

Maritime Charting & Realtime Integration

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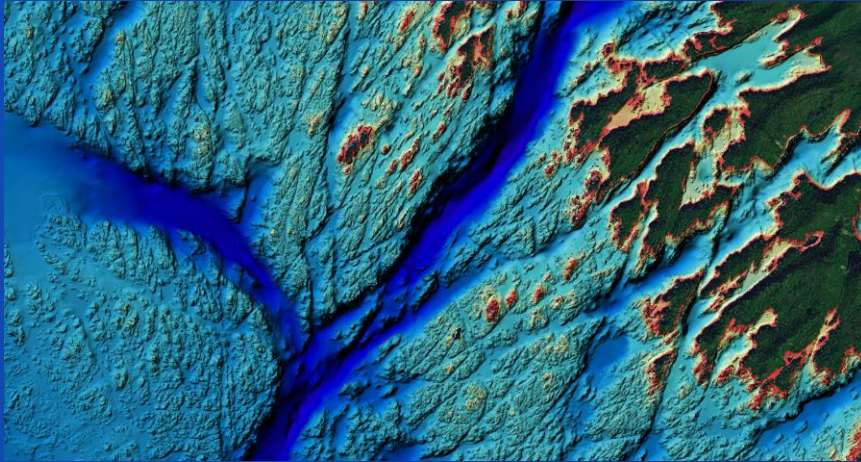




Have you ever wondered how ships Navigate?



ArcGIS for Maritime Bathymetry Charting



Store, discover, model and manage bathymetric data.



Create, maintain and publish charts for navigational and marine purposes.

