

Tracking Ships

(Maybe not your #1 IOT idea ... but cool nonetheless)

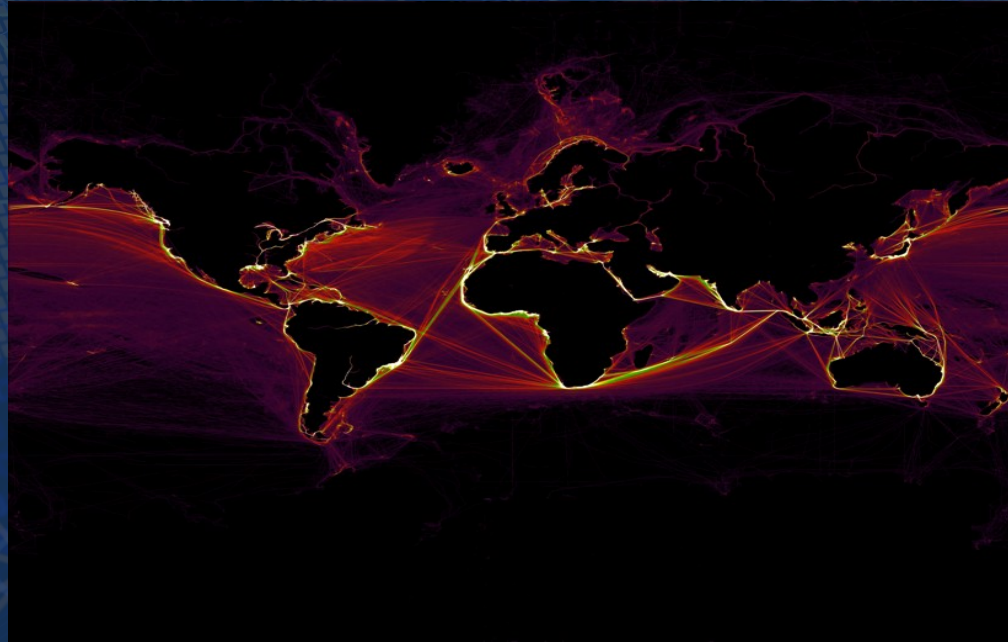
Dave Gibbon | Director – Strategic Accounts (Int'l)

What is this Picture?



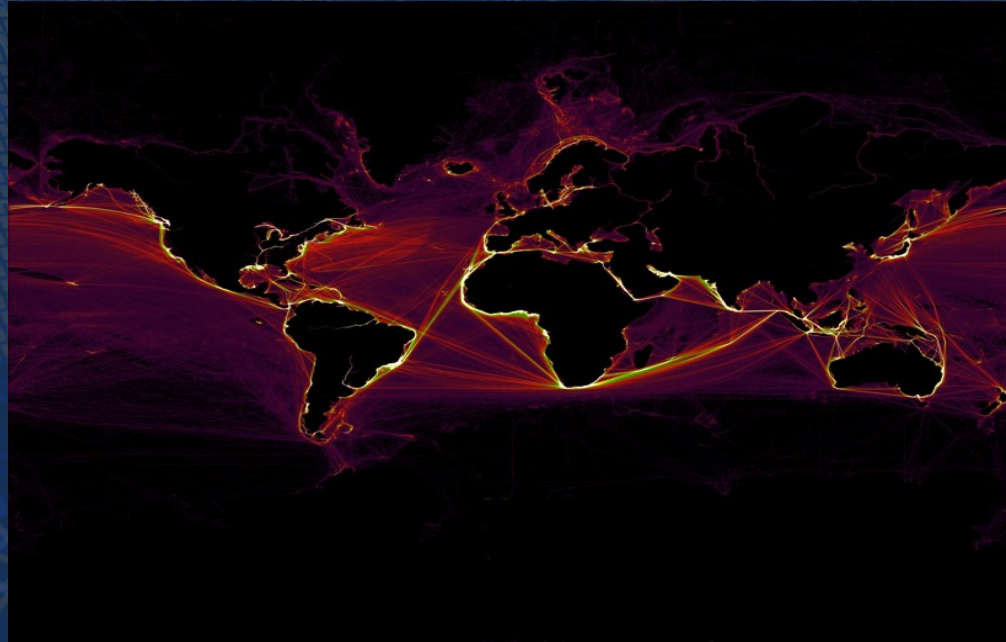
An Ansel Adams Abstract?

