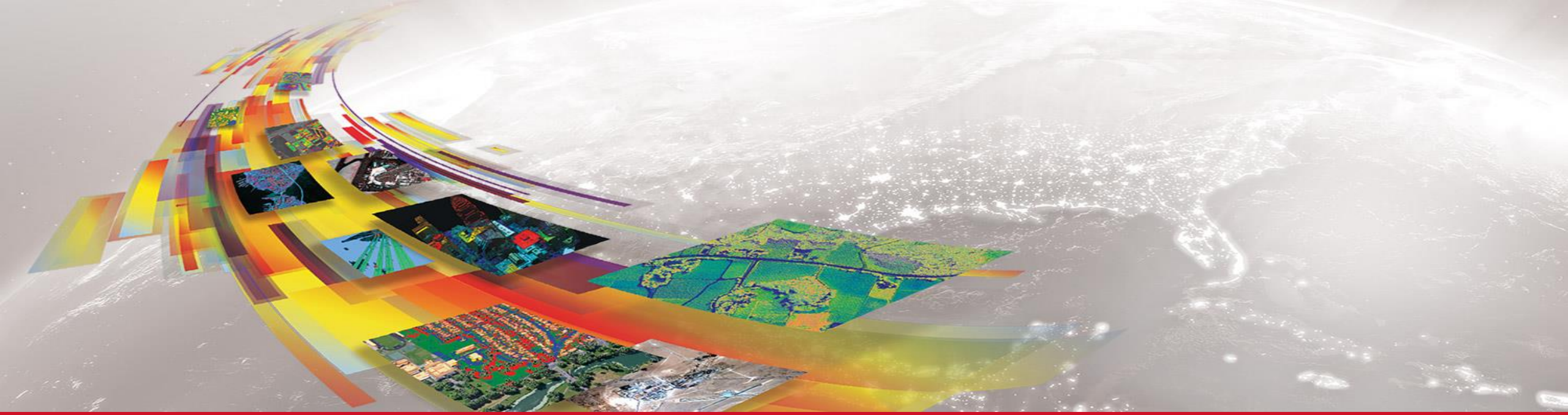


AIS SOLUTIONS OF HARRIS

大川 満二郎 / MITSUJIRO OKAWA

Harris Geospatial株式会社

Harris Geospatial Solutions K.K.

17 April 2019

HARRIS® TECHNOLOGY TO CONNECT, INFORM AND PROTECT™

Harris Corporation

Advanced technologies for customers whose missions are vital to the world's safety and security

Technology innovator with industry leading commitment to research and development

Agile, commercial mindset to meet the most demanding budgets and deadlines

---

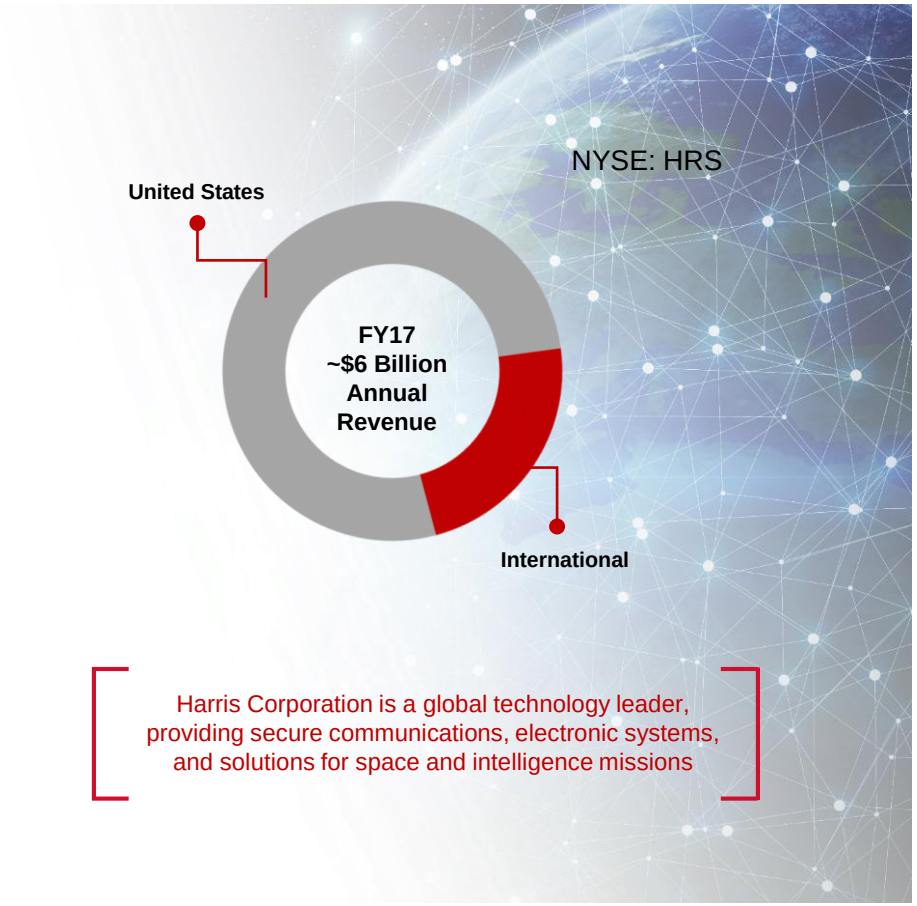
17,000 employees worldwide

7,700 engineers and scientists

Supports customers in more than 100 countries

Industry leading R&D investment

Leadership positions
Tactical Communications, Electronic Warfare, Avionics, Air Traffic Management, Space and Intelligence, and Weather Systems



Segment Overviews

Communication Systems $1.8B

航空管制および航空機ラジオ、ナイトビジョン、防衛および公安ネットワーク

Space and Intelligence Systems $2.3B

様々なセンサーおよびペイロードによる地球観測、天気、気象衛星、宇宙防衛およびインテリジェンス、それに関連する地上処理や情報解析

Electronic Systems $1.9B

電子兵器における豊富なソリューションラインアップ、航空電子機器、無線技術、C4I、海中システム、エアロストラクチャーズ

国内でのサービス

- Airborne Situational Awareness
- Information Exploitation
- Satellite Imaging
- Climate Monitoring
- GPS
- Night Vision

[Satellite Imaging]
地球観測衛星のセンサーを提供
- IKONOS, GeoEye-1, 2
- QuickBird, WorldView-1, 2, 3

