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# National Report for MSDI

## Republic of Korea

IHO M SDI WG M eeting, 4 – 8 M arch 2024.

1. Background of Marine Base Map
2. Composition of Marine Base Map
3. Marine Base Map Layers
4. Continuous for Marine Base Map
5. Marine Base Map data Management
6. Marine Info Collection and Management



Korea Hydrographic  
and Oceanographic Agency

# 1. Background of Marine Base Map

## Limitations of current marine spatial data



Data only for safe navigation



Height datum difference



Land-sea interaction issues



Absence of national marine base map

Unsuitable for land-sea interaction and coastal development

## Marine Base Map Production

Diversitication of marine information utilization

Providing marine terrian and feature information

## Marine Base Map



- Depth of water
- Coastline
- Marine facilities



Marine Information for various purposes

# 2. Composition of Marine Base Map

Marine Base Map provides marine spatial information as a data service

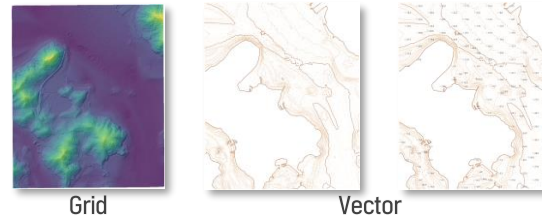
## ❖ Marine Base Data(MBD)

- Provide spatial information about feature in shore



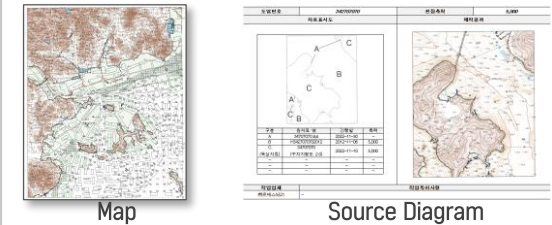
## ❖ Marine Base Topographic(MBT)

- EL(Ellipsoidal level) grid and MSL vector



## ❖ Marine Base Map(MBM)

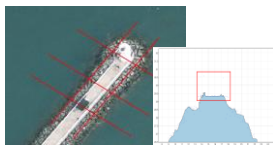
- Produce Marine base map by zone



### Detail



- Identify feature  
- Overlay Point Cloud and aerial image

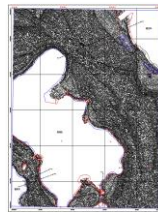


- Check profile

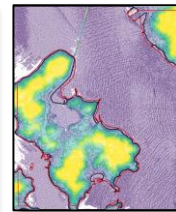


- Additional survey  
(if necessary)

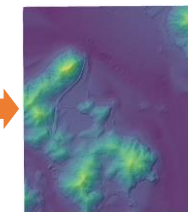
### Detail



Sounding(ALLW)  
(depth area)



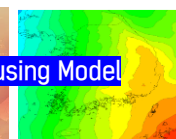
Aerial LiDAR(EL)  
(shore, Tide area)



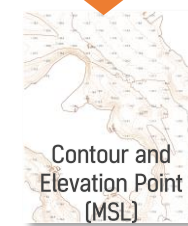
Merge and to grid  
(EL)



continuous ocean  
vertical datum  
(ALLW -> EL)



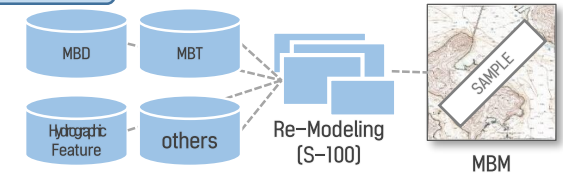
Geoid model  
(EL -> MSL)



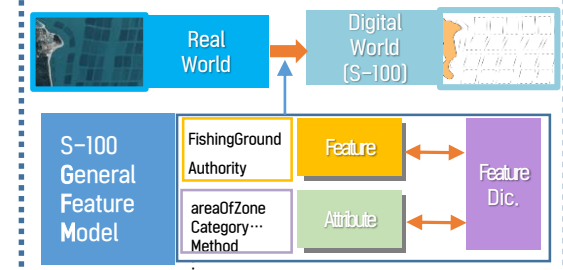
Contour and  
Elevation Point  
(MSL)