What is this Picture?



A Satellite Composite of Ocean Temperatures?

OR COULD IT BE ...



* Courtesy of Scott Syms (Royal Cdn Navy)

A Plot of 117M (AIS) Superimposed Ship Position Reports!

FACT SHEET



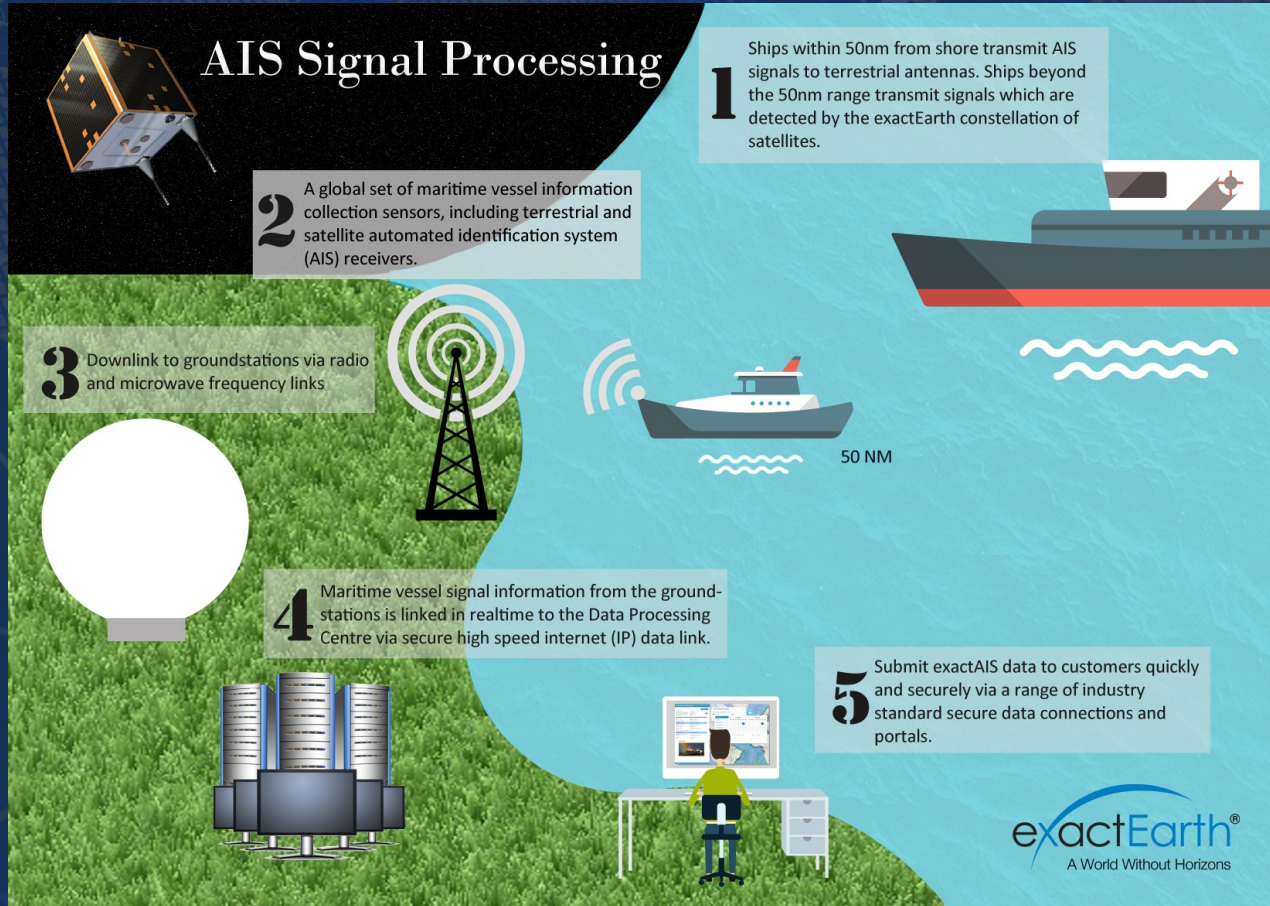
AIS = Automatic Identification System

- transponders placed on certain classes of ships
- identify and locate vessels via electronic data exchange (including ship position and metadata)
- signals received by nearby ships, AIS base stations, and satellites
- regulatory requirement (>250K ships today, >1M in several years)