[Climate Monitoring]
現在運用中の次世代気象衛星「ひまわり8号」、および「ひまわり9号」でHarris社製の画像センサーが採用中。またGOSAT2のTANSO-FTSもHarris製となります。

[GPS]
世界中で利用されているGPS衛星の搭載システムはHarris社製です。

Harris Geospatial株式会社

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email: sales_jp@harris.com

設立日：　2007年11月5日
株　　主：米国 Harris Geospatial Solutions, Inc. （100%）
代表取締役:　大川　満二郎

Automatic Identification System (AIS) Overview

- Automatic Identification System (AIS) is primarily a **collision avoidance system** for large class vessels

- Since 2004, the International Maritime Organization (IMO) has required AIS transponders to be aboard all vessels that exceed 300 gross tons

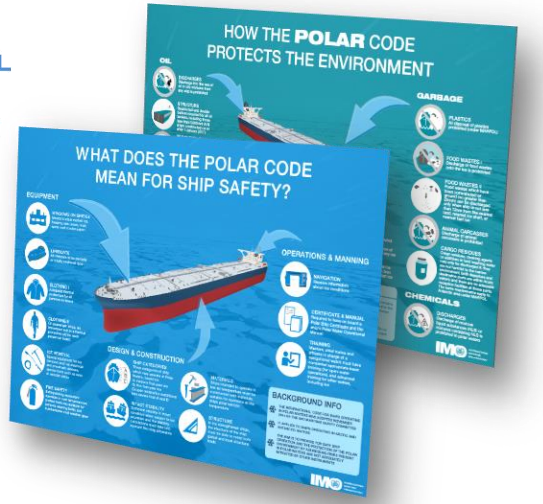
AIS one of the most successful maritime technology deployments of all time

With over 130,000 ships participating worldwide

The Polar Code

November 2014, the International Maritime Organization (IMO), adopted the "International Code for Ships Operating in Polar Waters"

IMO INTERNATIONAL MARITIME ORGANIZATION

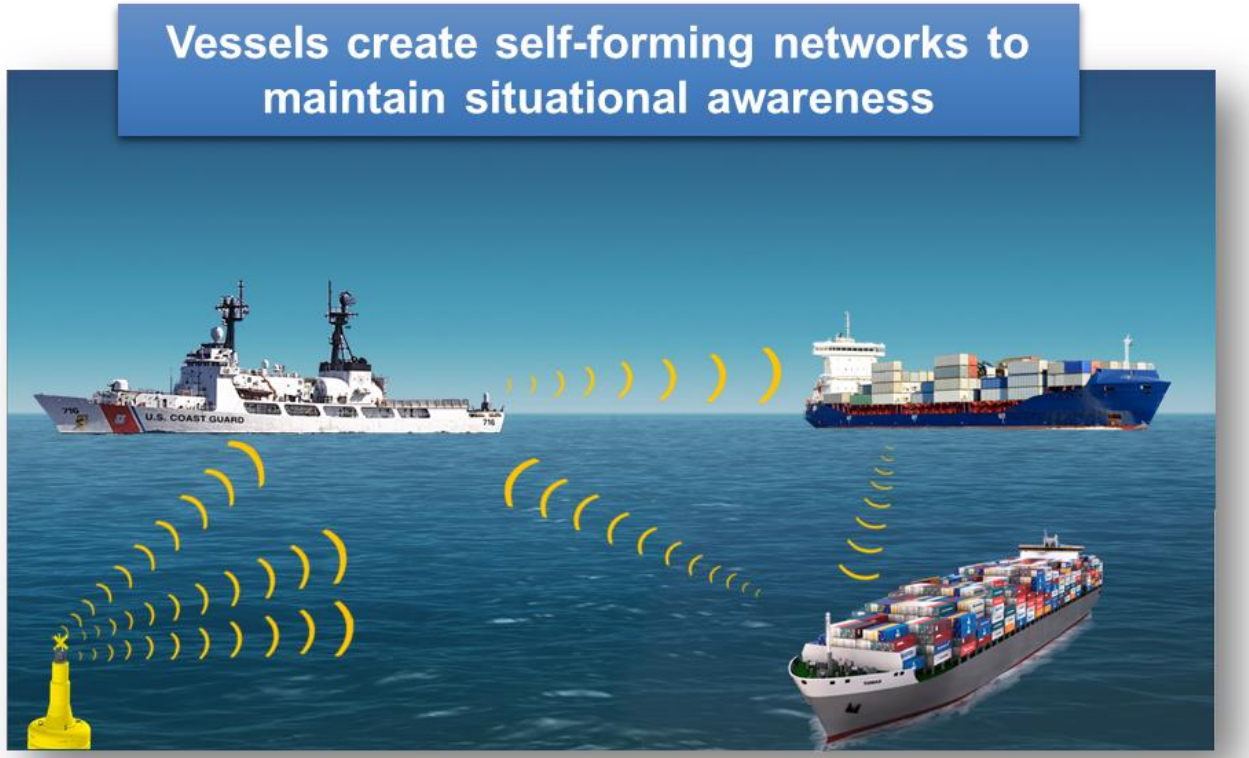


By 2017 all ships transiting in polar regions must be transmitting AIS

Automatic Identification System (AIS) Overview

Vessels Communicate AIS Messages within the VHF Maritime Band

Location, Destination, Draught, and more are broadcast




HARRIS
Has Joined forces with market leader
exactEarth
To Bring the Next Generation of
Real-time Satellite AIS Systems to the world
exactView™ RT
Powered By Harris Corporation
Premier Satellite AIS and Maritime Awareness Services

What can we see today?