Converting using Model

### Detail

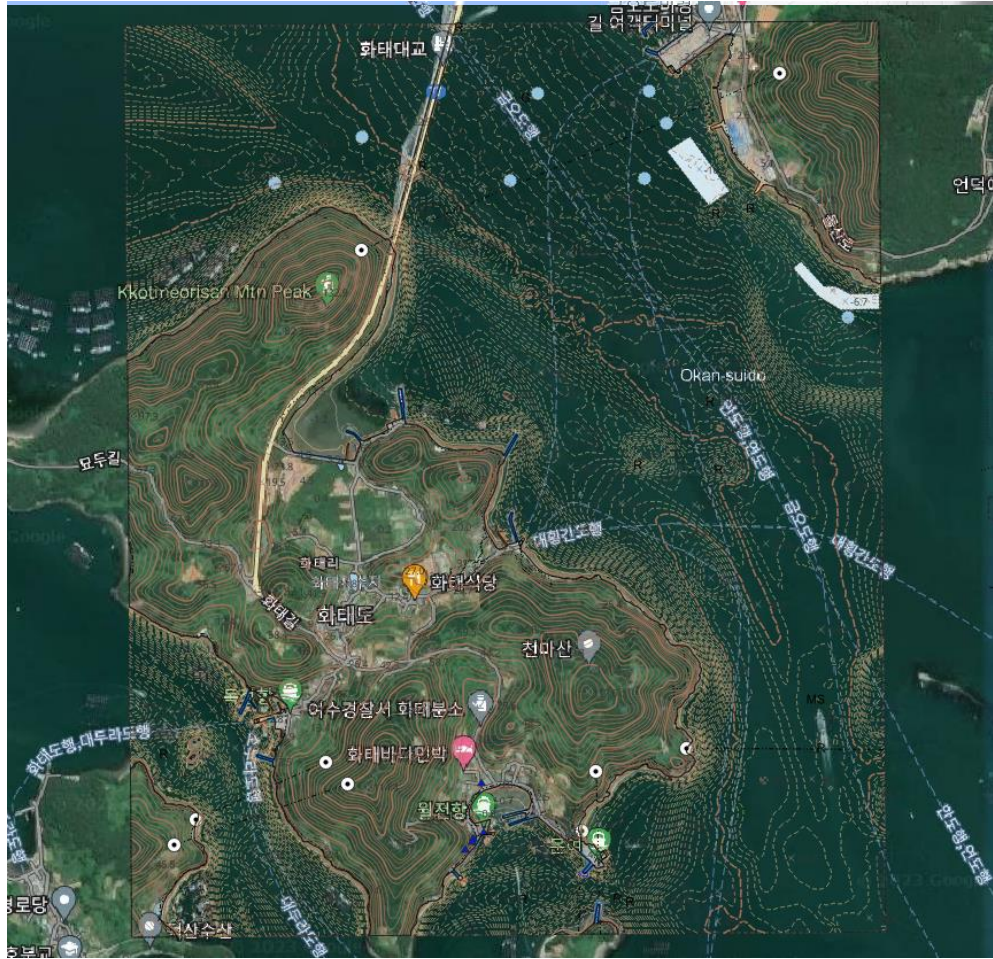


### ❖ S-100 Data Modeling



# 3. Marine Base Map Layers

## Layers for Marine Base Map

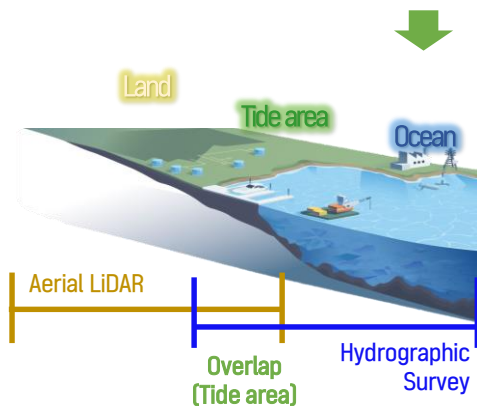
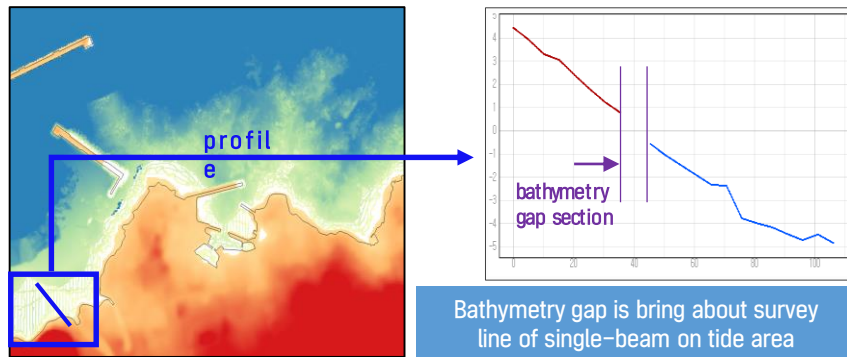