AKA

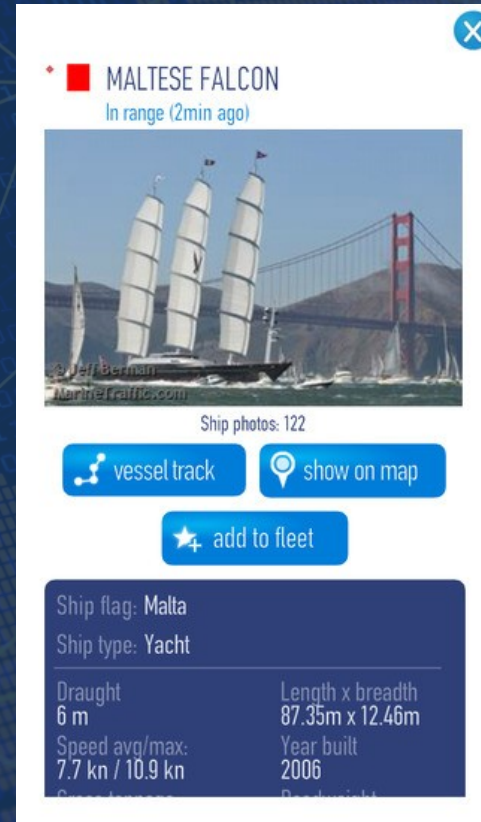
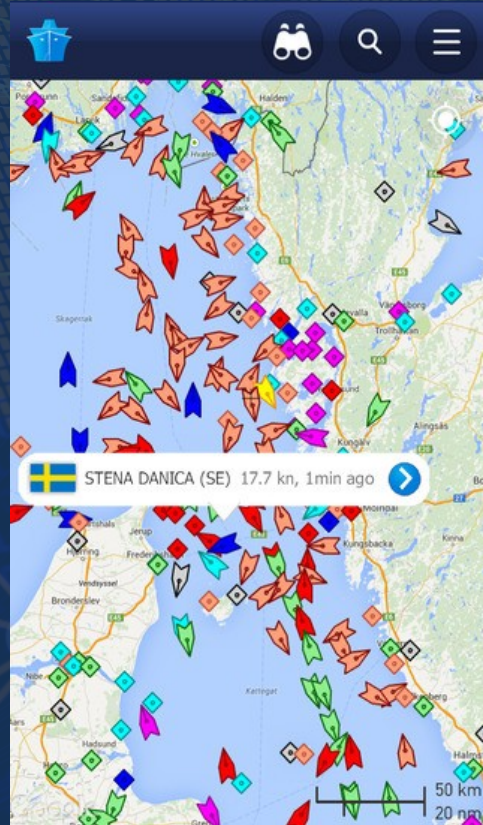
GPS (on steroids) for ships!

How does AIS Work?



