</b>
	<ul style="list-style-type: none"> <li>■ Crew Management</li> <li>■ Crew Payroll</li> <li>■ Crew Manning Platform</li> </ul>
	<b>VOYAGE</b>
	<ul style="list-style-type: none"> <li>■ Voyage Management</li> <li>■ Performance</li> <li>■ IMO DSC / MRV</li> </ul>

# 03. Large & Luxury Vessels

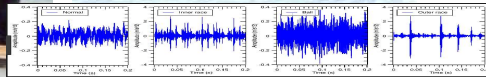
- Merged with Ship Machinery Predictive Maintenance System
- Leading Marine 4<sup>th</sup> Industry like EMISSION CONTROL



# 04. Medium & Small Vessels

- Marine Assets Remote Maintenance System for most of Middle & Small Boats
- Not enough space, not enough engineers, and not enough time to use ICT system onboard

## Key Machineries

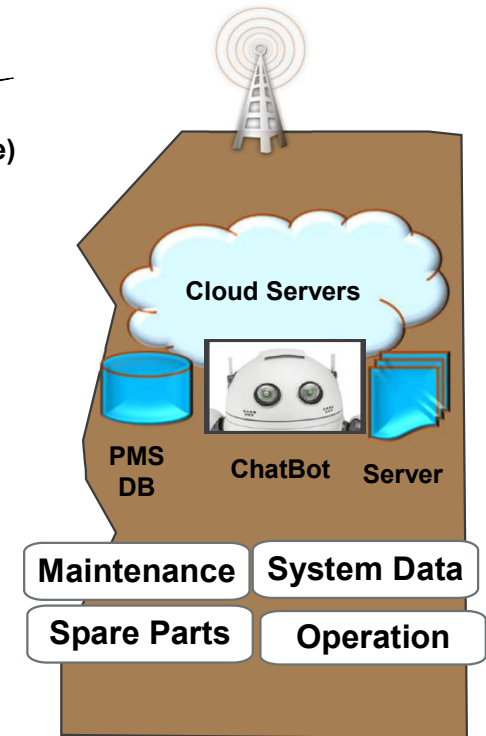


- Maintenance Warning
- Spare Parts Alarm
- Weather Forecast
- Accident/Rescue Signal
- Fishery Market Information

## Monitoring & Diagnose

MariComm (Mobil Phone)  
(3G, 4G, Wifi..)

**Ship-Shore  
Connection**





# 06. Maximized User Interface

- Improve the Poor Environment of Coastal Business Units and Safety Management
- Voice Recognized Multilinguistic System

## Mobil Phone Multilinguistic Application



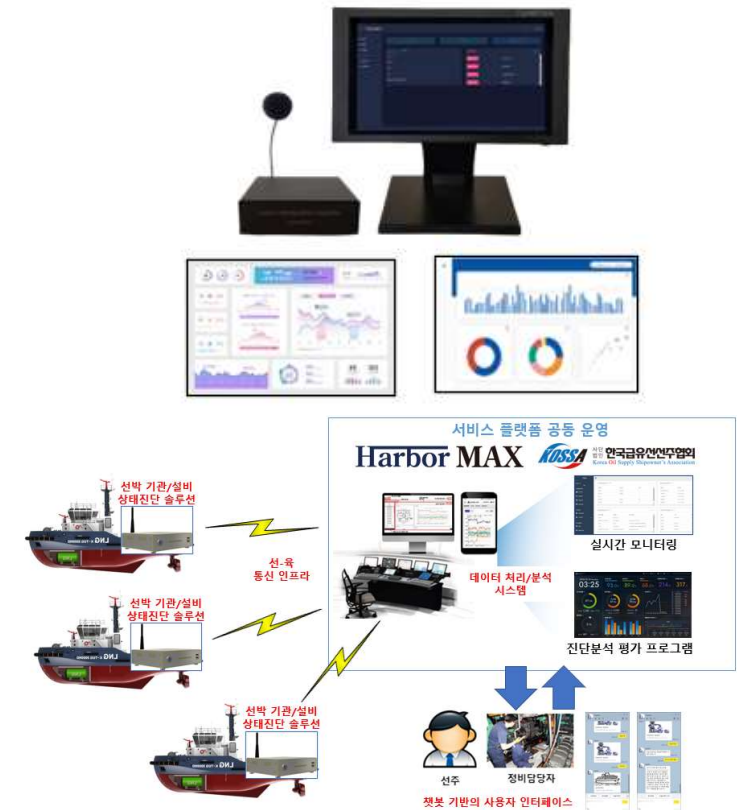
Main Screen  
(Select Language)