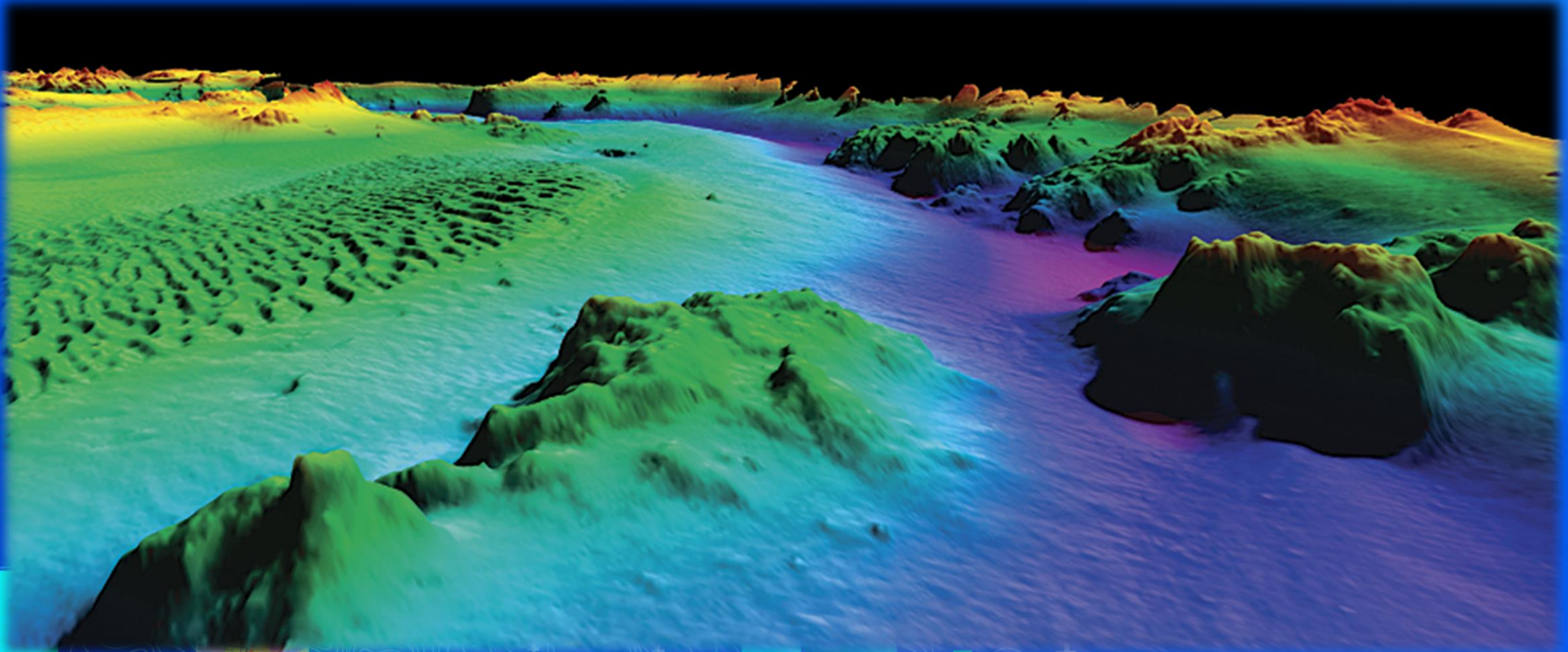


ArcGIS for Maritime Bathymetry



Bathymetry

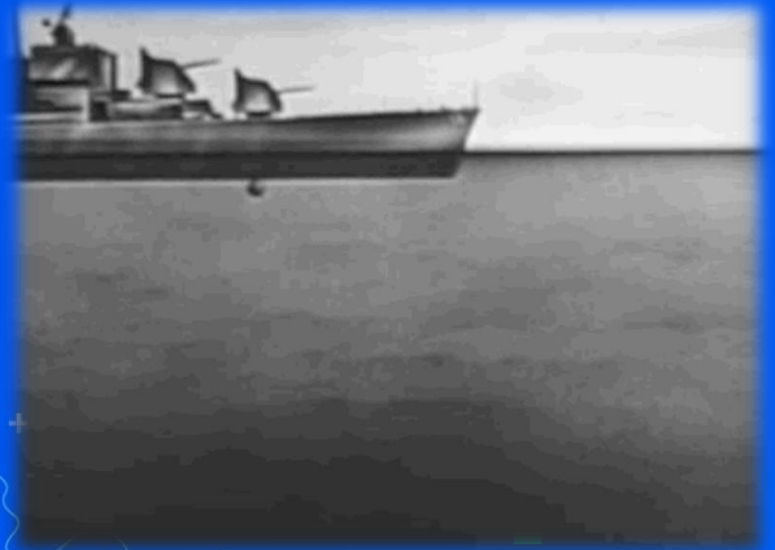
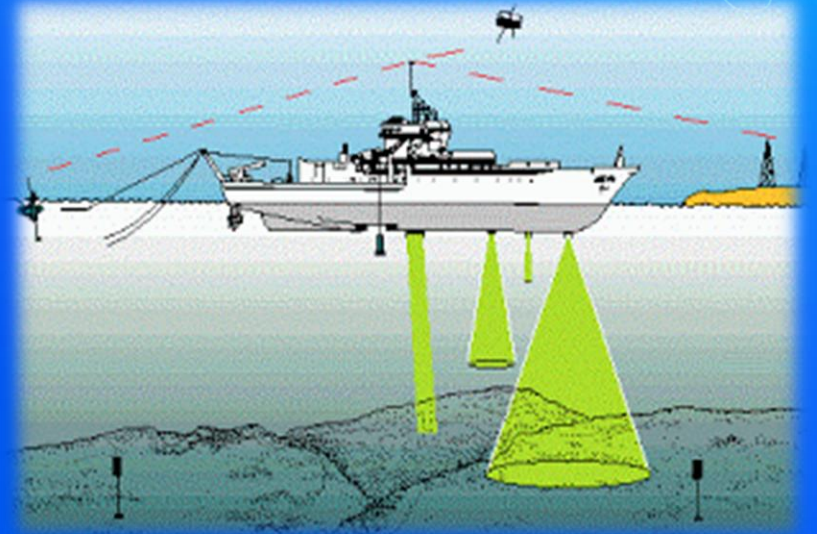
Bathymetry is the study of underwater depth of ocean floors or lake floors. In other words, bathymetry is the underwater equivalent to hypsometry or topography.