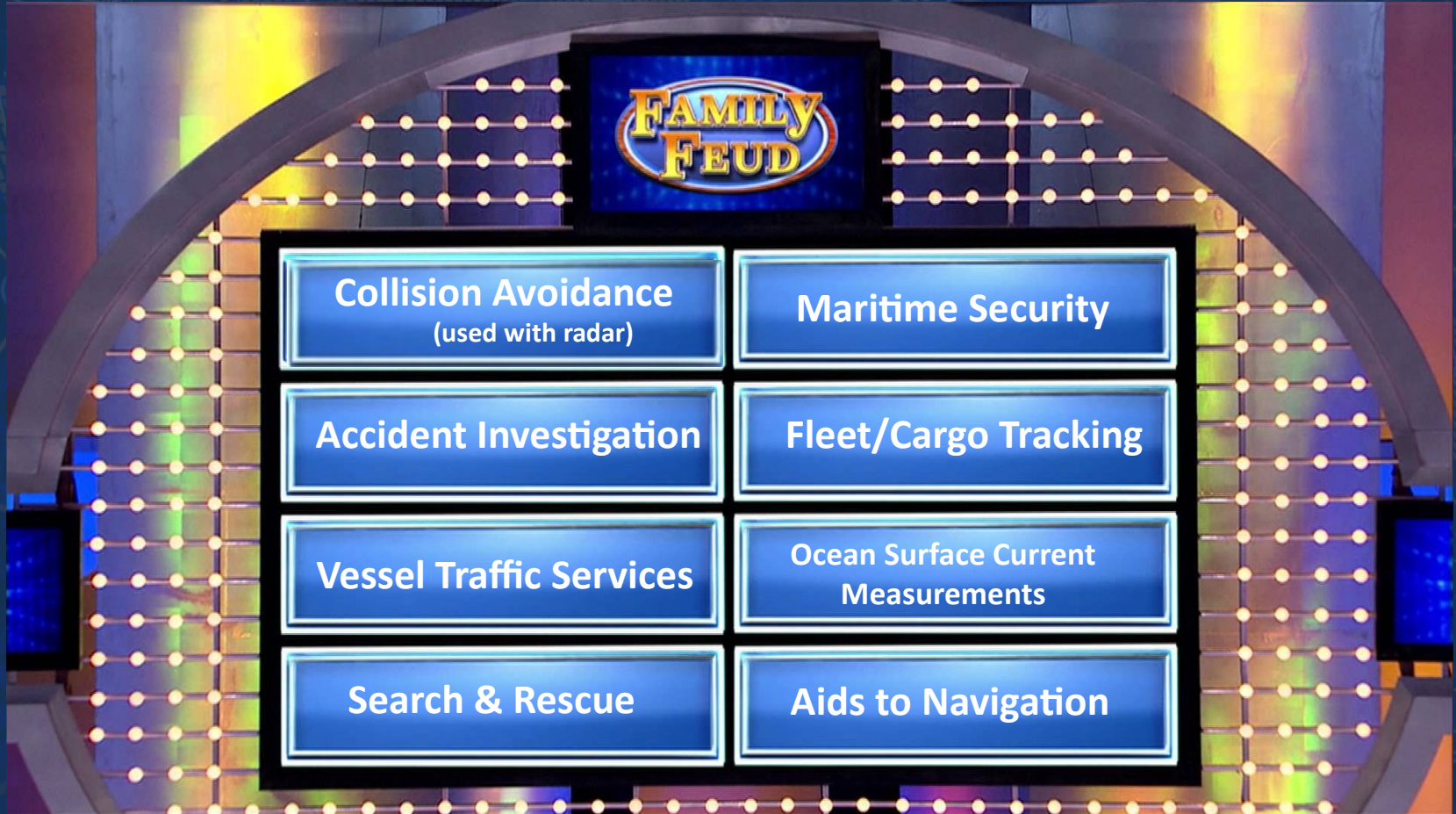
*Courtesy Exact Earth Inc.

Yes ... Someone has an App for that!