exactEarth

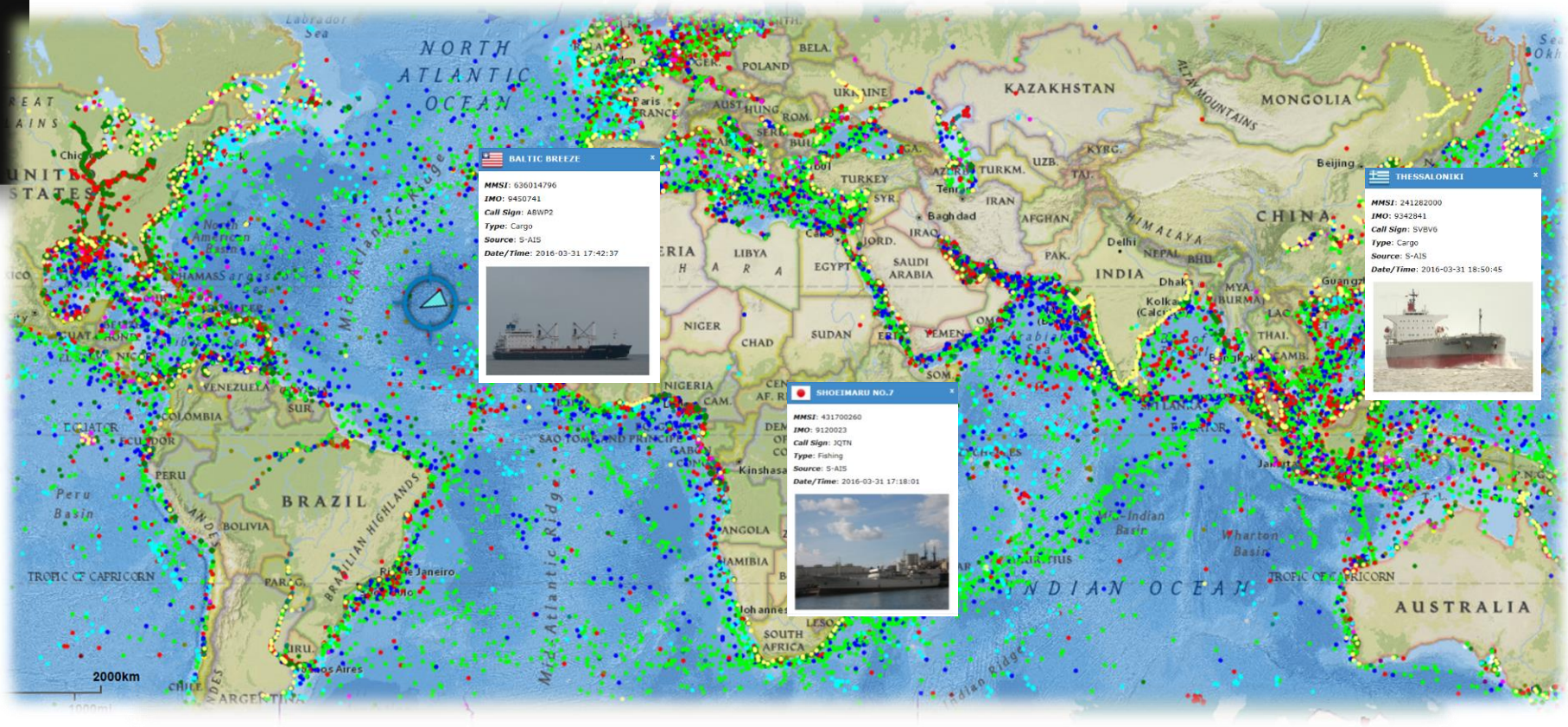
HARRIS

6.5 million
AIS position reports daily

<30
Minute Avg. global latency

53,000+
Unique vessels detected in space daily

Global Coverage with frequent revisits in the Arctic



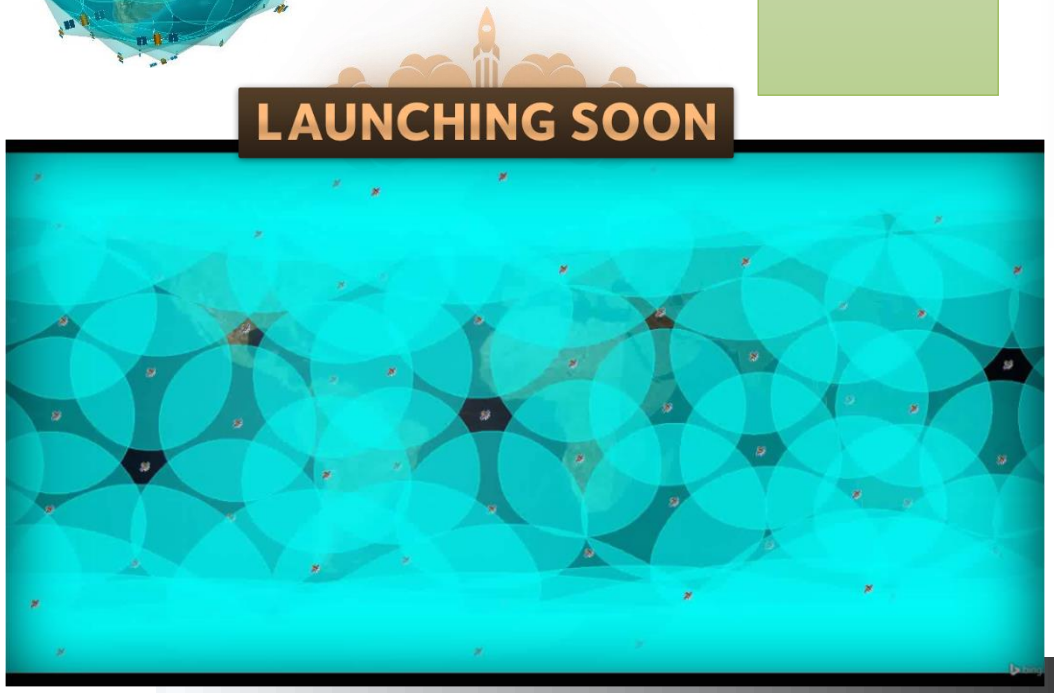
Base map visualization by esri

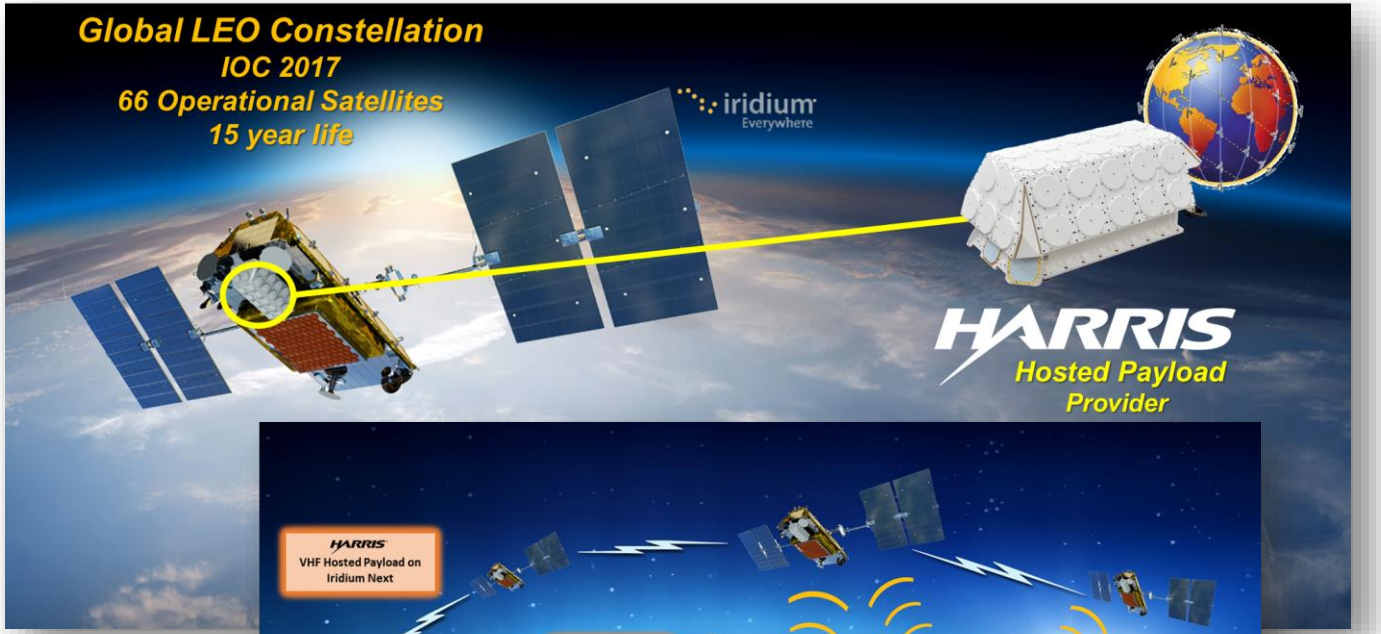
What are we doing enhance situational awareness?

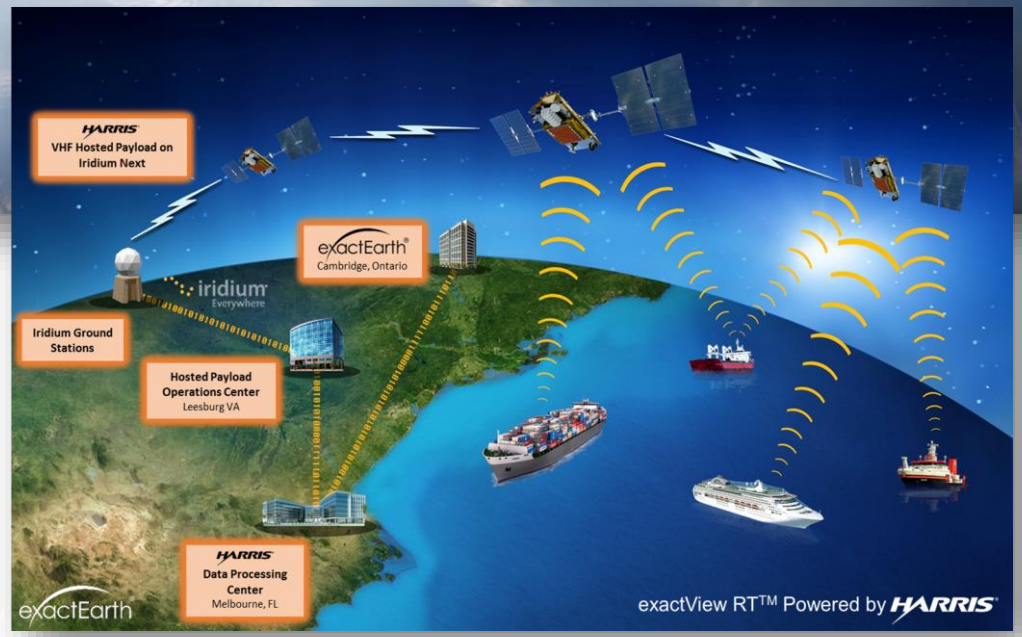
98%
of The Globe Under Persistent Coverage

3X-4X
Unique vessels detected every day

< 1
Minute Avg. global revisit



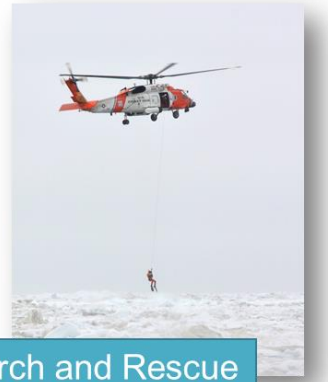




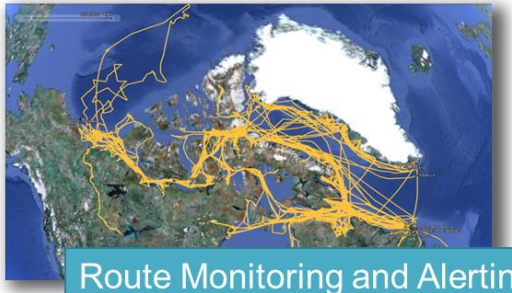