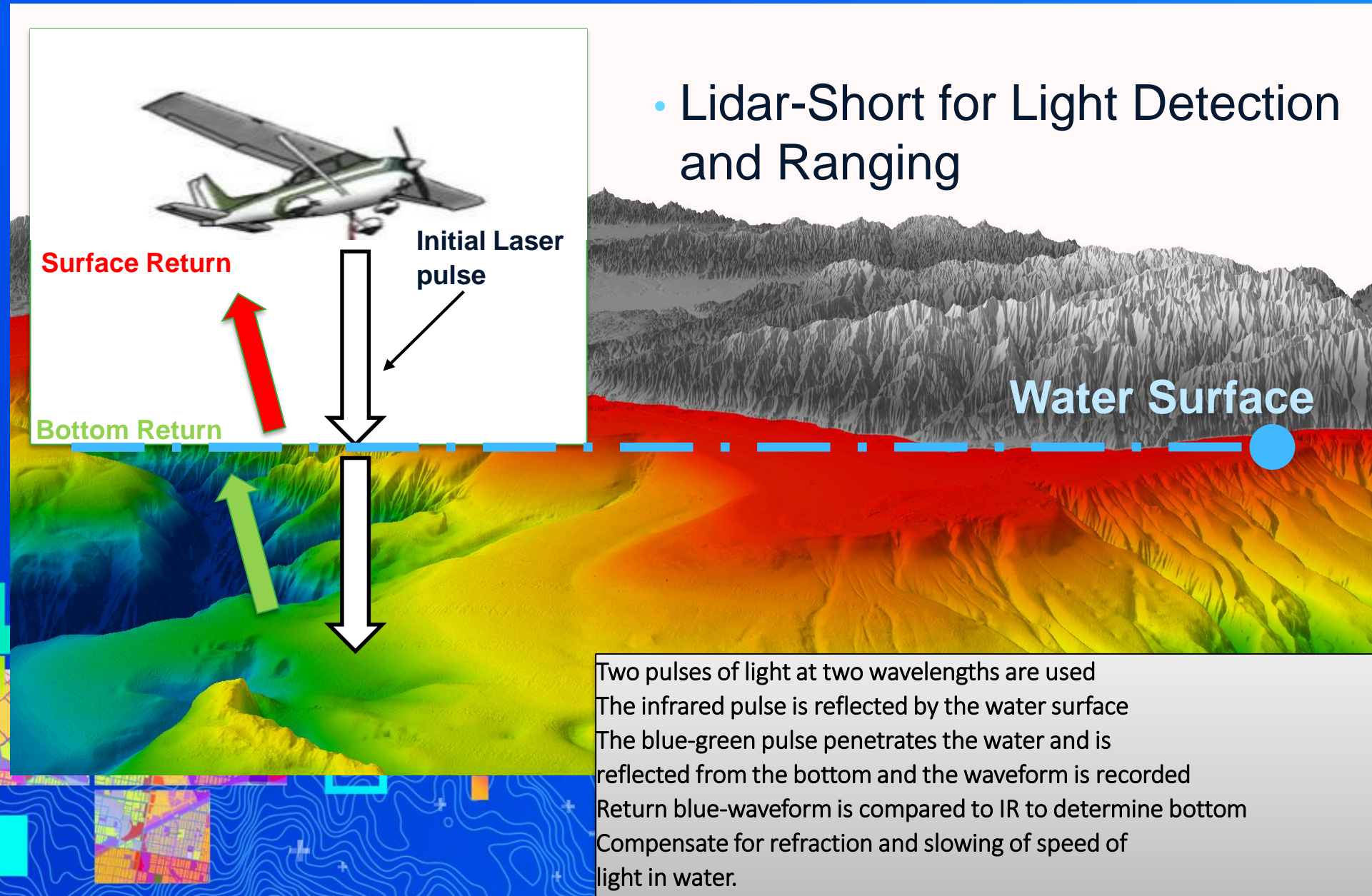


Data Collection

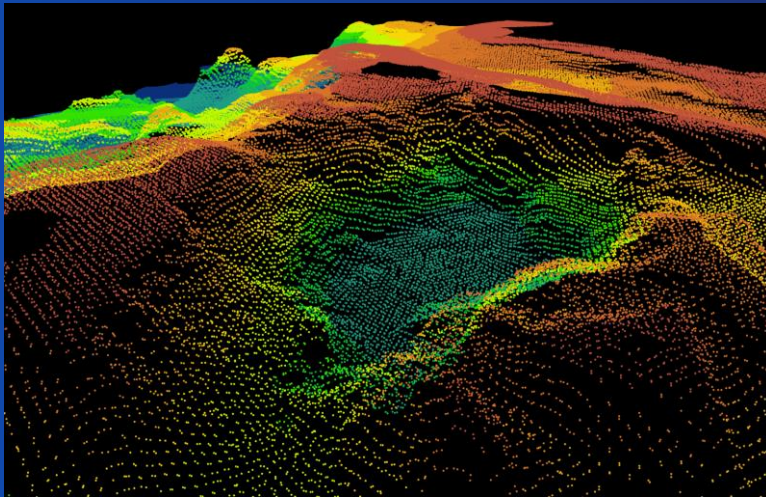


SONAR

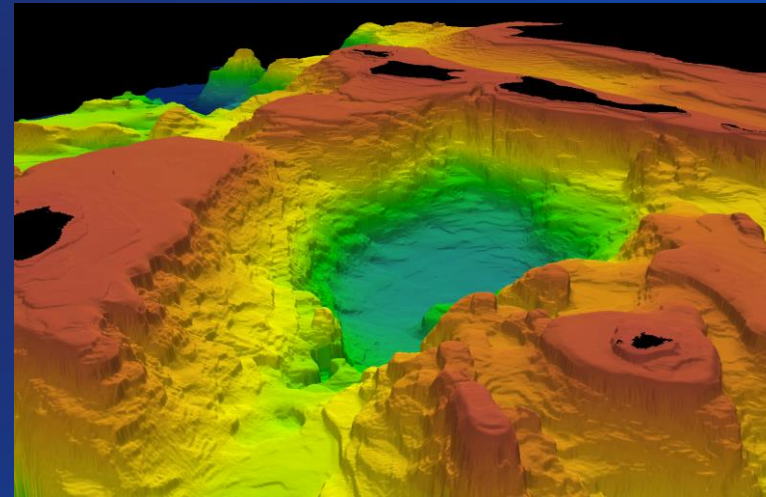




bathymetry (n): The measurement of depths of bodies of water.



Vector
(Soundings/Depths)



