

The Next Generation of Precision Navigation: Products and Services to Support Real Time Decision-making for Coastal Marine Transportation

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Precision Navigation

The ability of a vessel to safely and efficiently navigate and operate in close proximity to the seafloor, narrow channels, and other hazards.





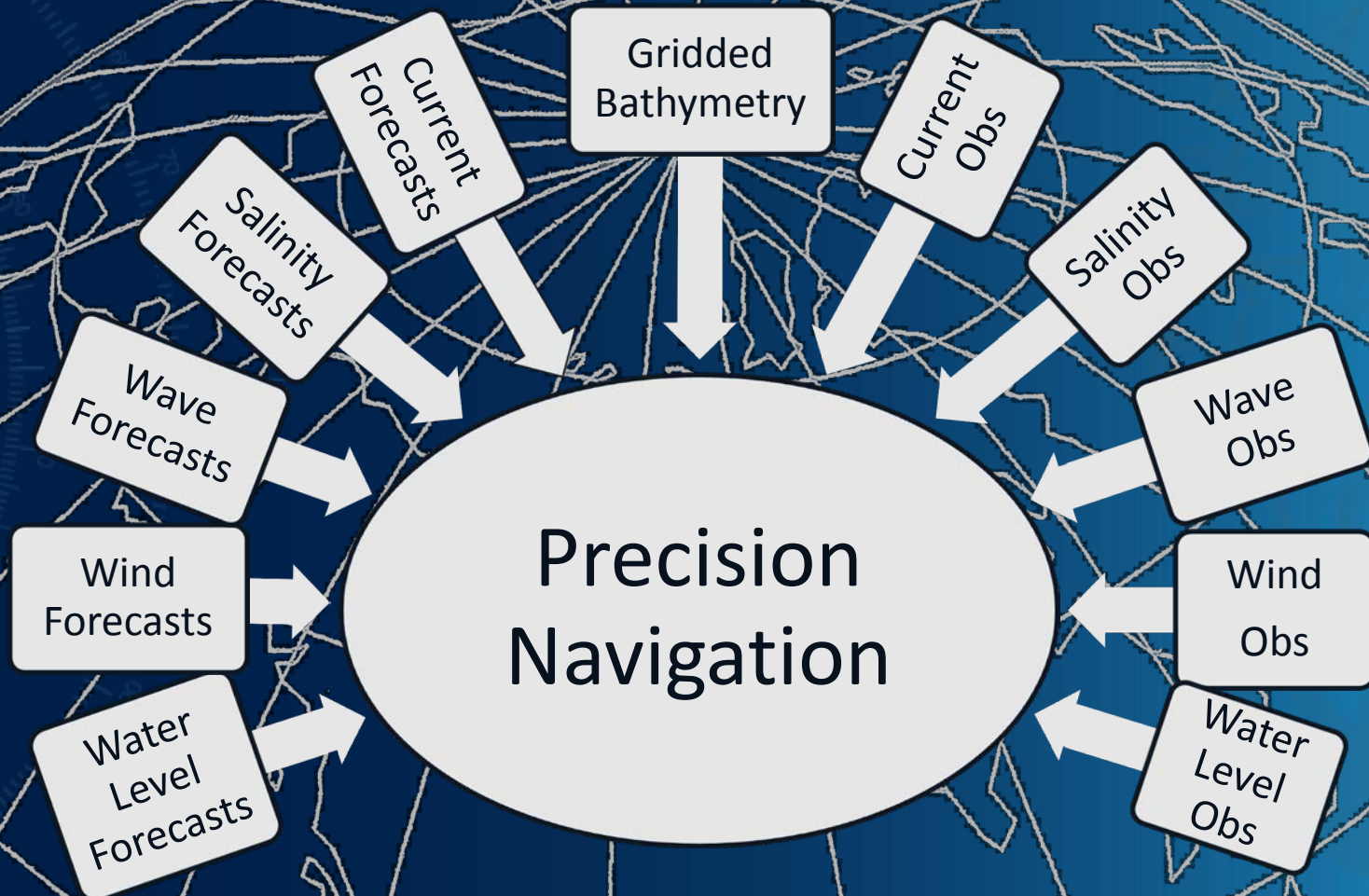
Goals of Precision Navigation

- Enable 24x7 Port Operations
- Increase the efficient flow of marine commerce
- Increase the safety of marine transportation
 - Decrease collisions
 - Decrease groundings
 - Decrease allisions (collisions with bridges/other fixed objects)
- Protect the environment from the damaging effects of marine catastrophes.
- Improve community resilience