Chinese



Vietnamese  
(Menu Changes)

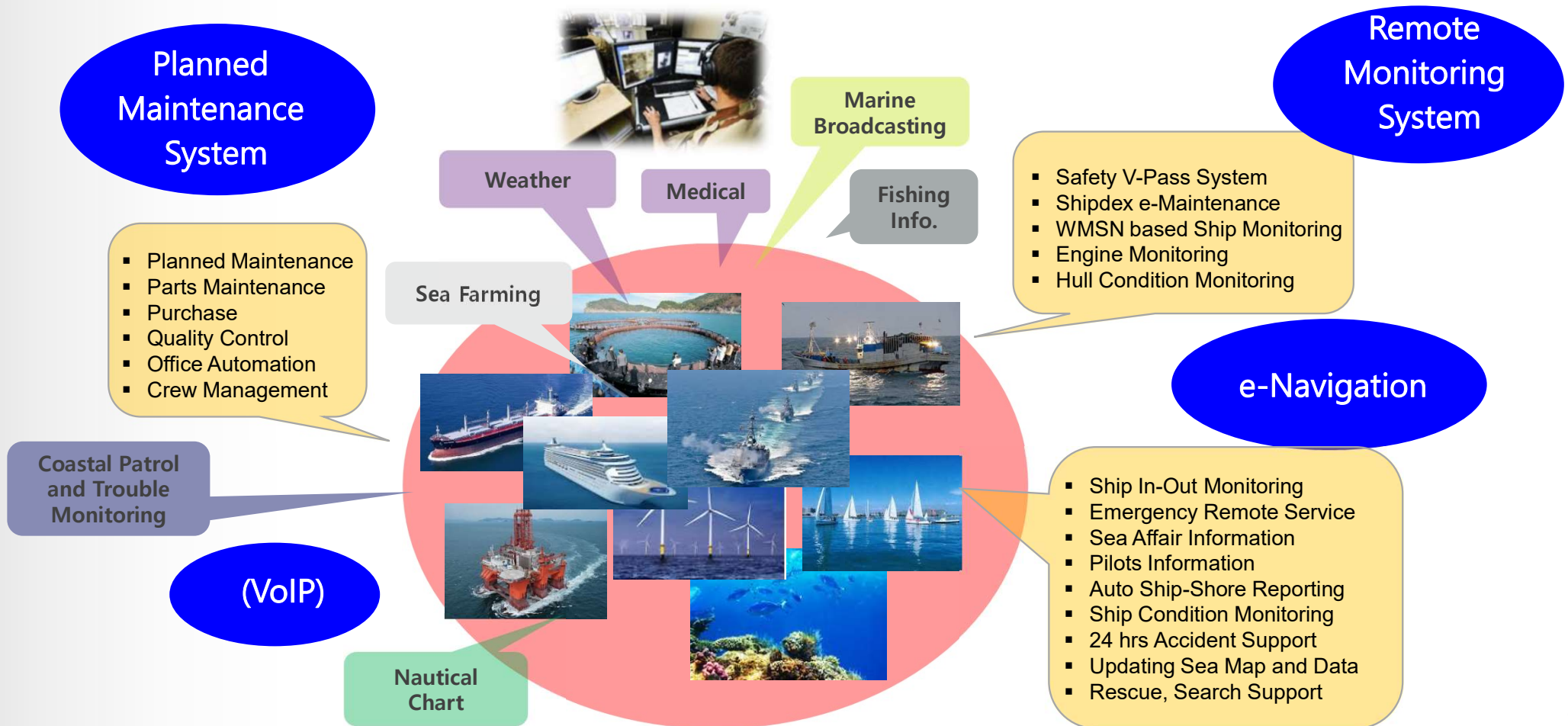




### 3. R & D

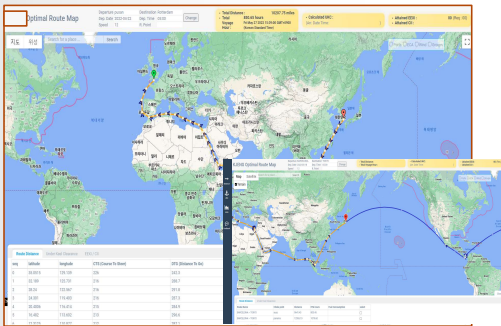
# 01. Marine 4<sup>th</sup> Industries

- Various New Industries based on the Digital Communication System
- Higher Demand for Connectivity Services for the Remote Monitoring

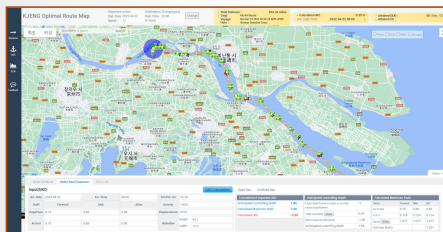


# 02. Solution for Environment

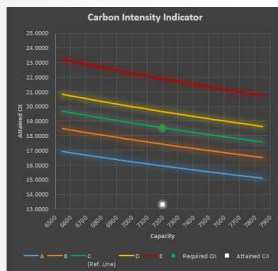
- Key Solution against the Global Warming
- Voyage Management, Exhaust Control, Under Keel Clearance



- Routes and Distance Calculator
  - when a departure port and destination port selected, create an optimal route
    - Distance, Estimated Time of Arrival
    - Grate Circle or Rhumb Line navigation and port navigation method
    - Finding optimal path by reinforcement learning (weather and sea conditions)
    - Alternative routes by choke points