Reprogrammable VHF Constellation

The Value of **Persistent Real-Time Monitoring**

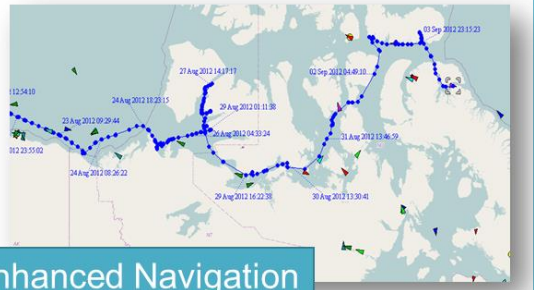
exactEarth



Search and Rescue



Route Monitoring and Alerting



Enhanced Navigation

- ✓ 継続的で漏れのない船舶の識別と追跡
- ✓ 海洋保護区（Marine Protected Area’）の持続的モニタリング
- ✓ 観光、海運などの目的で北極圏に進入する船舶の自動警告
- ✓ 船舶報告システムへの監視/コンプライアンス
- ✓ 高分解能での船舶追跡履歴
- ✓ 安全なナビゲーションを実施にするための様々なデータソースの提供（画像/レーダー/航空機ADS-B /天気/位置など）

Arctic Vessel Monitoring

Environmental Monitoring

MPA Monitoring

Providing Answers in Real Time

AIS is the foundation of Maritime Awareness

exactEarth

Maritime Security
Unusual / Illegal Behavior?