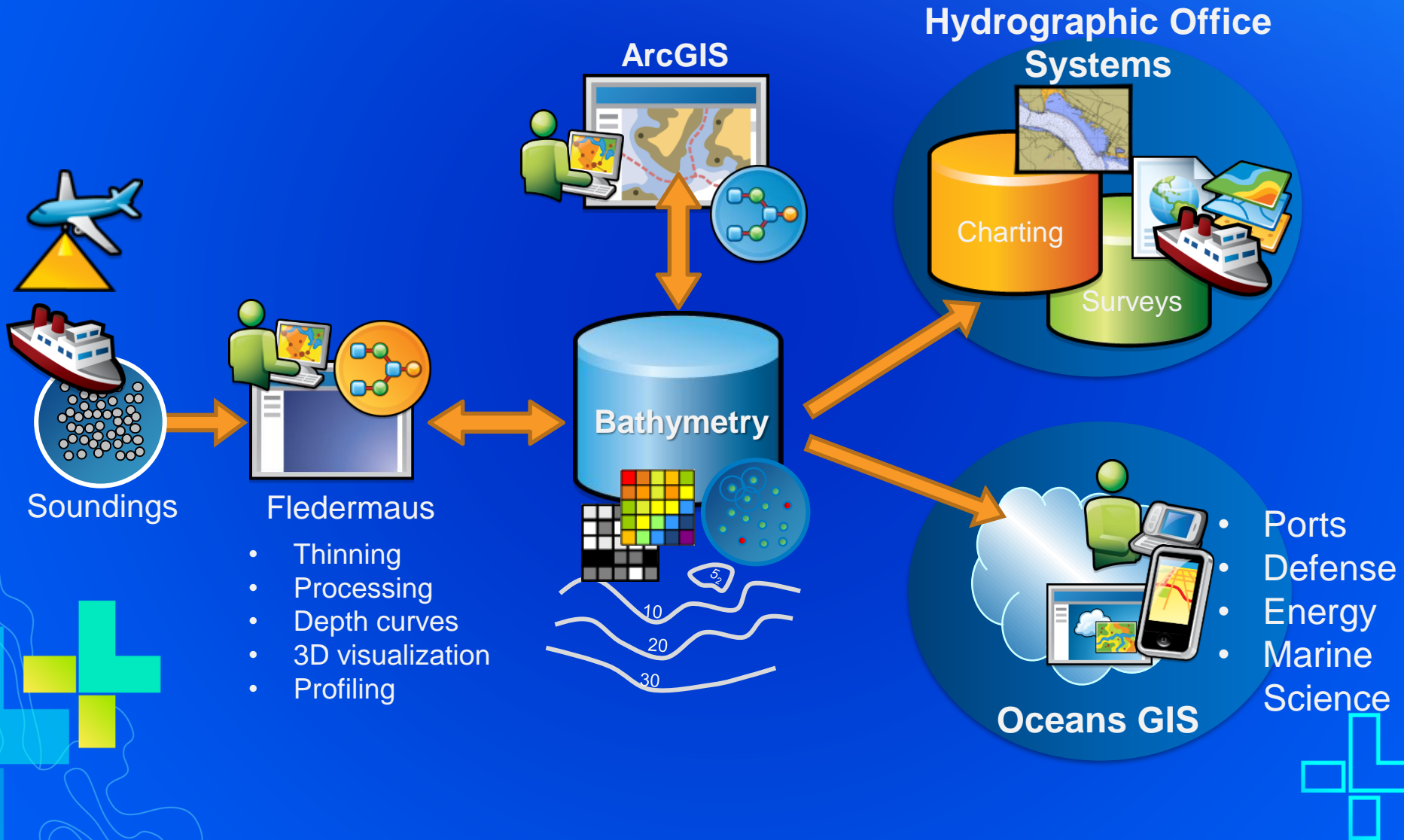
Raster
Models/Surfaces



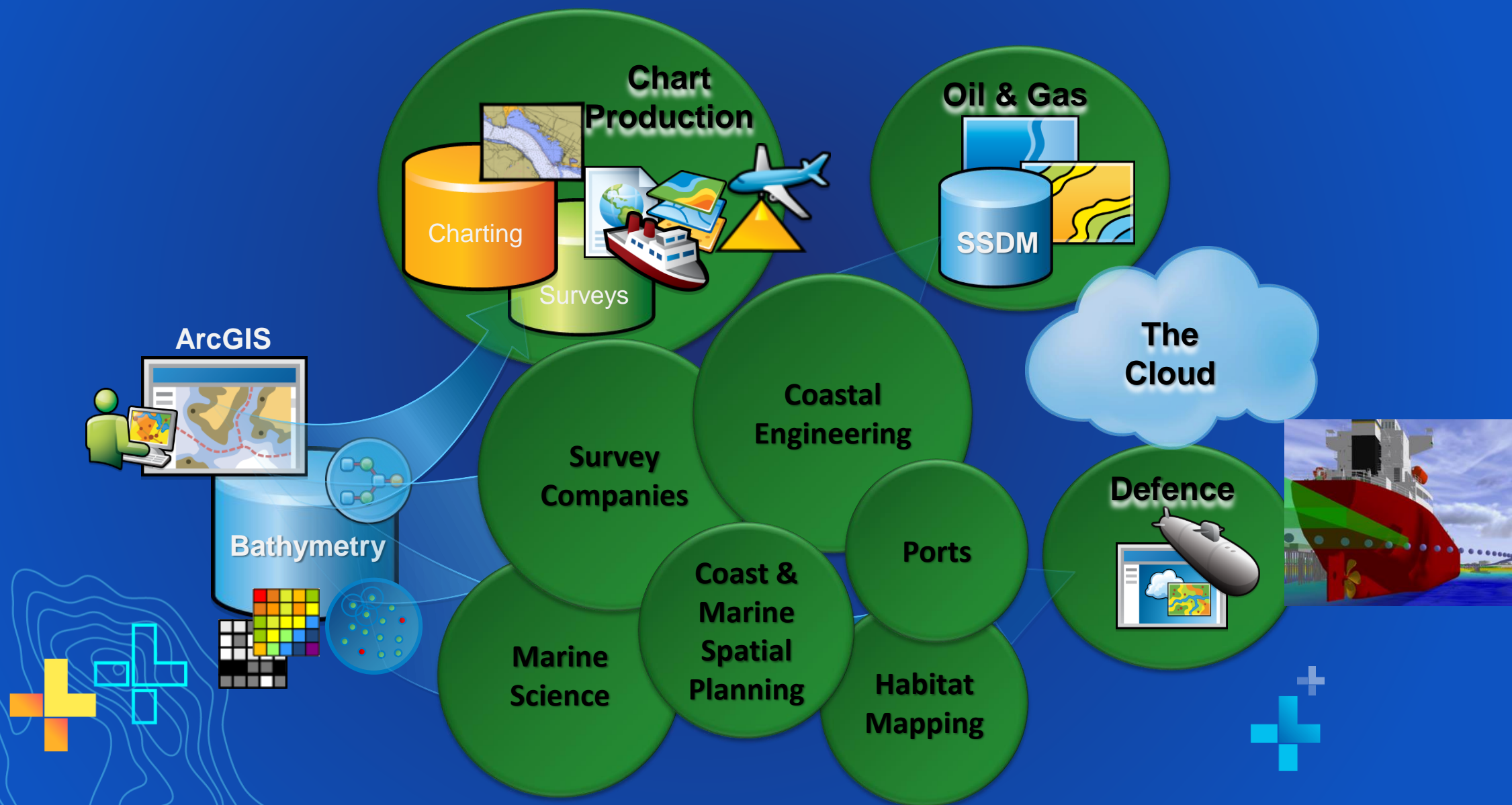
Demo 1



ArcGIS for Maritime: *Part of the ArcGIS system*



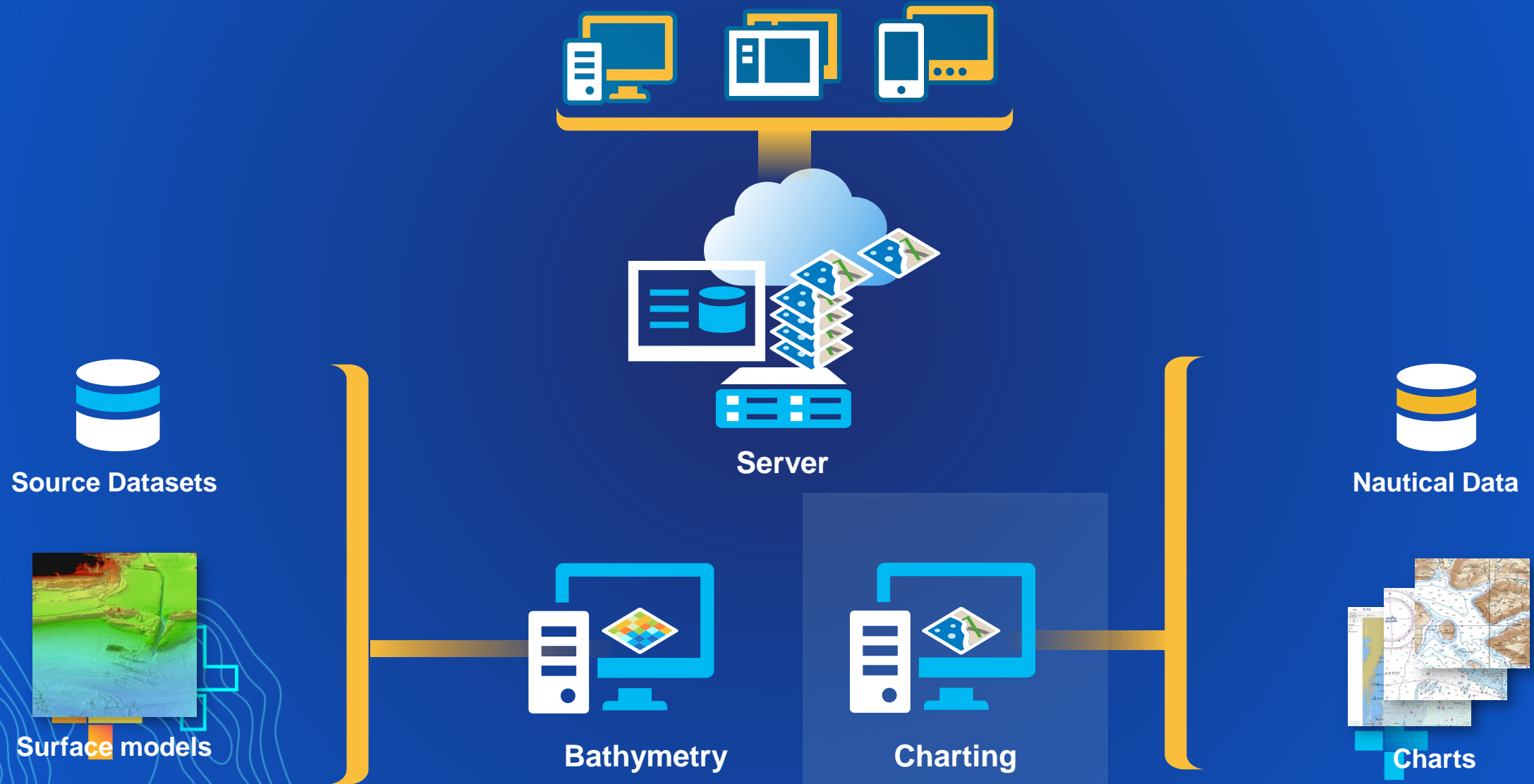
From GIS to anywhere...



