

A sunset over the ocean with a bright sun low on the horizon, casting a golden glow over the water. The sun is a bright white circle surrounded by a yellow and orange halo. The sky transitions from a deep orange near the horizon to a lighter yellow at the top. The water in the foreground is dark with gentle ripples, reflecting the light from the sun.

# CIO+ Services

Enhancing Safety of Navigation with ENC overlays

Stavanger, Norway

16 – 18 August 2023

**ChartWorld**  
Group

# CIO+ Services

## Brief background...

CIO+ was launched nearly 5 years ago as a unique service from ChartWorld for automated plotting of T&P NtM information for the ChartWorld eGlobe G2 ECDIS.

Since then, it has grown and is now one of our most popular services...

**5** products:

- CIO+ T&P,
- CIO+ NAVAREA,
- CIO+ ENVIRONMENTAL
- CIO+ NoGo Areas
- CIO+ StayAway Areas

**4** major ECDIS manufacturers - ChartWorld, Furuno, JRC, Wartsila - support this service

Over **1500** customers

CIO+



# What is CIO+ StayAway?

- StayAway is a cutting-edge solution designed to revolutionize navigation safety for mariners and vessels worldwide.
- StayAway's primary goal is to reduce navigation risks by making uncharted shoals and underwater obstructions visible to mariners.



StayAway addresses the challenge of inadequate or outdated ENC data by providing digitized information on the precise location and extent of uncharted shallow obstructions.

CIO+



# Leveraging Earth Observation Data

CATZOC distribution:  
low CATZOC values =>  
poor depth and  
position accuracy



Technical feasibility:  
water clarity and  
mapping potential



Vessel traffic:  
significant vessel traffic  
activities



StayAway  
Areas

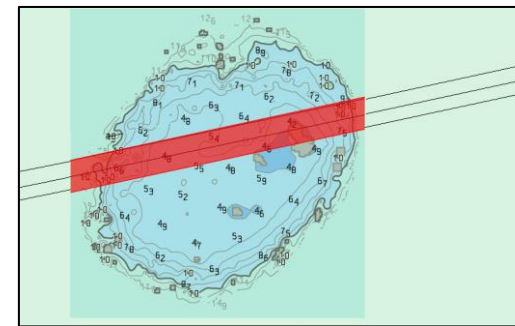
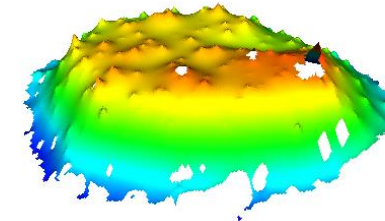
Selection of suitable multispectral satellite imagery of the area



Processing of satellite images to identify obstructions



Vectorize identified obstructions and create StayAway features



The vectorized data is then transformed into user-friendly ENC overlays, ensuring seamless integration into ECDIS



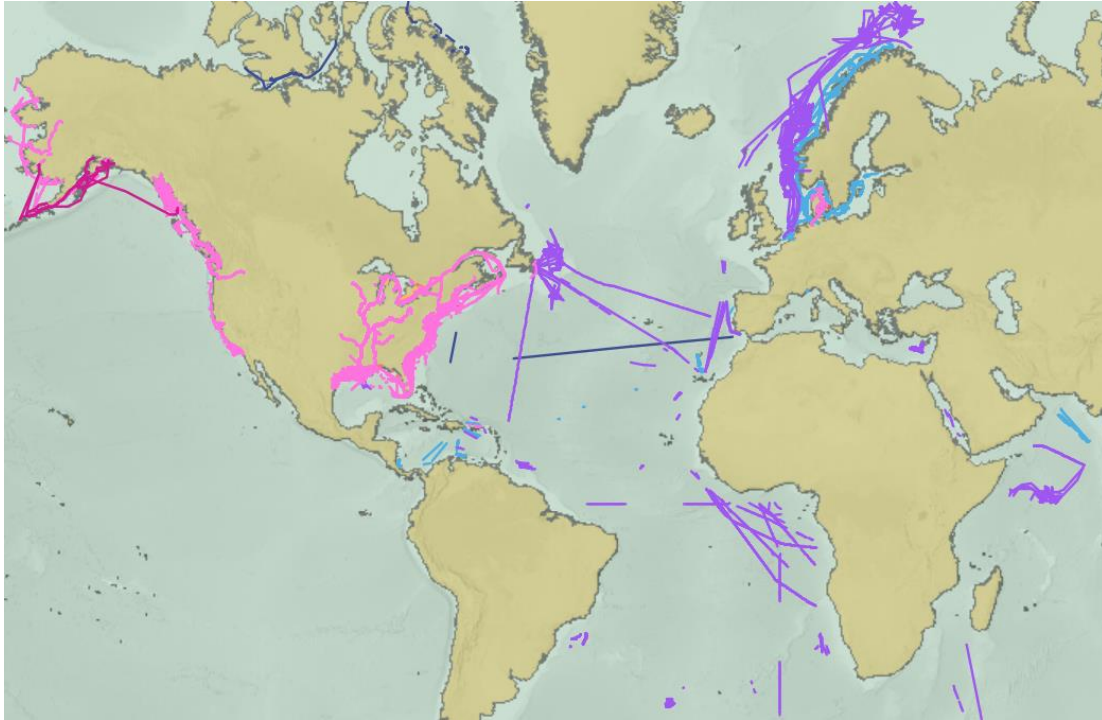
# Value Add of ENC Overlays

## Complementing Chart Data

- Overlays enhance ENCs by leveraging alternative data sources such as StayAway (SDB) to complement chart data in areas of limited data coverage.
- The integration of overlays enhances mariners' situational awareness by providing complementary chart data for improved navigational safety.



# CSB as ENC Overlays?



Presenting adequate CSB data as ENC overlays could potentially establish a strong use case of CSB in enhancing ENC chart coverage with bathymetric information in areas with limited coverage.

Just like with StayAway's approach, CSB data can be processed and transformed into ENC overlays to be displayed on an ECDIS for navigation.

## Replicating Existing Process

StayAway overlays sets a precedent for generating CSB overlays, making it a viable approach to harness CSB data to fill data gaps.



# Conclusion

In conclusion:

- Overlays have demonstrated their importance in enhancing ENC's and navigational safety when it comes to risk assessment.
- Overlays offer mariners a relatable and accessible solution that is user-friendly and convenient and vital to enhanced navigational safety.
- Overlays are non-official data but share common attributes with the S-100 model, allowing display and interoperability of data from various sources on ENC's.
- StayAway Overlays set a precedence for CSB towards a potential use case in the form of overlays.

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A Game-Changer in Navigation Safety

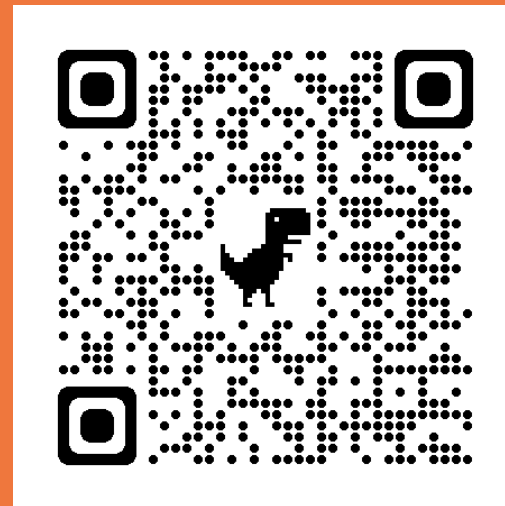


Thank you!

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