NEW PATHS. NEW APPROACHES

# Integrated Marine Geospatial Information Management

# An Implementor's Perspective

**2ND United Nations World Geospatial Information Congress**

**Ed Kuwalek**

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# Contents

- IIC Technologies Intro

- IHO S-100 Experience – 30+ Projects

- IGIF-H Value Proposition

- Key Implementation Considerations

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**IIC TECHNOLOGIES**

**Integrated Marine Geospatial Information is essential to supporting Sustainable Oceans, Seas and Coastal Zones**

1. Nautical Charting and Transportation
2. Support for Resource Management and Planning
3. Establishing Maritime Boundaries
4. Subsistence
5. Emergency Response, Disaster Management and Response
6. Integrated Marine Cadastral Systems
7. Energy
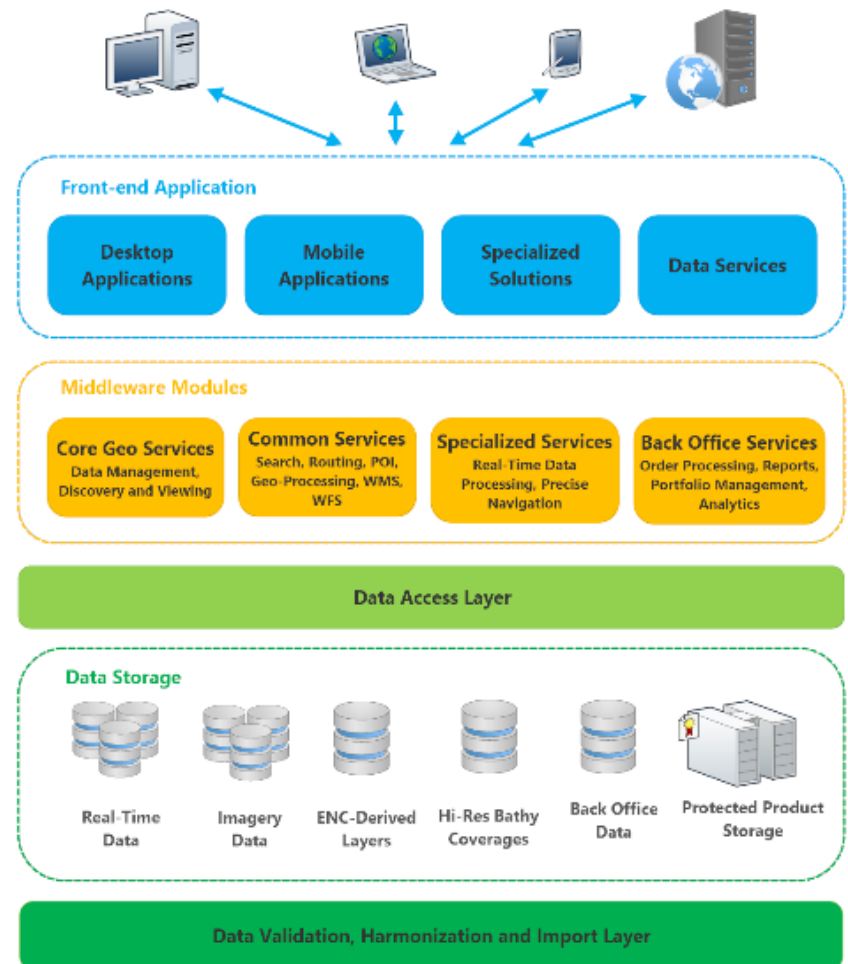8. Environmental Protection
9. Climate Change
10. Scientific Research
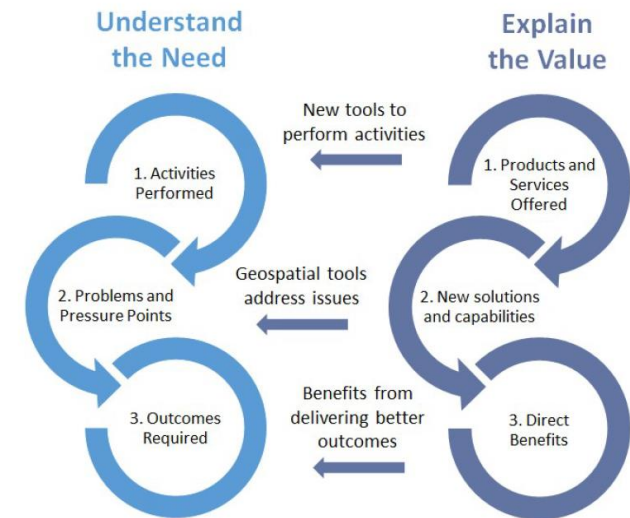


**In IGIF-H value drives the case for creating reusable and interoperable data, while covering the 'why' and the 'how'.**