ArcGIS for Maritime Charting

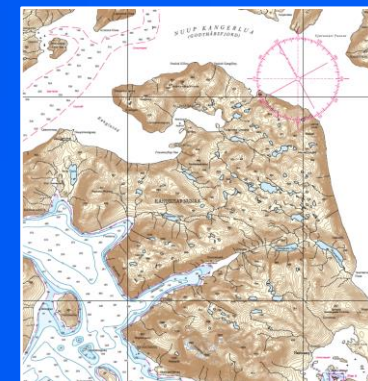
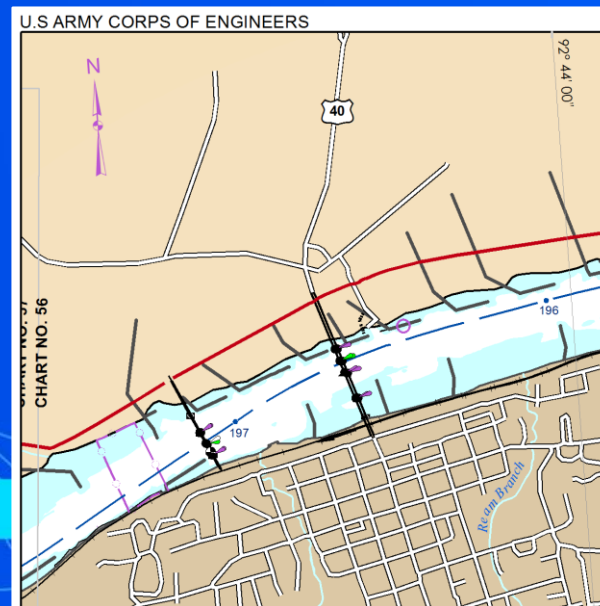
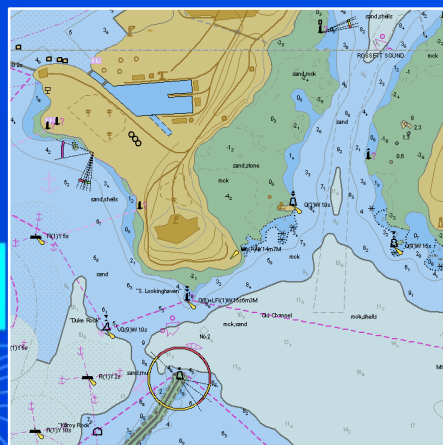
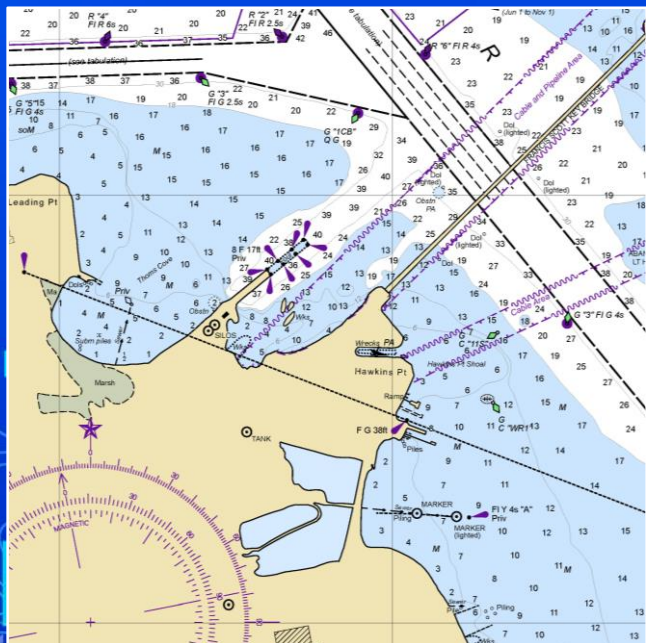


ArcGIS for Maritime



ArcGIS for Maritime: Charting *More Than Navigational Charts*

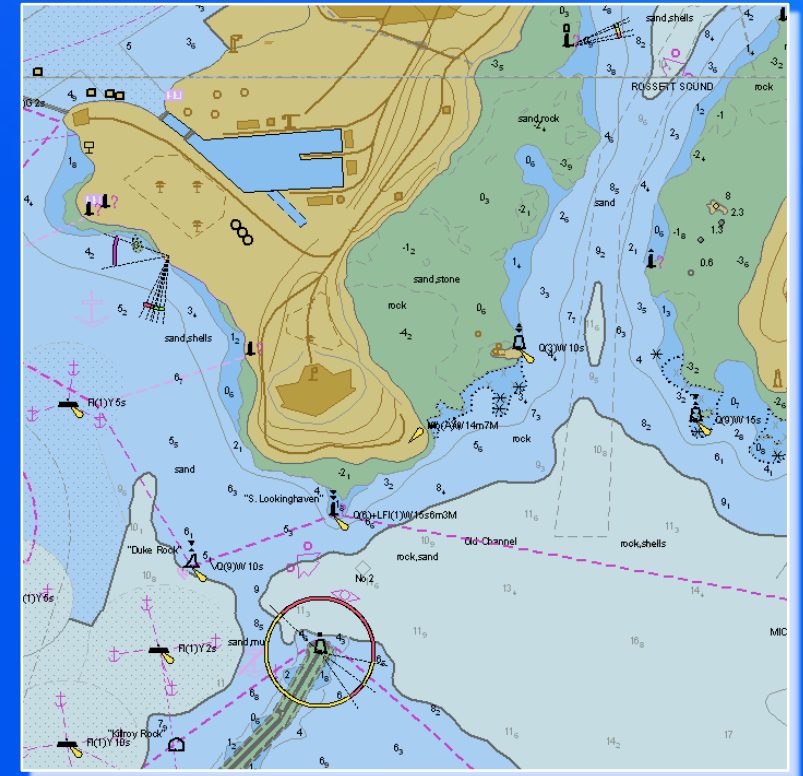
- Efficient production of nautical charts to specifications
- Repeatable workflows
- Centralizes maritime information
- Expands maritime data usage beyond navigation