- Under Keel Clearance
  - Calculation of allowable water depth at port of arrival at the expected date of arrival
    - Calculation of allowable water depth at port of arrival at the expected date of arrival
    - Open Sea and Confined Sea
    - Known depths, tides, and weather
    - Fresh Water Allowance, Squat by speed



- CII and EEXI
  - Calculation of EEXI and CII by ship's type
    - Ship type, DWT, fuel type, fuel consumption by IMO DCS, annual track distance
    - Attained CII, Required CII, CII Grade
    - Attained EEXI, Required EEXI



# 03. Global Cooperation

- World's First AIS2.0 (VDES) Commercial Service with the Satellite (2023. 10. Sternula A/S, Denmark ~ 2025)
- Service Agreement for GMDSS (2024. 02, danphone A/s, Denmark)

## Consortium

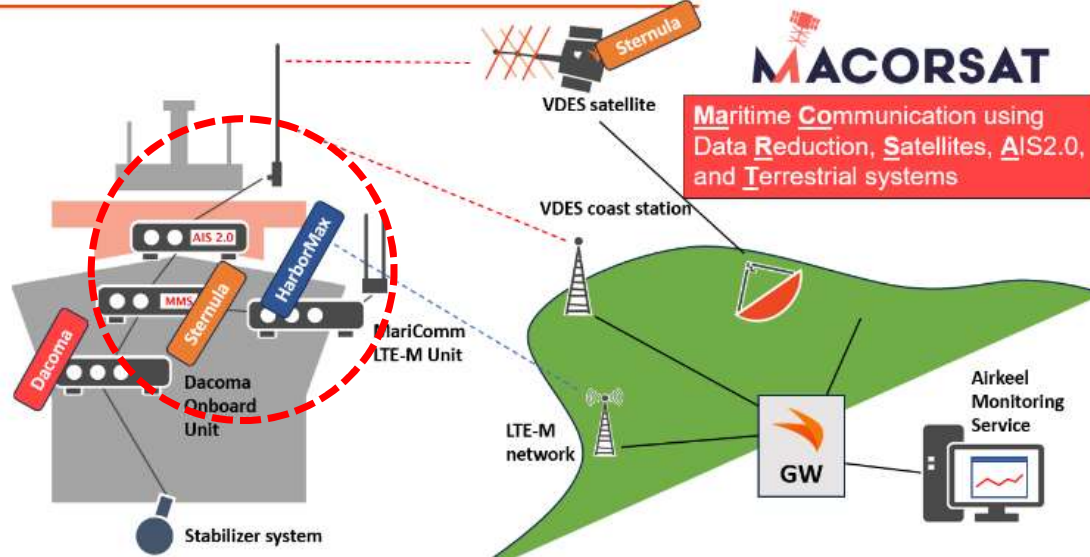
### Sternula is world leader in AIS 2.0 (VDES)