# Nautilus Cloud

**Nautilus Cloud** is a cloud based infrastructure for Marine Data, Solutions and Services for Government Organizations, Commercial Industry and Consumers

**Government:** HOs, National Institutes, R&D Organizations, Natural Resources, Environmental and Scientific Organizations, Inland Waterways

**Commercial:** Ports, Oil and Gas, Shipping, Dredging, Hydro Survey and Service Companies, Fishing Industry
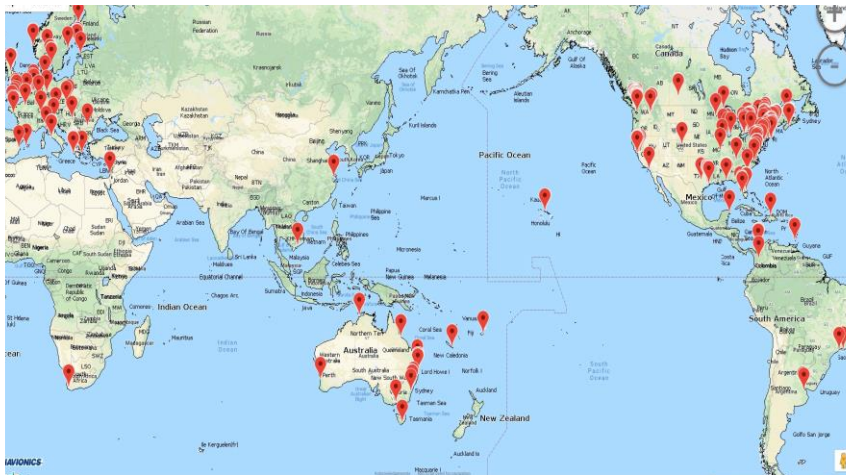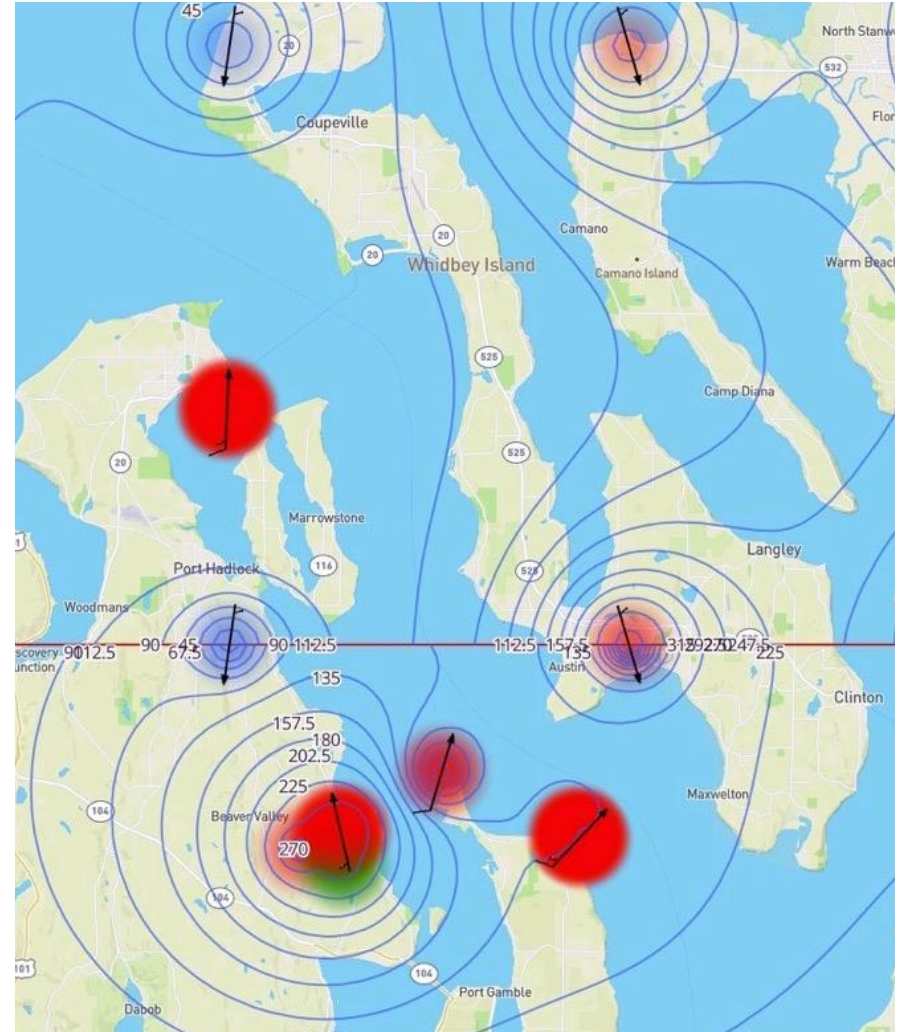
**Consumer:** Leisure, Sports, Tourism