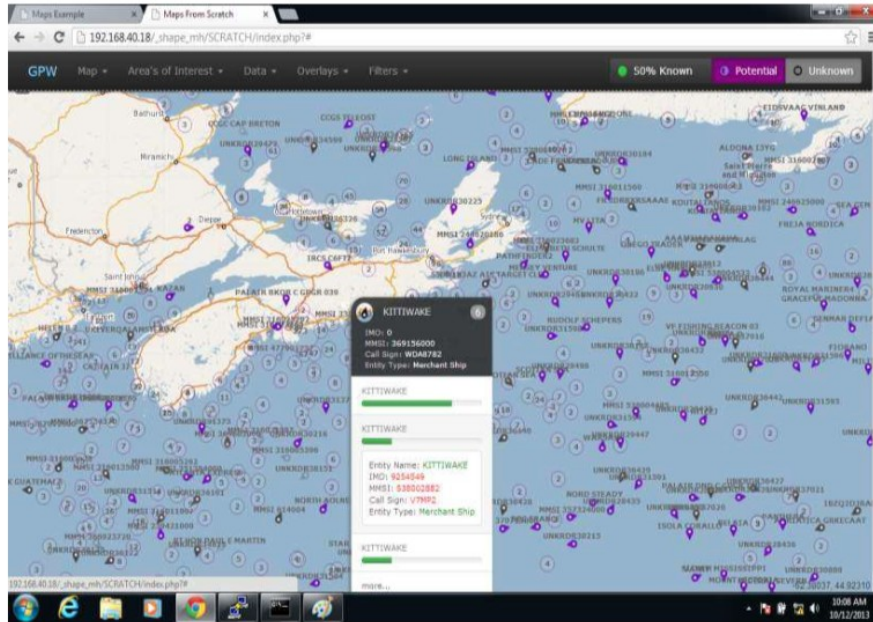
* Courtesy MarineTraffic.com

What is AIS Data Used For?



Who are some (Cdn) Industrial Strength Users?

Global Positioning Warehouse



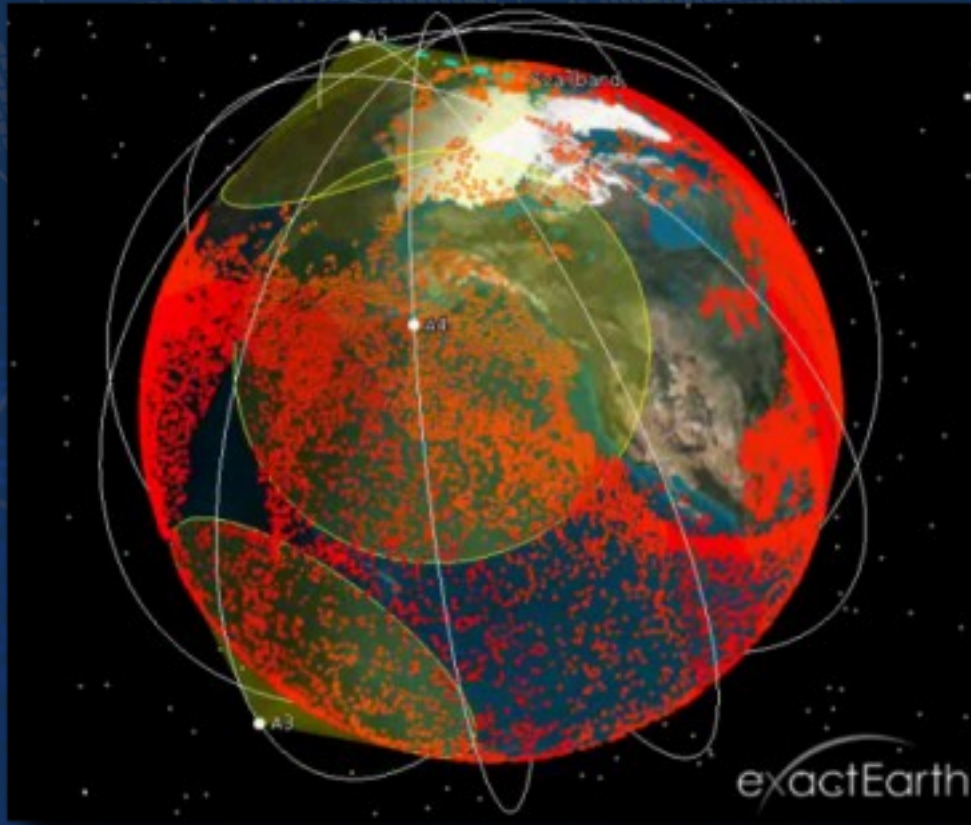
Royal Canadian Navy Maritime Situational Awareness

Challenge = Explosion of (Big) Data

- Velocity
 - 400K/day 10 yrs ago
 - 41M/day today
 - 80M+day in 2yrs
- Volume
 - Real Time AND Historical Analyses
- Variety
 - AIS Data AND other data types
- Veracity (NB: not referring to location)
 - Data Record Quality
 - Data Completeness
 - Data Integrity (am I who I say I am)
- Visualization



Who are some (Cdn) Industrial Strength Users?