theme	M BM Layers (43)
traffic (5)	Bridge, pylon, Wreck, obstruction, road center line
facility (22)	Pontoon, dock area, dolphin, fuel station, marine ranch, marine forest, artificial Reef, marine farm/culture, fish stake, fish trap, maritime cultural Heritage, conveyor, gate, power station, wind turbine, cable, pipe, ocean observation Station, observation platform, marine production platform, electric platform, shoreline construction
topographic (4)	contour, elevation, tide area, rock
Water limit (4)	Coastline(natural, artificial), lake, river
Point of Interest (3)	National geodetic control point, sea area name, Seabed area
Area limit(5)	Dredge area, law limit, survey data Quality , unsurveyed area, data coverage

MBD

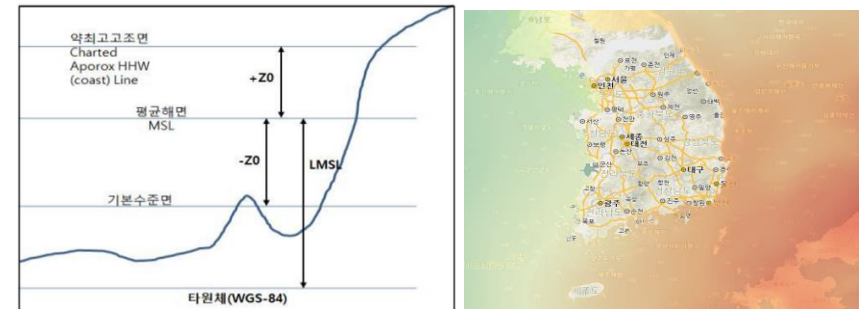
## Integrating land and ocean spatial data for Marine Base map

### ❖ Continuous land-ocean (Horizontal)



- ❖ In KHOA, Produce point cloud data using aerial LiDAR in shore area for delimitation coastline
- ❖ Replace data in overlap area(tide area) from hydrographic survey data to LiDAR data
- ❖ Merge two data LiDAR and hydro survey data for Marine Base Map

### ❖ Continuous Ocean Vertical Datum (KHOA) (Vertical)



- ❖ Continuous Ocean Vertical Datum(COVD) :
  - A model that continuously represents the tide surface and height difference between the WGS84 ellipsoid and Korean oceans.

Model accuracy	MIN (m)	MAX (m)	Avr. (m)	Std. (m)
ISML COVD Model (Land Elevation datum in Korea)	-0.084	0.096	-0.014	0.027
LMSL COVD Model (Local Mean Sea Level)	-0.175	0.156	-0.002	0.042
✓ LDL COVD Model (Sounding datum in Korea)	-0.217	0.228	-0.001	0.057
AHHW COVD Model (Approximate Highest High Water level)	-0.208	0.225	-0.003	0.058

- ❖ After sounding convert to ellipsoidal level using LDL-COVD, merge with aerial LiDAR Point Cloud for continuous land elevation