- World's first commercial VDES satellite on 3<sup>rd</sup> January 2023
- Active in VDES standardization (IALA, ITU, IMO)

### HarborMax provides advance maritime communications solutions

- MariComm platform for cost-effective shore-based communication up to 100 km.

### Dacoma provides innovative "air keel" for



<https://www.linkedin.com/feed/update/urn:li:activity:7156604401300713472/>



We always love having people over, whether they are familiar faces or guests sharing the same maritime passion as us. 📍🌐

Recently, we have had the pleasure of hosting Jakob Weibrecht and Marika Jensen from Sternula, alongside the esteemed HarborMAX. Known for their communication solutions spanning 2G to 5G. During HarborMAX's visit, inspiring discussions unfolded regarding the future of VDES, as well as conversations relating to our GMDSS and Port Systems.

At Danphone A/S, sharing knowledge and technological advancements is integral to our daily life, so we are always delighted to engage in dialogues with innovative companies.

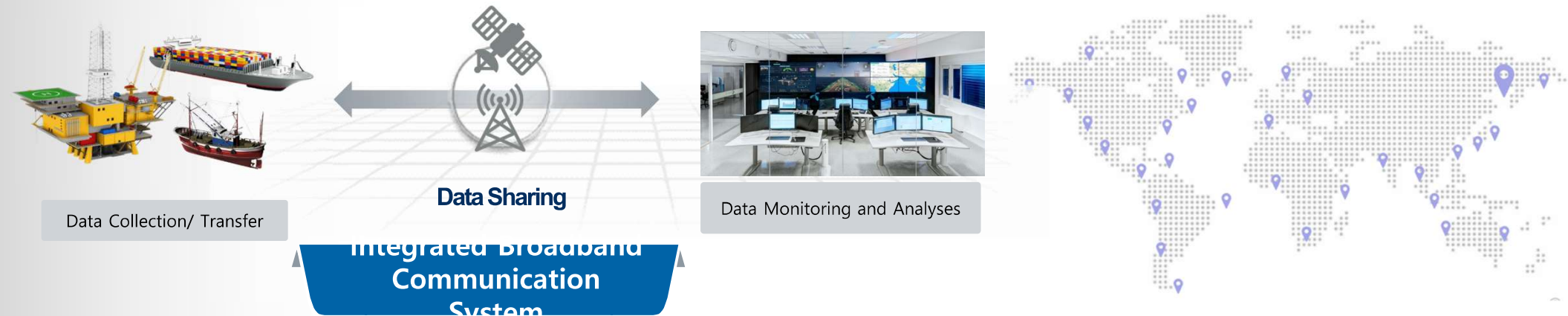
Claus Falk, Peter Ditlev Nødbak, Andy Reynolds

#Aalborg #MaritimeSafety #Collaboration #Innovation #MaritimeTech



# 04. Integrated Platform

- Convergence of Marine Connectivity at Eco Smart Ulsan Port
- Linked with Satellites for **New Marine Digital Communication**



Safety Control	Voyage Control	Asset Management	Data Storage/ Analyses	Service/ Supplies
<p><b>CCTV</b></p>	<p><b>Operation/ Report (AIS, V-PASS)</b></p>	<p><b>Anomaly Detects</b></p>	<p><b>Data Storage/ Sharing</b></p>	<p><b>Ship Supplies/ Smart Service</b></p>
<p><b>Fire/ Smoke/ Alarm</b></p>	<p><b>Smart Solution</b></p>	<p><b>Asset Management (PMS/WMS)</b></p>	<p><b>AI Big Data</b></p>	<p><b>Global Networking</b></p>