Exact Earth

Satellite AIS Data Provider

Similar Challenges

- Moving up the value curve from data to information provider
- Delivering offerings in scalable fashion

Factoid



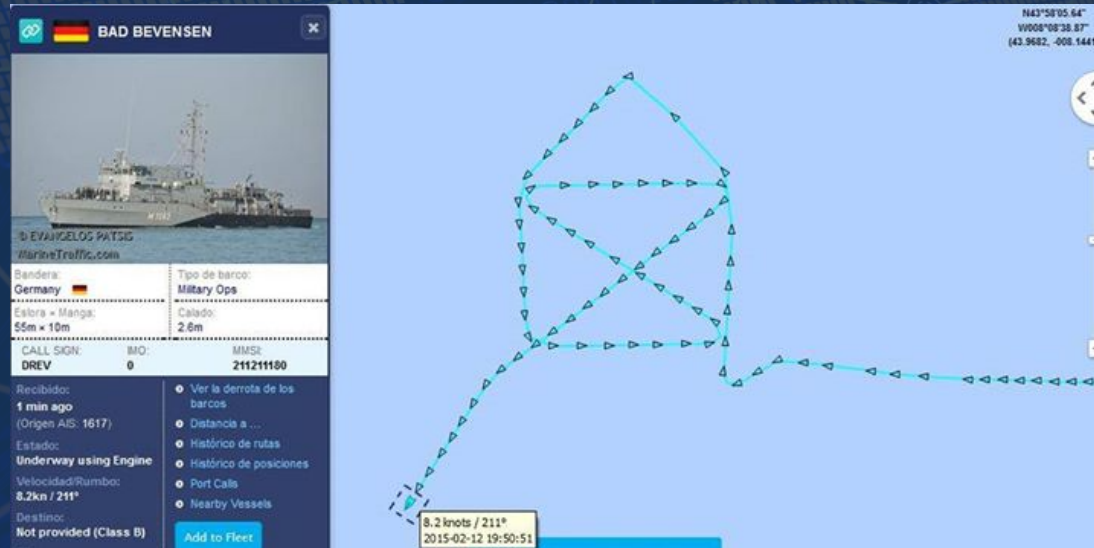
<http://blog.exactearth.com/blog/satellite-ais-monitoring-for-whale-ship-strike-risk>

Relationship Management?

“ Thank you very much! This site is a very big help coz it's easy to find the ship of my husband and less worry if he did not make this call because they are in the middle of the sea. Because of this, I will have an idea that my husband will be arriving at the next port and **what time I should be expecting his call** or vise versa. Constant communication is better than NEVER. God Bless ALL.... ”

Bored and Lonely at Sea?

FGS BAD BEVENSEN used AIS last year to “send a letter”

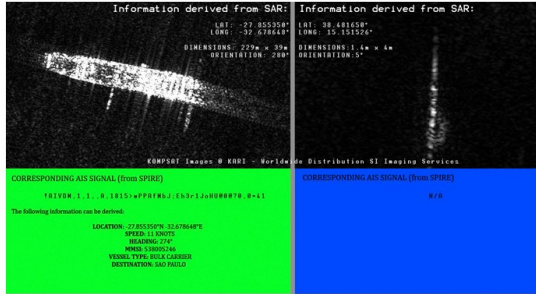


A Quick Demo You Ask? Enter Stage Left ...

<http://opengeonode.boundlessps.com/account/login/?next=/>

Is AIS a Panacea By Itself?

Use with SAR data to confirm info about a ship, or ID ships w AIS turned off



Above: The vessel on the left would have remained unidentified using SAR data alone, but AIS helped us understand more about this ship.