# 5. Marine Base Map data management

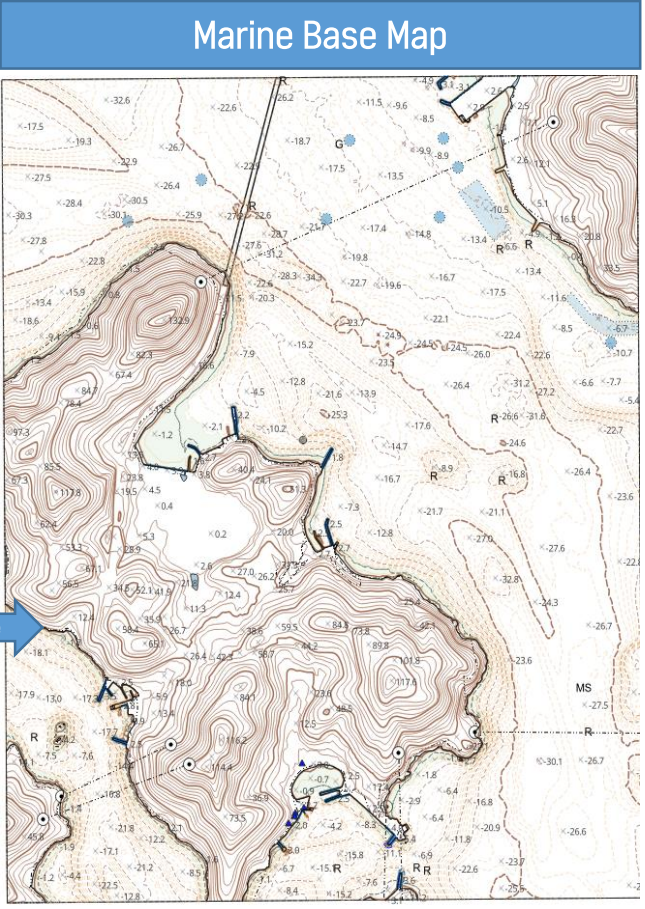
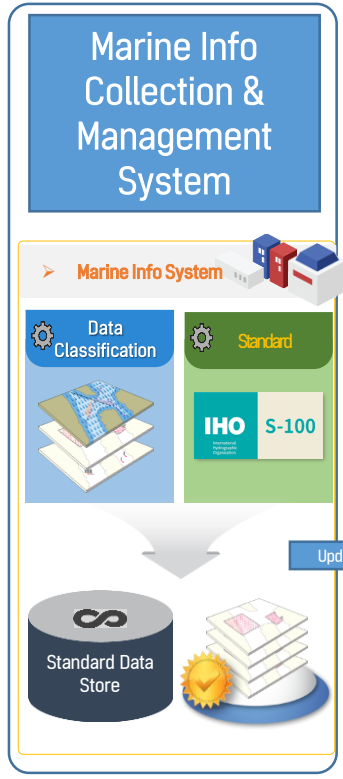
## Marine information collection and management for the usability and the efficiency of Marine Base Map

### Store Marine Base Map data

Projects related to Marine info Update in KHOA

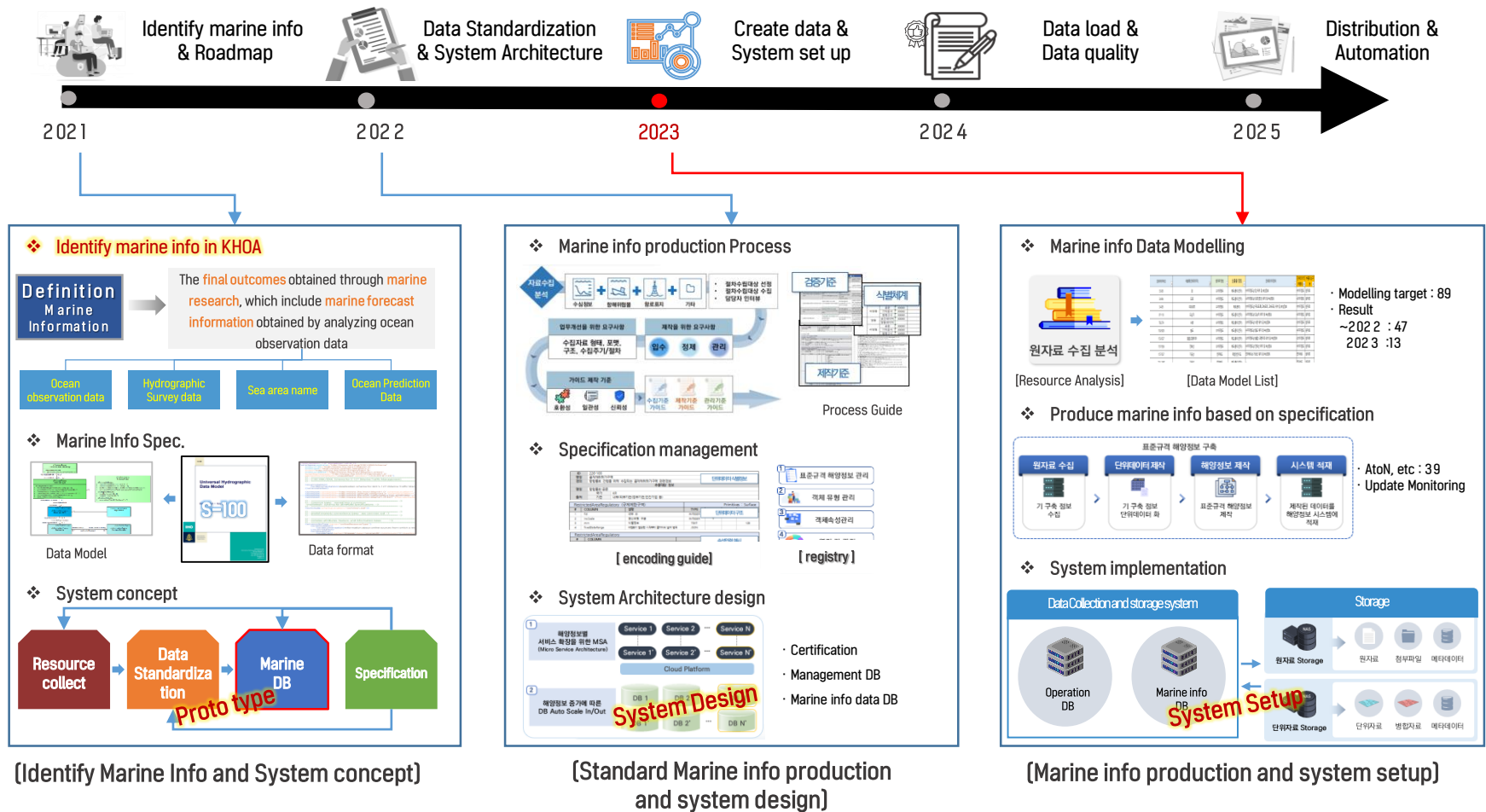
- ✓ Coastline update (shoreline construction)
- ✓ Aerial LiDAR Data
- ✓ TBM Observation
- ✓ Hydrographic Survey
- ✓ Marine info change for NTM
- ✓ Update of law
- ✓ Update County limit of law
- ✓ COVD Update