**Front-end Application**

| Desktop Applications | Mobile Applications | Specialized Solutions | Data Services |

**Middleware Modules**

| Core Geo Services – Data Management, Discovery and Viewing | Common Services – Search, Routing, POI, Geo-Processing, WMS, WFS | Specialized Services – Real-Time Data Processing, Precise Navigation | Back Office Services – Order Processing, Reports, Portfolio Management, Analytics |

**Data Access Layer**

**Data Storage**

Real-Time Data | Imagery Data | ENC-Derived Layers | Hi-Res Bathy Coverages | Back Office Data | Protected Product Storage

**Data Validation, Harmonization and Import Layer**

# NaAVIC - Free Mobile ECS App

**IIC TECHNOLOGIES**
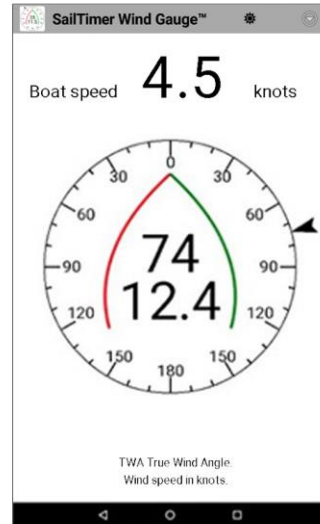
- Range of features to make recreational navigation easier, safer and more fun

- NaAVIC community to easily share experiences with friends

- Powered by Nautilus Cloud - native cloud solution streaming data on demand: ENCs, tide and current data, and satellite imagery

- Visit www.naavic.net for more info, user guide and download links



**Na AVIC**
Enhancing Safety & Awareness at Sea

- Supports IHO S-57 charts and S-52 presentation
- North up or Head up display orientation
- Route planning and management tools
- Notifications & Alarms
- Day and night colour palettes
- Displays position, speed and course

- Real-time route monitoring
- Location and feature query tools
- Mobile GPS integration
- User objects (Overlay)
- Data Layers
- Displays range bearing from vessel using EBL

Download on the App Store

GET IT ON Google Play

# IHO S-131 Database



We transcribed data from the sample S-131 finnish examples.

# IIC TECHNOLOGIES

Cross-Sectoral data reuse
founded upon "interoperability"

Interoperability of marine geospatial
data:

- Founded on interoperability
  between "entities"
- Coherent models
- Data sharing partnerships
- Compatible standards
- Authoritative, curated datasets
- Custodianship
- Persistent, unique identifiers

# Desirable Enhancements
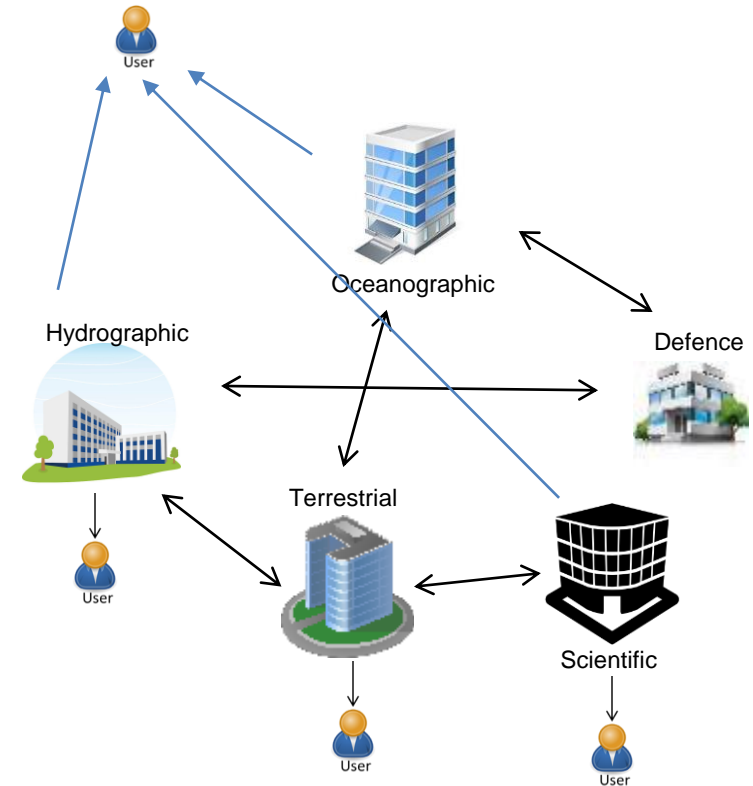
- More effective machine to machine data interoperability support (API)

- Reference implementations of core components to speed up innovation

- Support for software developers

- Strengthening the advocacy for open standards, particularly for open source tools and architectures

-  Open data access

# Thank You!

## NEW PATHS. NEW APPROACHES

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*Geospatial Excellence*