# 05. Marine Digital Twin

- Cutting Edge Technologies for Marine Asset Management (Ulsan Smart Port)
- New Challenges for **Marine Single Window**

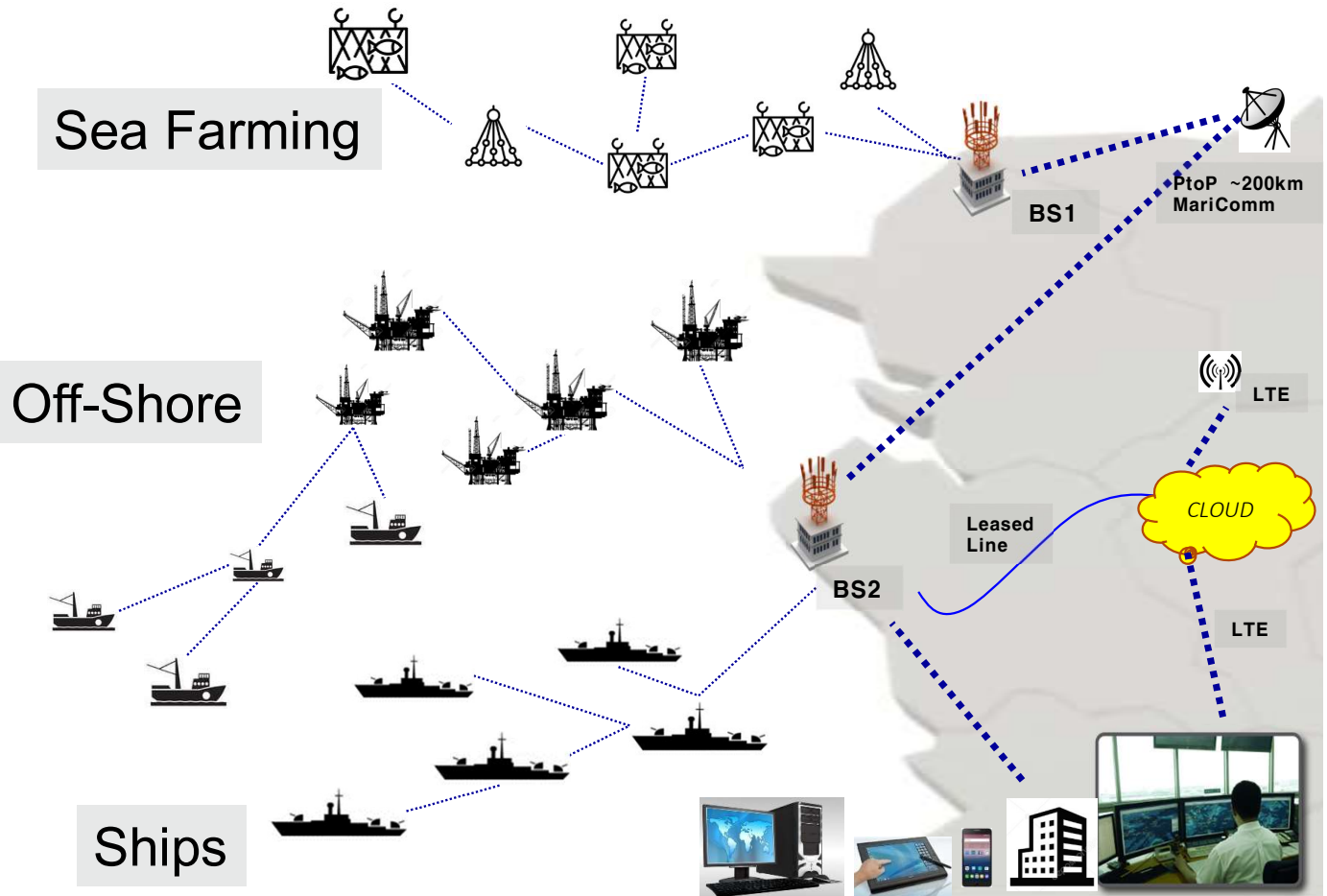




## 4. Extended Application

# 01. Mesh Digital Networking

- Ad-Hoc Connection provides the New Way of the Remote Services at all Marine Assets
- Integrated Connectivity for Fixed Asset and Moving Vessels of the Global Coastline