Search and Rescue
State of Emergency / Location?

Port Authority
Arrival Time?

Customs
Unusual Cargo or Behaviors?

One Ship, Many Questions

Insurer
Unnecessary risks or unplanned route?

Environmental Regulations
Emissions, Travel through protected waters?

Commodities Trader
Source and value of Cargo?

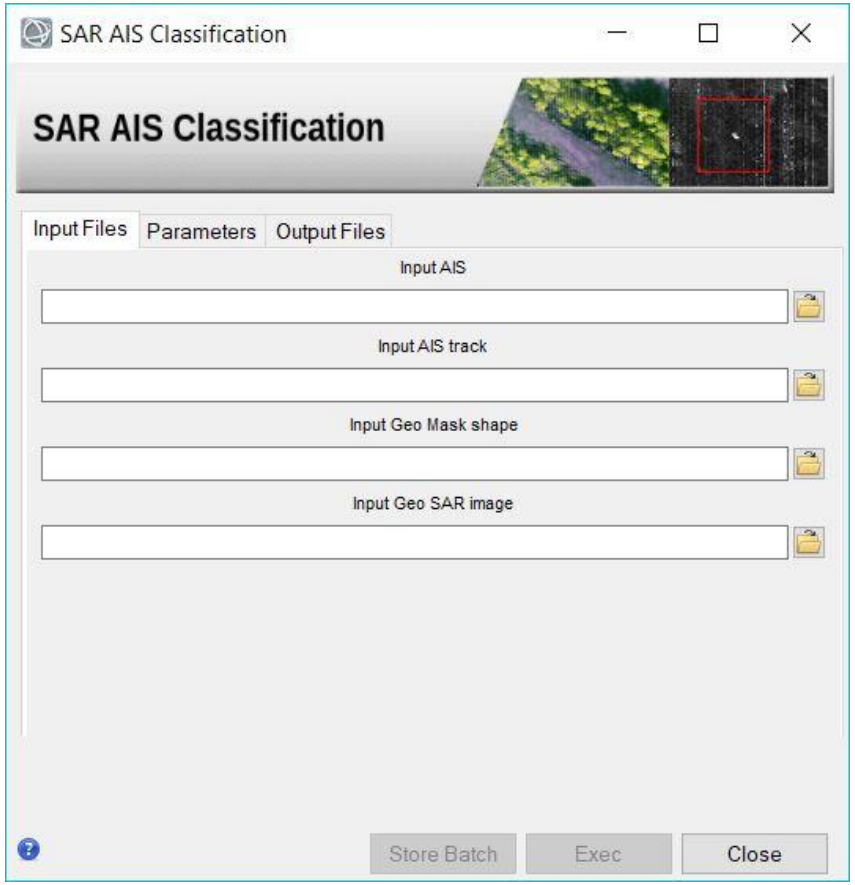
Ship Owner
Length of Journey/Ships Status/ final destination?

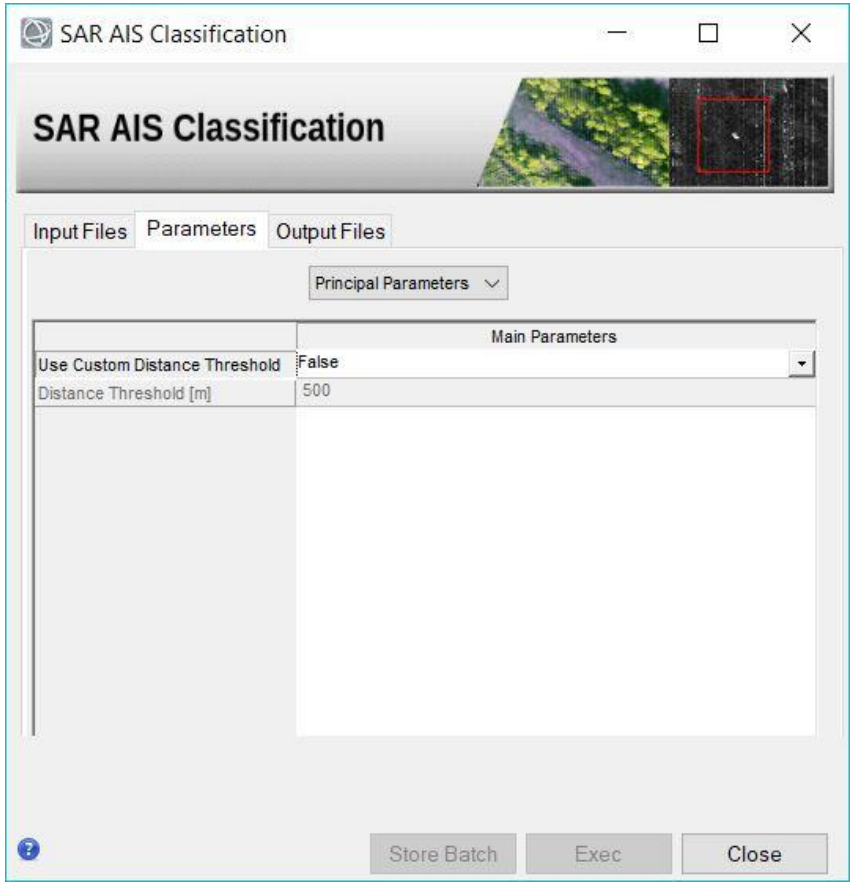
Harris Geospatial Solutions
日本法人取り扱いソリューション

- **SARscape**
  - ENVI用SAR（合成開口レーダ）解析処理オプション
  - AISデータの読み込み機能
- **ENVI**
  - リモセン用統合アプリケーション
  - 光学衛星データの表示、処理
  - SARscapeのプラットフォーム
- **ISE/ESE/GSF/Jagwire**
  - エンタープライズソリューション
  - ENVI、SARscapeのwebソリューションなど
- **IDL**
  - 配列指向型のプログラミング言語
  - ENVIなどの基になるテクノロジー

