ESRI AND SPIRE MARITIME AIS DATA WEBINAR

SUPPORTED BY 40GEO
WEBINAR TEAM

Guy Noll
Principal Consultant, Maritime Services @ ESRI

Keith Fraley
President @ 40Geo

Iain Goodridge
Product Marketing @ Spire
AGENDA

• Spire Maritime Introduction
  ▪ AIS data level set
  ▪ Visual demo of AIS data integrated in GeoEvent and ArcGIS Pro

• ESRI Introduction
  ▪ Maritime Analysis
  ▪ AIS Discussion and Autonomous Shipping

• 40GEO Introduction
  ▪ What 40GEO offer
  ▪ Leveraging Spire APIs in ArcGIS
SPIRE MARITIME

It is on a mission to become the global leader in capturing, mining, refining, and analyzing AIS-related data and information.
WHAT IS AIS?

- AIS: Automatic Identification System
- Developed as a collision avoidance system
- Mandated by the International Maritime Organization
- Sent via RF from on-board equipment
AIS DATA COLLECTION – GULF OF MEXICO
RESULTS
CLOSING POLL
Spire and Esri Maritime: The Future of Marine Information

Guy Noll
Principal Consultant, Maritime Services
Find AIS on ArcGIS MarketPlace

Timely Example of Analyzing Maritime Risk – M/V Viking Sky

• A Few Questions from the Weekend

News (*Daily Mail*)

- Did cruise ship company understand the risks?
- Did maritime authorities engage with the company and have a plan for mitigating the risks?
- Do passengers have insight into the risks at time of purchase?

ArcGIS Enterprise supports Evidence-based Decision-Making
Traffic-Aware Route Planning in a VTS, Using AIS

A simple example:
- Could be ENC
- Could be WebApp

Geographic Context Matters in Decision-Making
Example: Traffic-Aware Route Planning in a VTS, Using AIS

- Note: Source Diagram uses valuable space; would be more useful as an attribute layer with CATZOC (recent discussions indicate this is NOAA’s intent)
Example: Traffic-Aware Route Planning in a VTS, Using AIS

Note Southbound Traffic is Meeting and Crossing the Vessel's Planned Route!

Geographic Context Matters in Decision-Making
Example: Traffic-Aware Route Planning in a VTS, Using AIS
Maritime Analytics = More than a Vessel’s Track

• Situational Awareness
  – Original Intent of AIS as part of GMDSS – eliminate Radar-assisted collisions!
  – Indicate intent (Rate of Turn, Heading, Destination) and not just Course & Speed Made Good

• Vessel Traffic System (VTS) Management
  – Recognized utility of information for transits as well as ports
  – Pilot-to-pilot and Pilot-to-HarbourMaster shorthand
  – Shipping Company trend analysis

• Now extended to Real-Time Analytics for Environmental Factors
  – Esri is working to automate nautical navigation products and services

How does the shipping company manage risks?
Generalized Geodatabases to New Products

- Scripts
  - Survey
  - Bathymetry
  - Nav Surface
  - Charting

- Navigation
- Surface

- Staging GDBs
- Cut/Paste

- NIS Checkout Replicas

- 12k
- 80k
- 250k

- NIS

- 12k
- 80k
- 250k

- S-57/S-100

- S-58
Autonomous Ships are Coming – Are We Ready?

• Level 3 (Hybrid) will come before Level 4 (Full)
  - Is the robotic operator seeing same info as human operator, and vice versa?
  - Port “Virtual Twin” must support all four autonomy levels
    - Current, manual navigation modalities
    - Robotic-assisted
    - Human-assisted
    - Fully Autonomous

• Situational Awareness
  - IHO S-100 Standard
  - Example of GIS Weather http://arcg.is/01K5yi
    - Note: User must be logged into ArcGIS On Line to see SST

Maritime ArcGIS Online Organization
http://esriho.maps.arcgis.com/home/index.html

Maritime GeoNet Page
https://geonet.esri.com/groups/arcgis-for-maritime

Contact Info
maritime@esri.com

Direct Connect: Gnoll@Esri.com, Twitter/LinkedIn: guynoll
40Geo is a solutions company focused on the integration of geospatial technologies into enterprise wide systems. Our leadership has been designing, developing and delivering world class geospatial solutions for 20 years in a wide variety of industries.

At 40Geo we turn APIs into location based intelligence.
Why does AIS matter?
Common Operating Picture
Supply Chain Optimization
Remote Monitoring
GET STARTED

AUTHENTICATION

Before accessing the APIs you will need to register and create an APP to receive a token. Please create an account here:
Create Account

Our APIs use tokens to authenticate requests. Attempting to make requests to the API without a valid API Key will result in the return of an HTTP 401 Not Authorized response code containing a WWW-Authenticate HTTP header with an error message.

In addition, to ensure transport layer security, all access or communication with the API must be made over HTTPS.

<table>
<thead>
<tr>
<th>Host</th>
<th>api.sense.spire.com</th>
</tr>
</thead>
<tbody>
<tr>
<td>Header Key</td>
<td>Authorization</td>
</tr>
<tr>
<td>Header Value</td>
<td>Bearer (your_token)</td>
</tr>
</tbody>
</table>

RESPONSE FORMAT

Responses from an API request are formatted as JSON. All responses have a common schema as this example response from our Vessels API shows:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>paging</td>
<td>Information related to the previous and next pages of results along with total amount of results and currently set limit.</td>
</tr>
<tr>
<td>json data</td>
<td>The data returned from the request in the form of an array.</td>
</tr>
</tbody>
</table>
ArcGIS GeoEvent Server

Real-time mapping and analytics

Gain situational awareness of your real-time streaming data with ArcGIS GeoEvent Server, part of the Esri Geospatial Cloud. Whether you are tracking moving assets, monitoring stationary sensors, or following social media feeds, you can tap into, analyze, and display real-time and the Internet of Things (IoT) data on your maps. Boost your real-time monitoring and response rate when you define filters that focus on the data and events that matter most to you.