Making maritime data interoperable

Maritime Specifications – Vector Products

- International Hydrographic Organization IHO
 - S-57 Transfer Standard
 - Electronic Navigational Chart (ENC)
 - **New Editions and Update files (EN/ER)**
 - Inland Electronic Navigational Chart (IENC)
 - Additional Military Layers (AML)
 - S-52 ENC Portrayal Standard
 - S-58 ENC Validation
 - S-63 ENC Encryption
 - S-100 Emerging Standards
- Digital Nautical Chart – DNC
 - Vector Product Format (VPF)
 - Geosym for Portrayal



Advanced tools for Chart production

• Capabilities

- Ingest S-57 data
 - Fully scriptable
 - For S-57 vector/raster Chart Production
 - For basic GIS - analysis
 - For Ad-hoc maps/charts
 - Data warehouse
- Symbolize
 - INT1
 - S-52
 - custom
- Maintain
 - Edit and create S-57 and cartographic features
 - Validate (S-58)

- Publish

- New Editions
- Updates
- Rasters – broad raster support including BSB

• Hydrographic Standards Support

- AML 2.1
 - Plans to support 3.0 at 10.3.x
- IENC 2.3
- DNC (VPF)
- ENC 3.1.1
- S-52
- S-4
 - INT1 & INT2



Realtime integration in ArcGIS



Maritime Realtime Use cases

- Tracking, Visualization and Monitoring
- Situational Awareness
- Route Planning and optimization
- Data Interoperability
- Analytics
- Voyage Operations
- Piracy Detection and Alerting



Maritime Realtime Data Sources

Govt or Open source

- AISHub
- CruiseMapper
- Sailwx
- Marinecadestre, HELCOM,
ShipAIS, dma, MSA

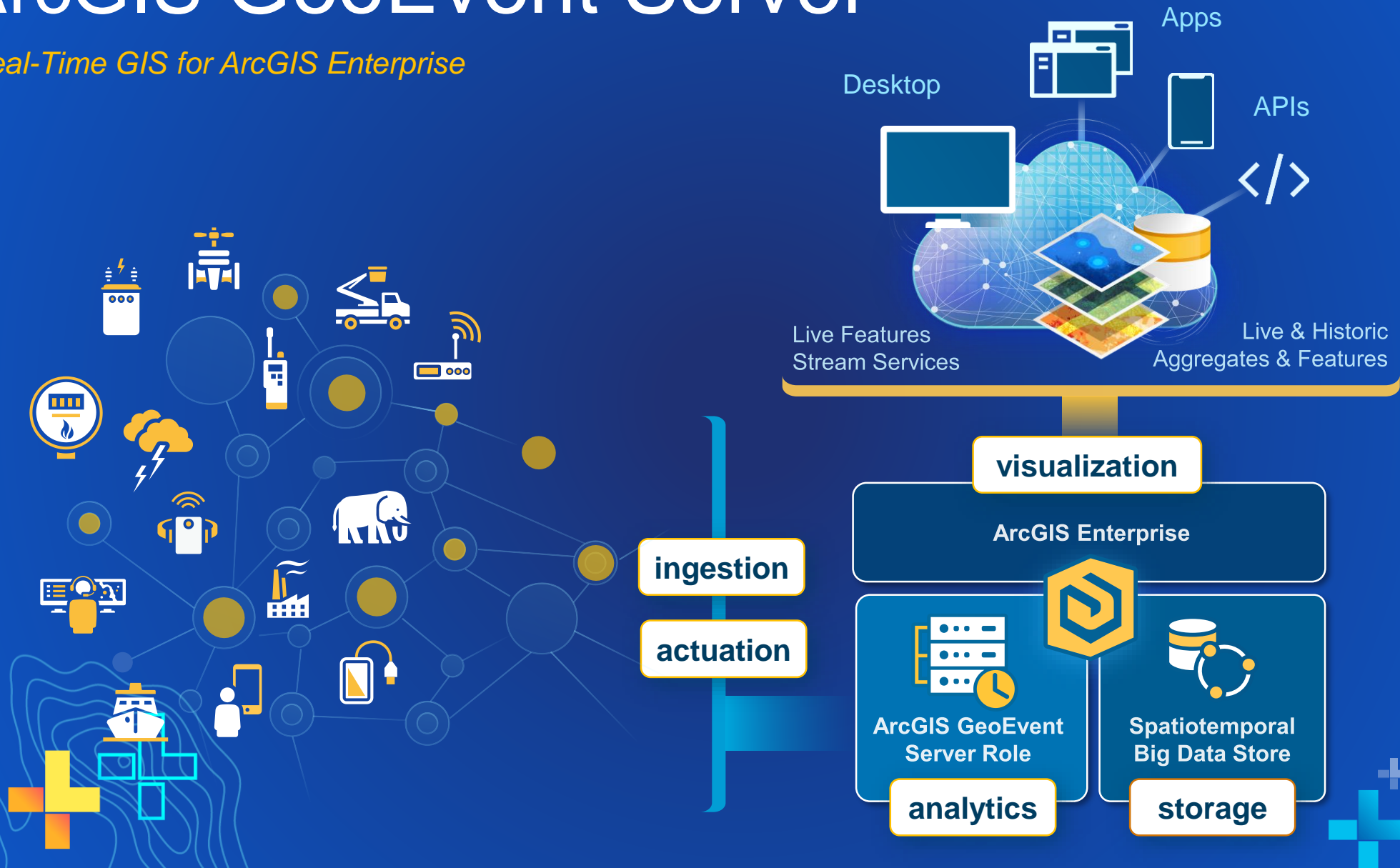
Commercial Sources

- SPIRE
- Marine Traffic
- Vessel Finder
- ExactAIS
- FleetMon
- Vessel Tracker
- VTExplorer