AISデータとSARデータの活用

SARscapeにAISデータを読み込ませ、SARデータで抽出した海上の対象物とAISデータをマッチング





ENVI Modeler

A visual programming tool to create custom task-based workflows in ENVI

Combines the power of the ENVI API with a simple and intuitive user interface

- Build workflows without any knowledge of ENVI programming

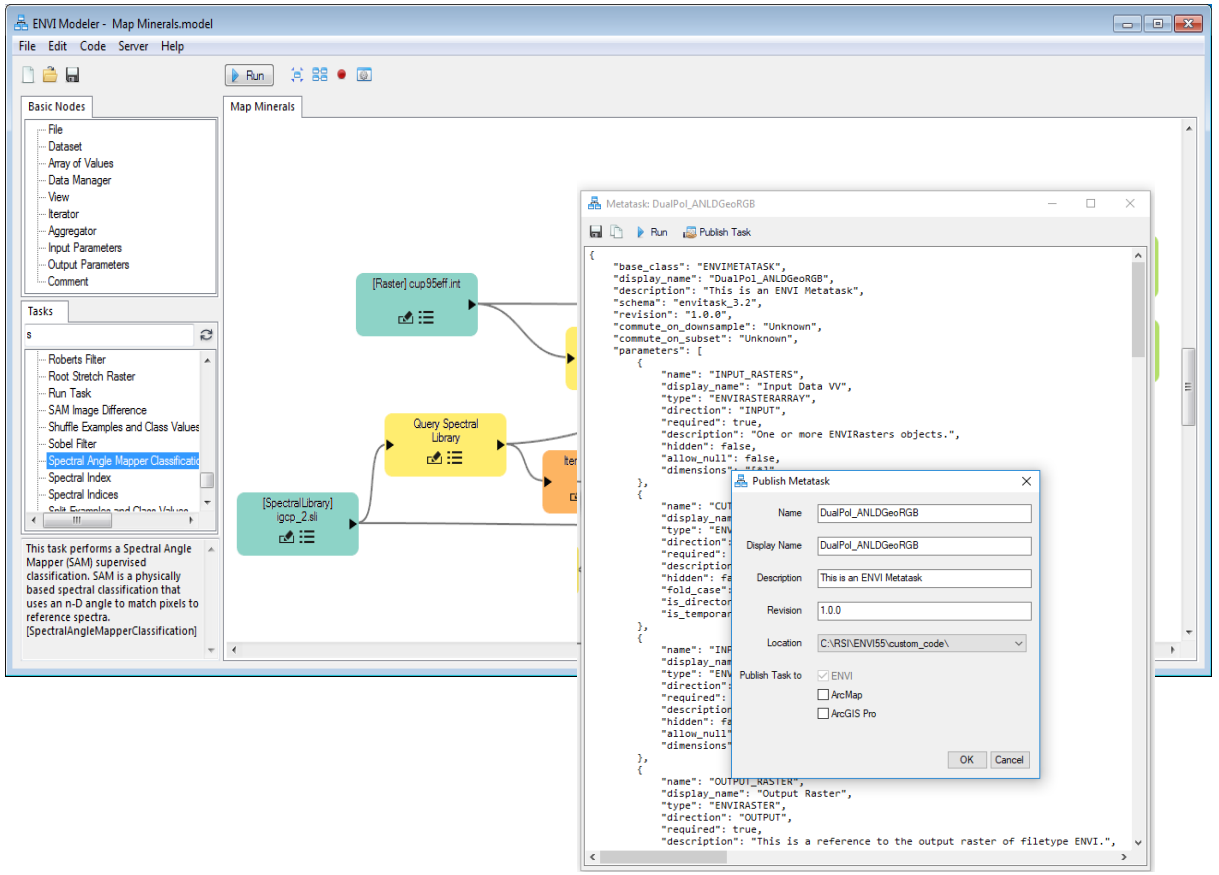
Batch-process data

Generate IDL and Python programs from models

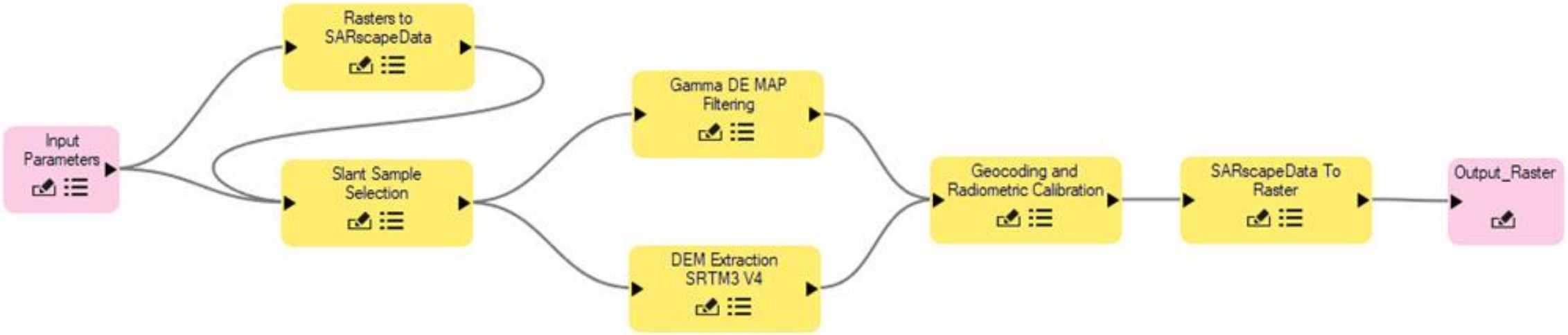
Deploy in desktop, enterprise and cloud environment:

Desktop (ENVI, ArcGIS Pro)

Enterprise (Geospatial Services Framework, ArcGIS Server)



And now…. SARscape in ENVI modeler!