## 02. Voyage Support

- Parts Supply & Repair through the Global Networking(Engine/ Generator/ Boiler/ Purifier, etc.)
- Satellites, Radar, Ship Networking and other ICT System and Upgrade



# 03. Global Data Roaming

- Extended Coverage of 3G/ 4G/ 5G and WiFi for Anchorage, Quay Side and Coastal Voyage
- Data Packages for Ship Management System with Satellites Connection

**Harbor MAX**


## For Your Global Data Service at All Ports & Coasts

3G, 4G, 5G Terrestrial Connection with Satellites



Voice	Video	E-MAIL
Internet	PMS	CCTV
GPS	Diagnose	Messages

\* Router Design may be decided to the latest Product Model



**Harbor MAX**


## For Your Communications Over the World

Technical Advantages	Main Application
<ul style="list-style-type: none"> <li>• For VSAT Redundancy</li> <li>• Stable 3G/ 4G/ 5G Service</li> <li>• Economical Data Package</li> <li>• All over the Global Countries, Anchorage, Coastal Lines</li> <li>• Linked Advantage Service with Satellite</li> </ul>	<ul style="list-style-type: none"> <li>• Internet (Web, Voice, Video)</li> <li>• Indoor WIFI (AP) onboard</li> <li>• Real Time Information (Weather, Fishing, etc.)</li> <li>• Real Time Voyage Monitoring</li> <li>• CCTV monitoring of the Ship</li> </ul>

Ship Management	Internet	Remote Diagnoses
	<b>Baybot PMS</b>	

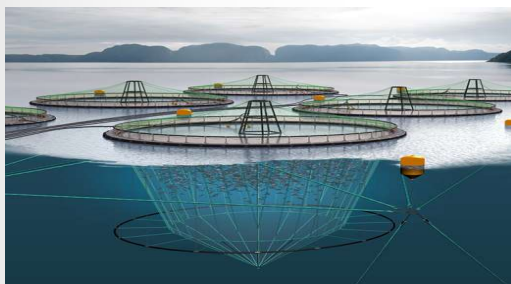
Data Package, Country Selection can be easily done at <http://www.bayoss.com>

**HarborMax Co., Ltd.**  
 Tel : 051-626-9451 / Fax : 051-626-9459  
 Homepage : [www.harbormax.com](http://www.harbormax.com)  
 E-MAIL : [info@harbormax.com](mailto:info@harbormax.com)