ArcGIS GeoEvent Server

Real-Time GIS for ArcGIS Enterprise



Ingestion & dissemination of real-time data

Out of the Box

- Poll an ArcGIS Server for Features
- Poll an external website for GeoJSON, JSON, or XML
- Receive Features, GeoJSON, JSON, or XML on a REST endpoint
- Receive GeoJSON or JSON on a WebSocket
- Receive RSS
- Receive Text from a TCP or UDP Socket
- Subscribe to an external WebSocket for GeoJSON or JSON
- Watch a Folder for new CSV, GeoJSON, or JSON Files

Esri Gallery

- ActiveMQ
- AIS
- Common Alerting Protocol
- CoT Cursor-on-Target
- esd Exploitation Support Data
- GTFS
- Instagram
- Kafka
- KML
- MQTT
- NMEA 0183
- RabbitMQ
- Sierra Wireless (RAP)
- Trimble (TAIP)
- Twitter

Partner Gallery

- AWS IoT
- Azure IoT
- CompassLDE
- enviroCar
- exactEarth AIS
- FAA (ASDI)
- GNIP
- Networkfleet
- OSIsoft
- Valarm
- Waze
- Zonar

GeoEvent Server



Out of the Box

- Add or Update a Feature
- Publish Text to a UDP Socket
- Push GeoJSON or JSON to an external Website
- Push GeoJSON or JSON to an external WebSocket
- Push Text to an external TCP Socket
- Send a Text Message
- Send an Email
- Send an Instant Message
- Send Features to a Stream Service
- Write to a CSV, GeoJSON, or JSON File
- Add a Feature to a spatiotemporal big data store
- Update a feature in a spatiotemporal big data store

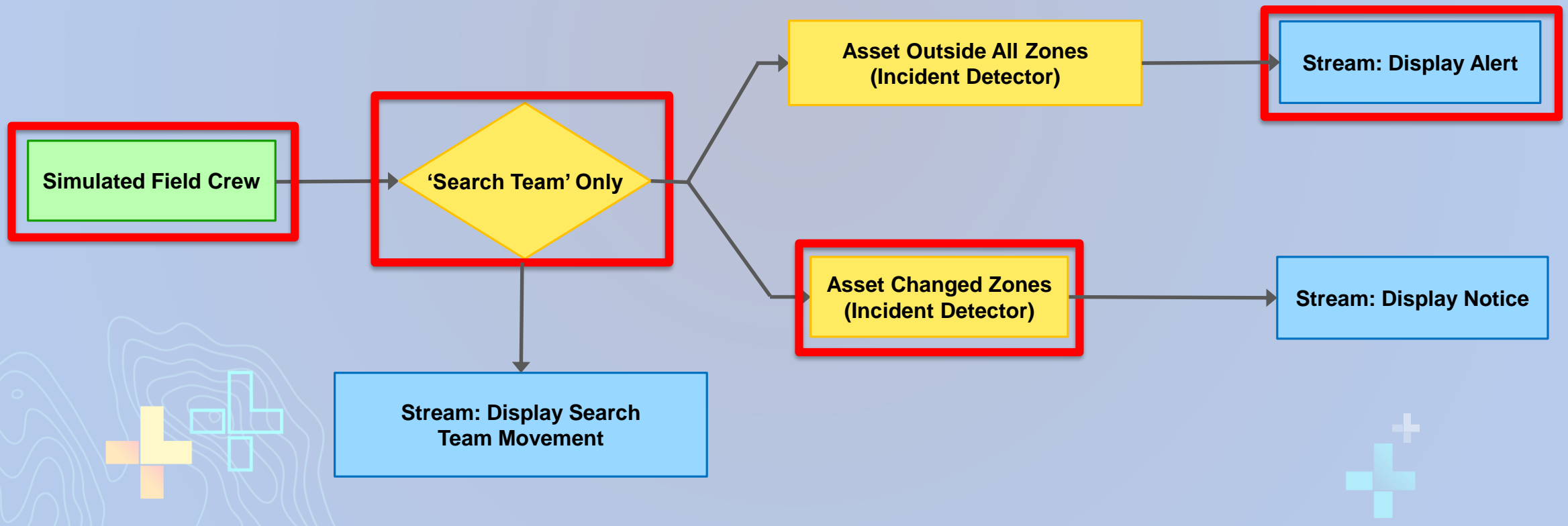
Esri Gallery

- AWS IoT
- Azure IoT
- ActiveMQ
- CoT Cursor-on-Target
- Hadoop
- Kafka
- MongoDB
- MQTT
- RabbitMQ
- Twitter