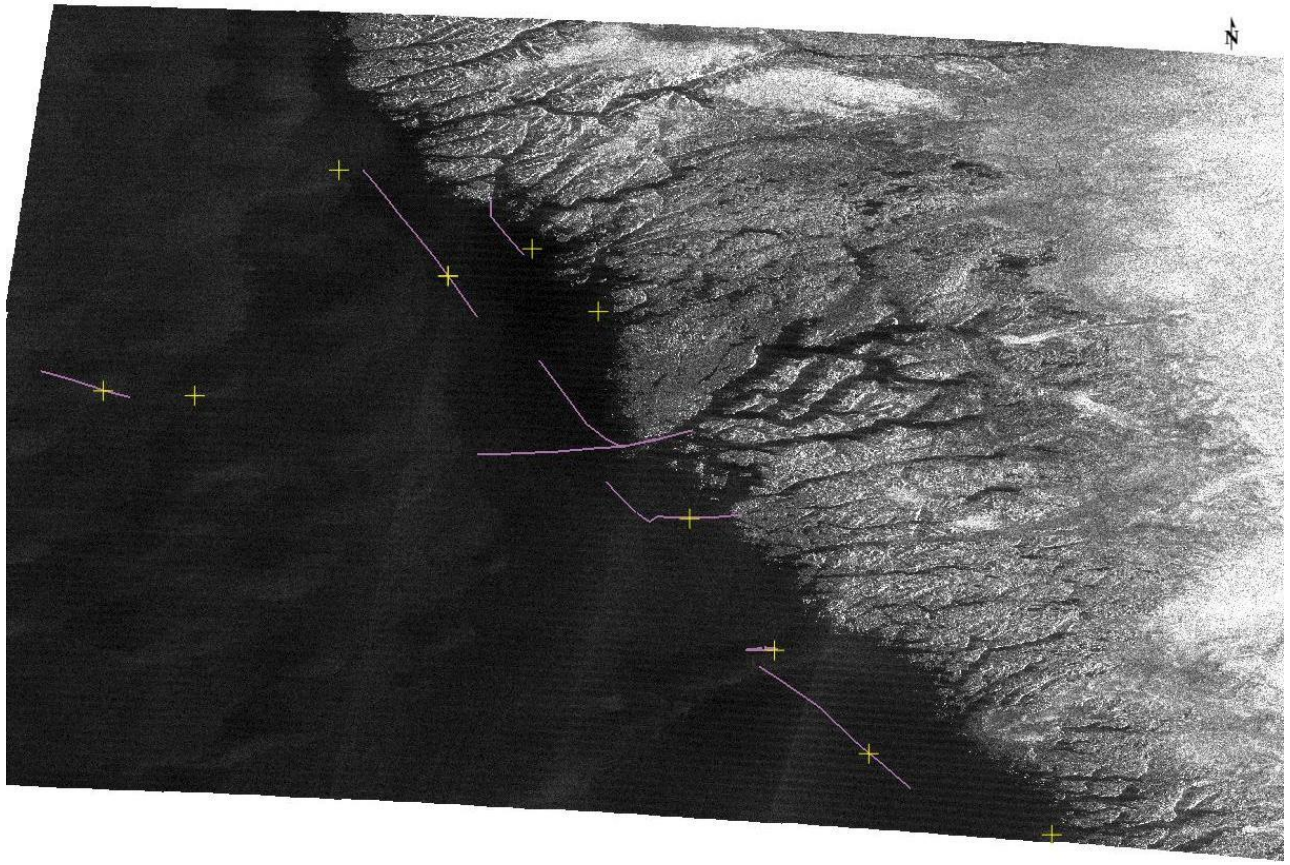


SAR & AIS match

SAR, detected ships and AIS data

+ SAR

- AIS



SAR & AIS match

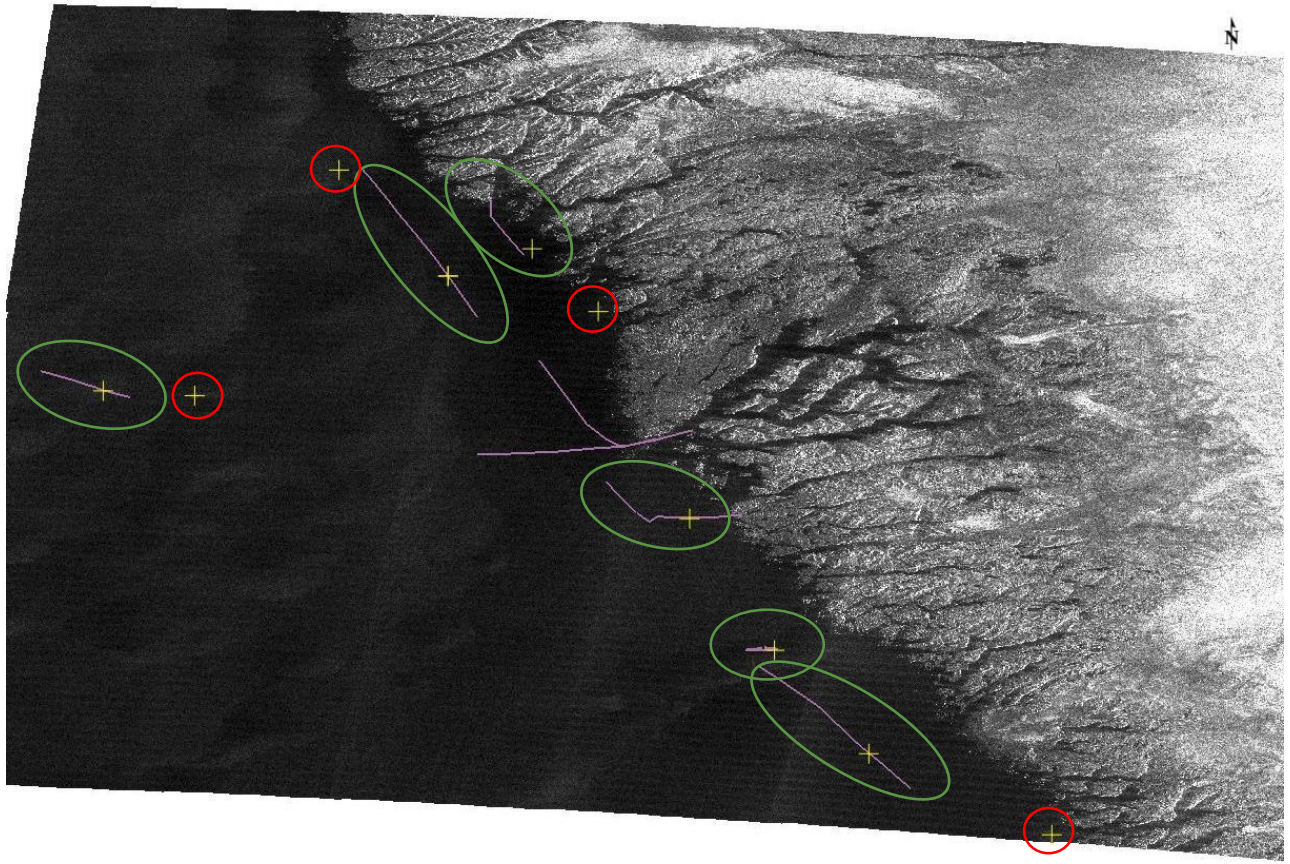
SAR, detected ships and AIS data