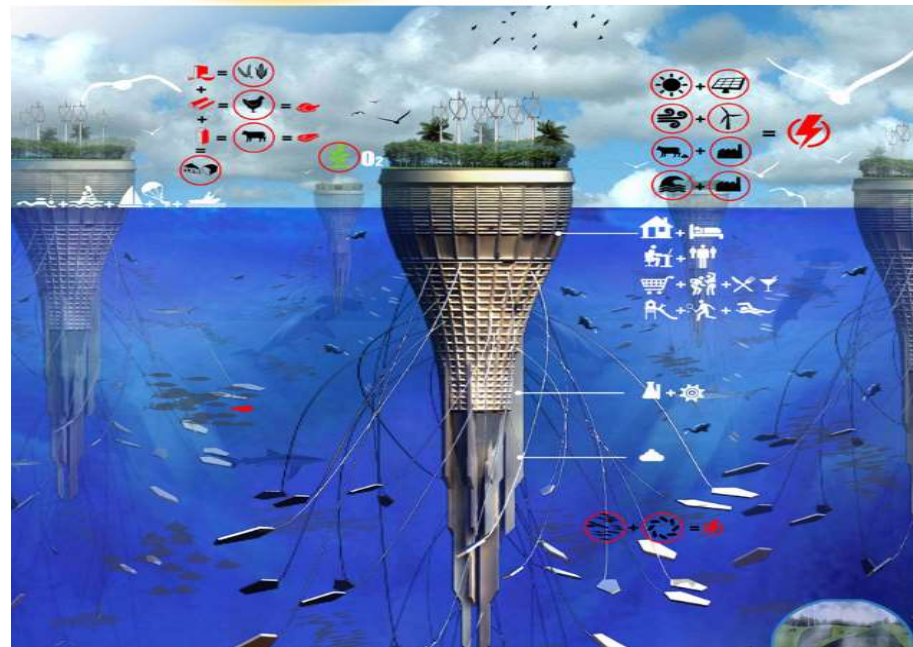


## 04. Smart Farm

- Extended Coverage of 3G/ 4G/ 5G and WiFi for Anchorage, Quay Side and Coastal Voyage
- Data Packages for Ship Management System with Satellites Connection



Various  
Remote Monitoring!!!



Future Aqua Farm Sample (Internet)



# 05. HW/SW Tools

- Extended Coverage of 3G/ 4G/ 5G and WiFi for Anchorage, Quay Side and Coastal Voyage
- Data Packages for Ship Management System with Satellites Connection

MariComm융합 중계플랫폼 선박용 다중통신 서버 Deluxe/Standard/Compact type	해상통신 안테나/ 선박 실내, 실외용 무선통신 라우터		다중채널 무선통신 DAQ / 지능형 원격 예지보전 시스템	챗봇 기반 음성인식 선박 관리자동화 시스템
				
<ul style="list-style-type: none"> <li>• 연안 장거리통신의 핵심 중계기</li> <li>• 외부솔루션 탑재 및 해상 망 관리 시스템으로 다중 무선통신 제어</li> <li>• 다양한 디바이스 확장(CCTV 등)</li> <li>• 통신환경에 따른 3가지 TYPE</li> </ul>	<ul style="list-style-type: none"> <li>• LTE 기반의 연안 해상 고품질 인터넷 서비스 제공</li> <li>• 선박용 장거리 WiFi 및 LTE⇔WiFi 전환</li> <li>• 다양한 해상 실시간정보확인(기상, 조항정보)</li> <li>• 인터넷전화(음성통화, 영상통화)</li> </ul>		<ul style="list-style-type: none"> <li>• 선내 설비진단 및 잔여수명 예측 기술</li> <li>• 다양한 설비에 적용 가능한 지능형 예지보전</li> <li>• 무선 LTE 통신 기반 상태 고장진단 원격 모니터링</li> <li>• 사용자 요구에 따른 센서 (4~12CH)</li> <li>• 휴대형 검진센서로 주기적인 설비진단</li> </ul>	<ul style="list-style-type: none"> <li>• 음성인식 기능으로 선박장비에 대한 주요 업무를 확인</li> <li>• 선박 장비에 대해 상태분석</li> <li>• 장비 진단에 따른 알람 기능</li> <li>• 입출항 이력 확인</li> <li>• 정비 이력 확인</li> <li>• 네트워크 통한 시스템 공유</li> </ul>

# 06. Smart Service of the Port

- Highest Competitiveness through the Networking of Ship Service Providers
- Integrated Service for Port Business Units for B2B, B2C Platform



VOYAGE	SUPPLIES	SERVICE	SHOPPING
<ul style="list-style-type: none"> <li>- ICT/ Control System</li> <li>- Machinery</li> <li>- AI Monitors</li> <li>- Ports Routing</li> <li>- Ship Management</li> <li>- Anomaly Detect</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Bunkering</b></li> <li>- <b>Spare Parts</b></li> <li>- <b>Consumables</b></li> <li>- <b>HSE &amp; Safety</b></li> <li>- Foodstuff</li> <li>- Internet</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Pick-Up</b></li> <li>- <b>Quick Drone Delivery</b></li> <li>- <b>Medical Care</b></li> <li>- <b>Tour</b></li> <li>- <b>Event</b></li> </ul>	<ul style="list-style-type: none"> <li>- <b>Cosmetics</b></li> <li>- <b>Accessories</b></li> <li>- <b>Nutrient</b></li> <li>- <b>Medicals</b></li> <li>- <b>Apparel</b></li> <li>- <b>Sundries</b></li> </ul>

# CONTACT US



## PHONE NUMBER

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## EMAIL

[info@harbormax.com](mailto:info@harbormax.com)