



MPA
SINGAPORE

GeoSpace-Sea

Singapore's National Marine Spatial Data Infrastructure

Maritime and Port Authority of Singapore (MPA)

IHO MSDI WG 14

30 Jan 2023

GeoSpace-Sea Strategic Direction

1. Government Agencies

2. Research & Education & Industry Entities

3. General Public

Singapore Geospatial Strategic Direction

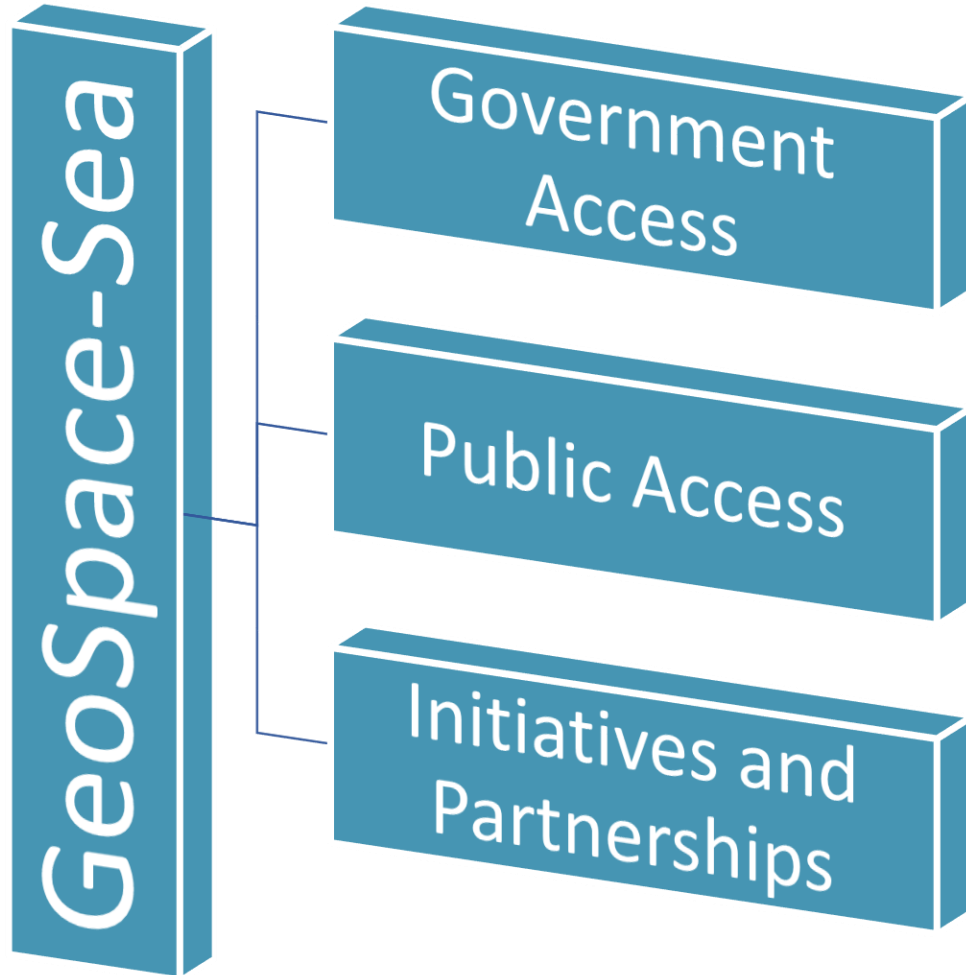
- Operationalised Access to All
- Authoritative Source for Marine and Coastal Digital Data
- Continued Partnerships and Projects
- Preparation for Climate Change/Food Security Issues

- **Key Responsibilities of GeoSpace-Sea:**
 - **Conceptualise** and **incorporate** national marine geospatial strategic directions.
 - **Share** our **experience** and **incorporate insights** on international marine geospatial developments.
 - **Work** with GeoSpace-Sea **marine stakeholders** (government, industry, academia) to gather key opportunities and actions.


Marine Geospatial
Knowledge Hub

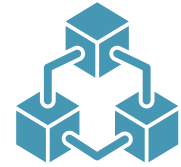
*Note: Guided by IGIF 9 Pathways

GeoSpace-Sea Continued Maturation



30 Nov 2020

- System live on Intranet for government access
- 255 Registered Users, 148 Datasets



31 Aug 2022

- Commenced public sharing thru SG-MDH
- Continued Service Enhancements and Dataset Sharing



OGC Federated MSDI

- Integration between Land and Sea

Seaward Digital Twin

- Works to Commence with TCOMS
- Implementation of Data Standards for Marine Science Data
- Paper for IHO MSDI WG
- Proposed Implementation Q2 2023



Proposed Implementation of Digital Twin in Singapore

Phase 1 – Q1 2023

Implementation of an **operational forecast system** for astronomical tides to interface with the platform

Phase 2 – Q2 to Q3 2023

Development and implementation of **more advanced features** e.g. storm surge, spectral waves (to work with USA NOAA)

Phase 3 – Q4 2023

Use cases demo e.g. prediction of oil spills, drifting vessels

Horizontal Development

(1) Data-Driven Digital Twinning e.g. Using AI to determine erosion, deposition changes, current patterns and storm surge

(2) Data Assimilation using technology e.g. streaming tidal gauge data, current info, satellite observations

Looking Ahead



❑ Continued Review of operational sustainability within GeoSpace-Sea

- Land-Sea Integration
- Cloud Migration Efforts
- Implementation of Seaward Digital Twin



❑ Building Partnerships and Capacity Building

- Expanding beyond current partners for collaboration
- Developing interoperable datasets and new datasets (Water Column)
- Inclusion of marine geospatial in education



❑ Enhancing Data Standards

- Data, Metadata, Services, Technology
- FAIR and UN Shared Guiding Principles
- Expanding to other categories involving Marine/Maritime



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Thank You