+ SAR

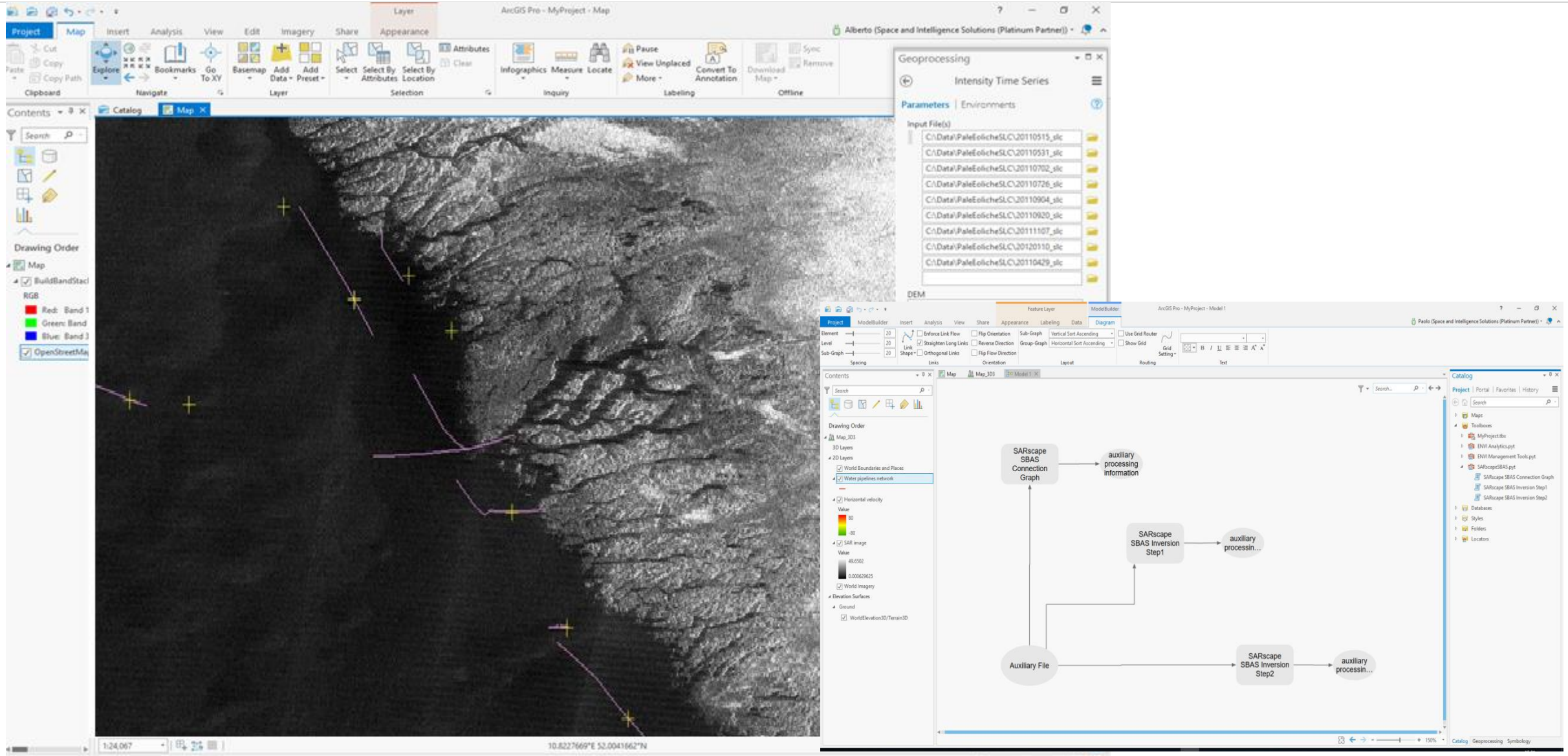
- AIS

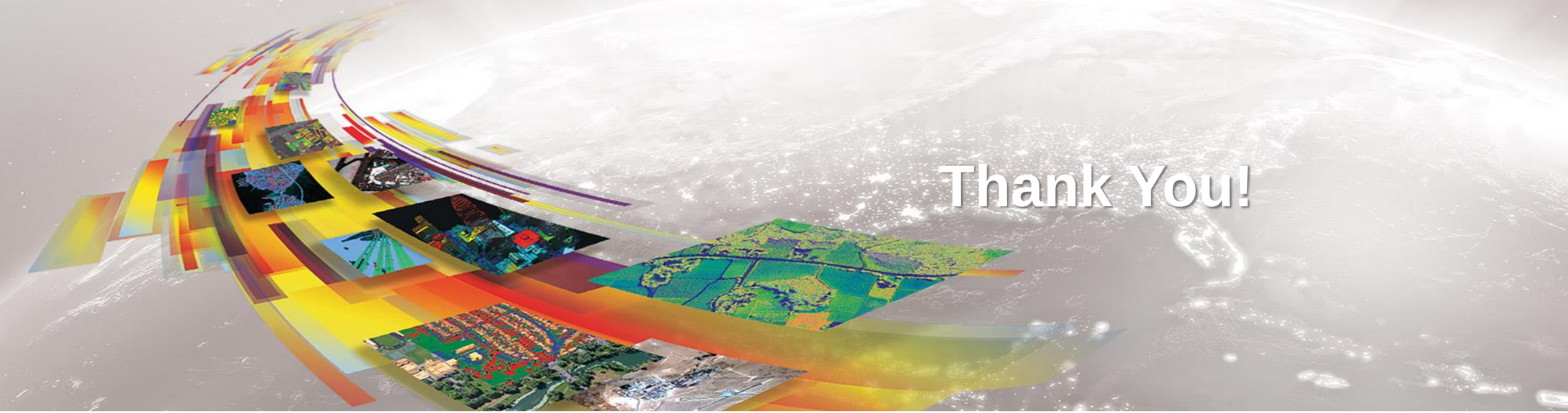
- Match

- ??????



SARscape in ArcGIS Pro





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