theme	MBM Layers [43]
traffic (5)	Bridge, pylon, Wreck, obstruction, road center line
facility (22)	Pontoon, dock area, dolphin, fuel station, marine ranch, marine forest, artificial Reef, marine farm/culture, fish stake, fish trap, maritime cultural Heritage, conveyor, gate, power station, wind turbine, cable, pipe, ocean observation Station, observation platform, marine production platform, electric platform, shoreline construction
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# 6. Marine Info Collection and Management

## Roadmap and history of Marine information collection and management system



# 6. Marine Info Collection and Management

## Set up Marine Information Collection and Management System

The dashboard displays the following data:

원자료	단위데이터	병합데이터
업로드된 데이터: 549 건	업로드된 데이터: 576 건	업로드된 데이터: 576 건
승인된 데이터: 549 건	승인된 데이터: 0 건	승인된 데이터: 53 건
반려된 데이터: 0 건	반려된 데이터: 0 건	반려된 데이터: 1 건

최근 데이터 승인/반려정보

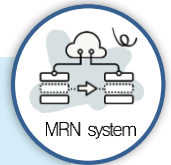
원자료 - 승인	원자료 - 반려	단위데이터 - 승인	단위데이터 - 반려	병합데이터 - 승인	병합데이터 - 반려
2023_43_항형통보 게재 의뢰 및 사실항로표지 기 능통보(울산신항원대F호 등부표 등 2기) datauser	데이터 없음	데이터 없음	데이터 없음	등대표(DB_0519) datauser	2023_43_항형통보 게재 의뢰 및 사실항로표지 기 능통보(울산신항원대F호 등부표 등 2기) datauser

Marine Information Collection and Management System (Dashboard)

1

### Data classification and identification functions

- MRN Issue and history management
- Data management with MRN (identify file and feature)



2

### System Operations functions

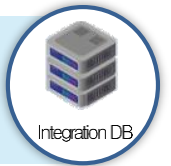
- Categorize user permissions and roles
- Registration, renewal, and maintenance of marine information standards



3

### Data collection and storage functions

- Data import by step
- Input metadata and create XML files
- Data validation
- Maintenance of Integrated DB Data



4

### API for data distribution

- Dataset extraction with metadata
- Dataset conversion and history management
- Create exchange set apply S-100 (Meta/FC/PC/Dataset)







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