Real-Time Analysis

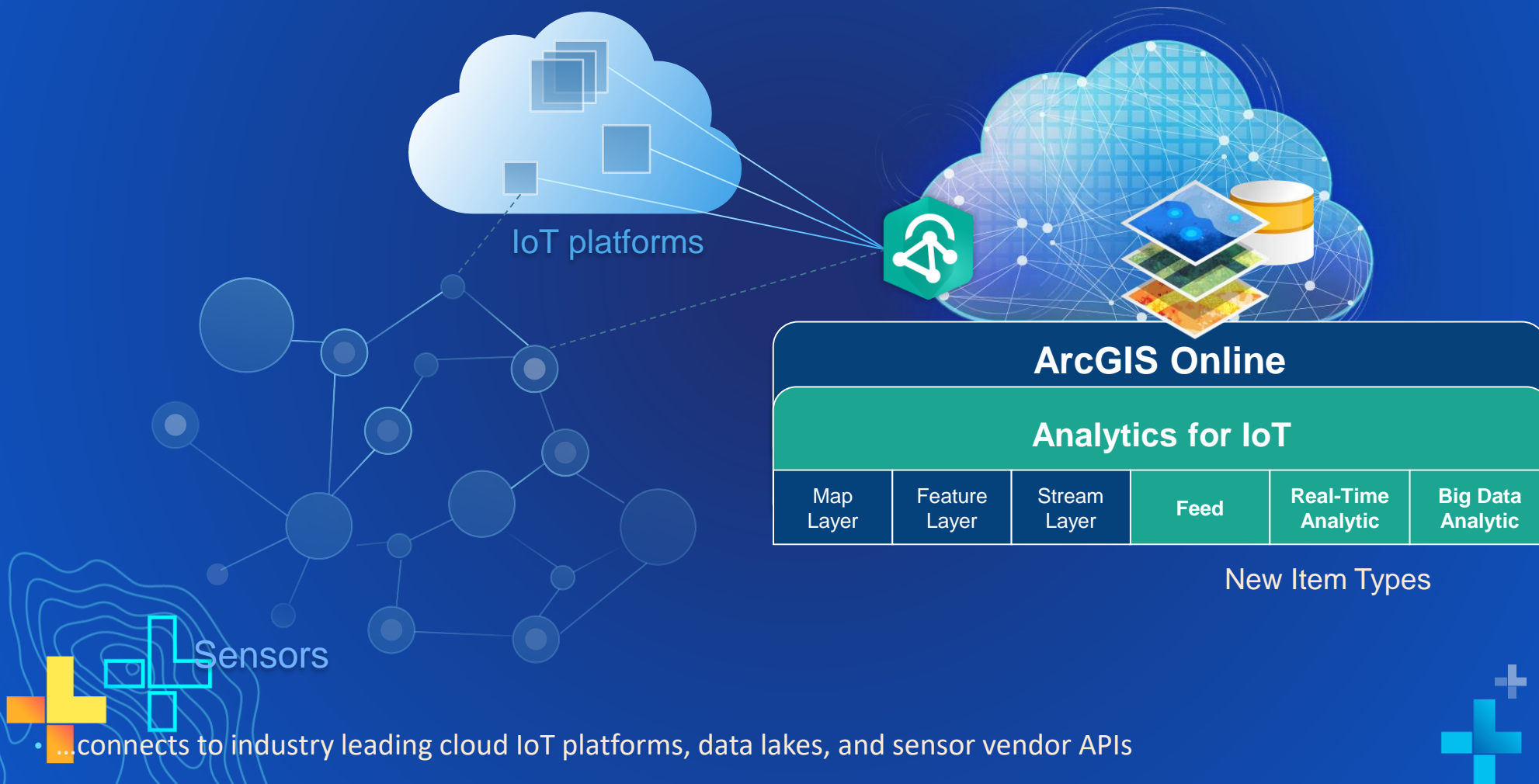
GeoEvent Services

- A **GeoEvent Service** configures the flow of GeoEvents
 - The **Filtering** and **GeoEvent Processing** steps performed
 - The input(s) data comes from and the output(s) to which results are sent

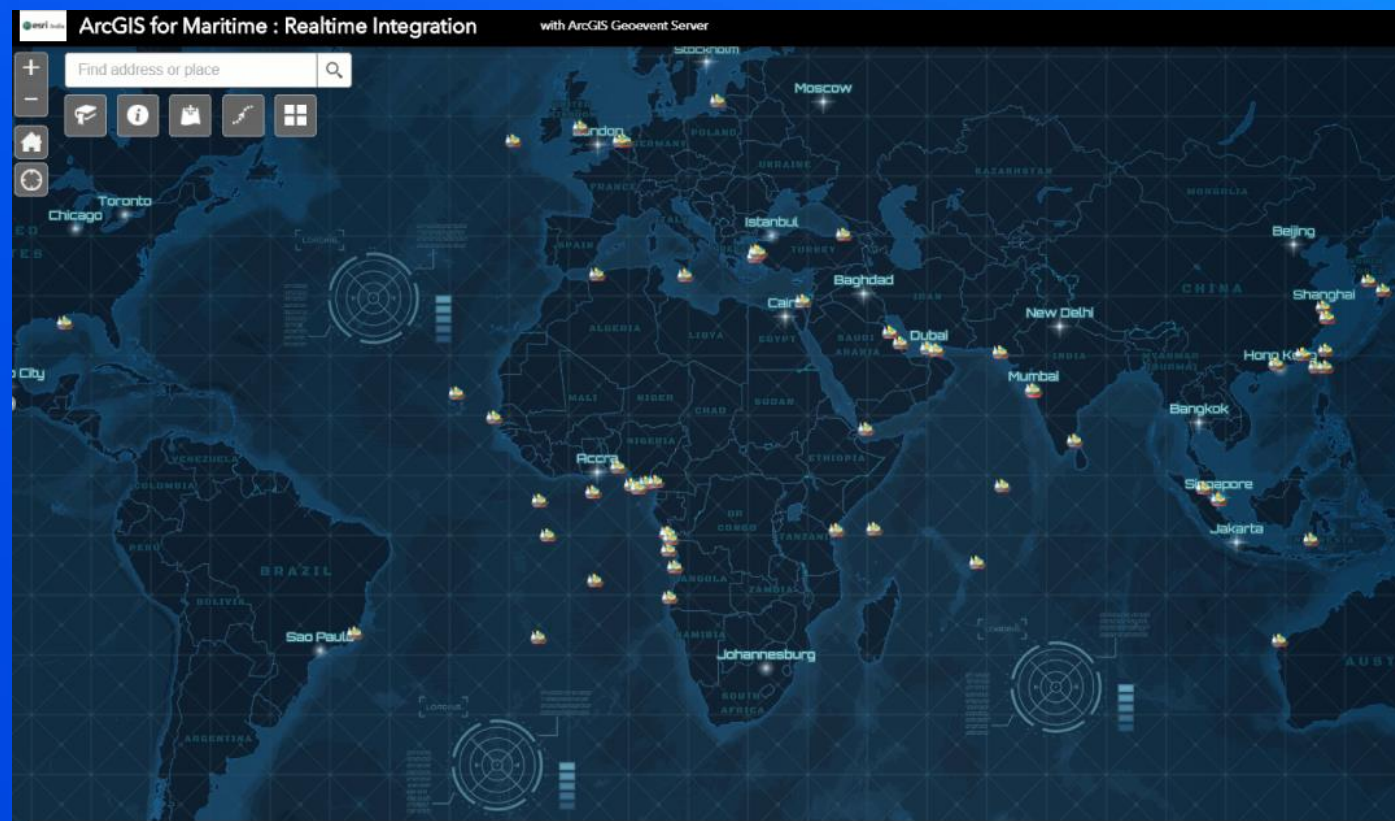


ArcGIS Velocity

- Real-time and big data capabilities for ArcGIS Online



Demo 2



Questions?