The vessel on the right would have been undetected if one relied purely upon AIS data. There are two reasons for this: this ship may simply not have an AIS transponder or may have turned it off. The latter could be a cause for alarm as this would normally indicate possible illegal activities. Thus, SAR helps to monitor those ships which may not want to be monitored.

e.g. Hitachi
Japanese System Integrator

Challenges = 同上

But Also Related Challenges

2015 IEEE Int'l Conference on Big Data
International Standard "OGCR
Moving Features" to address "4Vs"
on locational BigData

<http://geo-bigdata.github.io/2015/papers/S08207.pdf>

Use with SAR data to identify polluters

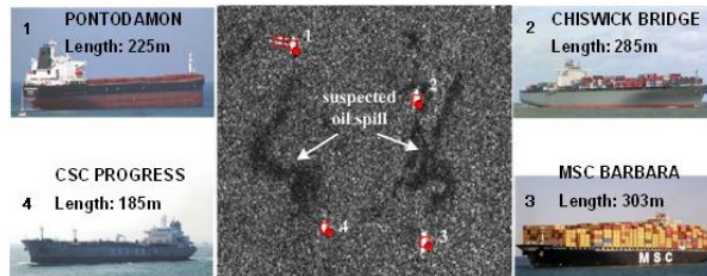


Fig.5 Suspected oil spill from vessels for their discharge.(vessel pictures are from Live Vessels Map website: www.marinetraffic.com)

So What Does Boundless Have to do with this?

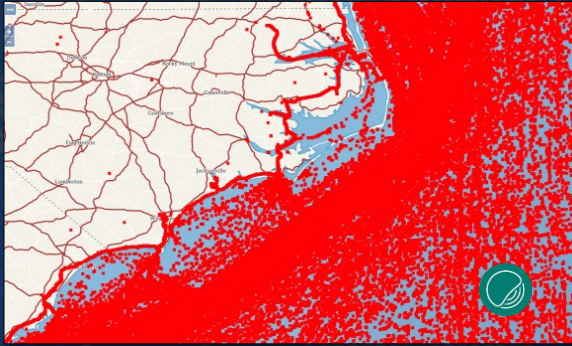


QGIS
OpenLayers
GeoWebCache
GeoServer
PostGIS

Each of the organizations had limited budgets, and leveraged open source geospatial technology to innovate and scale (architecturally & financially) without penalty

NOTICE: No Open-Source Big Data Repositories were harmed in the making of this presentation.

Pivotal Greenplum (aka MPP PostgreSQL)



<http://boundlessgeo.com/2015/10/scaling-your-gis-with-pivotal-greenplum/>

GeoServer



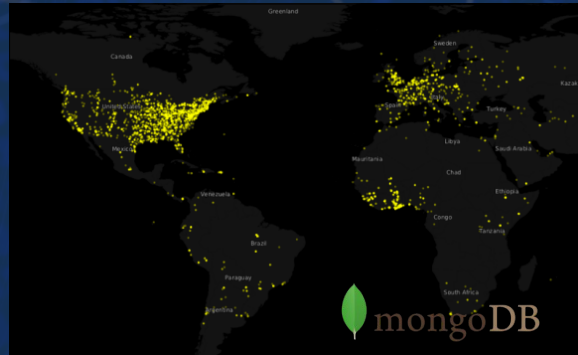
ElasticSearch

Paris, Texas

- Gazetteer
- Geocoding
- Reverse-Geocoding
- Routing

The ElasticSearch logo, which consists of four colored circles (yellow, green, blue, red) arranged in a square pattern, and a globe icon to the right.

MongoDB



<http://boundlessgeo.com/2015/07/mongodb-collaboration/>

PostgreSQL

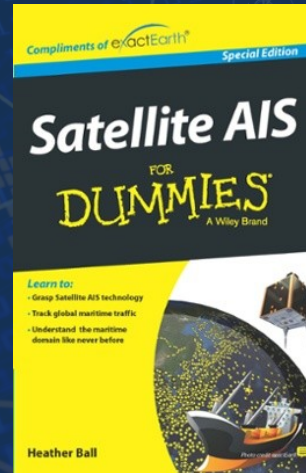


Where Do I Get More Info on AIS?

If a millennial, link here:

https://en.wikipedia.org/wiki/Automatic_Identification_System

If a baby boomer, read here:



*NB: The book apparently includes “Tips on **how to track pirates**, polluters, perilous ships and much more”*

Applicability?



Do YOU Monitor Any Objects
that Move?





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