Integrated Data for Better Decisions

National Spatial
Reference System



Port of LA/Long Beach Project

Challenge

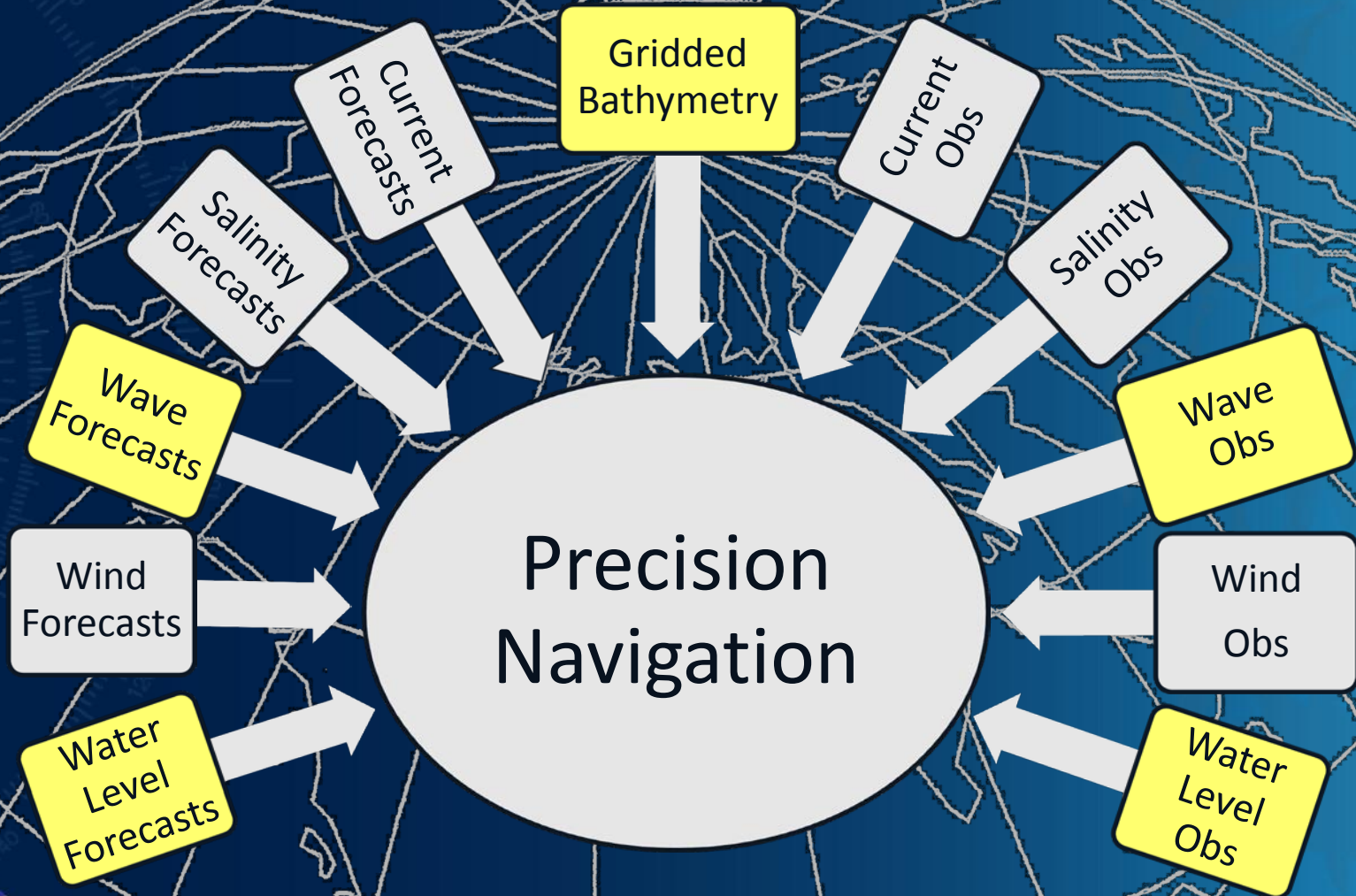
- Very large tankers enter the Port of Long Beach
- How we can reduce the risk they touch bottom?

SHIP MOTION DUE TO OCEAN SWELLS



Long Beach Precision Navigation Data

National Spatial
Reference System



LA/Long Beach – Precision Navigation Tool

NOAA/OCS Port of LA/Long Beach Precision Navigation Tool Demo

[More Info](#) [Contact Us](#)

Precision Navigation Tool Demo
** EXPERIMENTAL **

Precision Navigation Tool Demo

[Layer Menu](#) [Legend](#)

Menu

LA/Long Beach (9410660) Water Level:

Water Level: 3.002 feet from MLLW

Valid Time: 7/27/2015 9:18 AM EDT

Vessel Specifications

Vessel Draft: 72 Feet

Bathy View Selector

View Ramp: One Meter

ECDIS Parameters

Color Scheme: DAY_WHITEBACK

Layers

- ☒ Under Keel Clearance
- ☒ Waypoints
- ☒ NOAA Electronic Navigational Charts
 - ☒ Information about the chart display
 - ☒ Natural and man-made features, port features
- ☒ Depths, currents, etc
- ☒ Seabed, obstructions, pipelines
- ☒ Traffic routes
- ☒ Special areas
- ☒ Buoys, beacons, lights, fog signals, radar
- ☒ Services and small craft facilities

Display Time: Mon, Jul 27, 2015 9:16 am (EDT)

Time Control

7/27 9:16 am (EDT)

Present 7/27 9:30 am 7/27 9:42 am 7/27 10:06 am 7/27 10:24 am 7/27 10:42 am 7/27 11:00 am 7/27 12:06 pm 7/27 1:36 pm 7/27 3:06 pm 7/27 4:36 pm 7/27 6:06 pm 7/27 7:36 pm 7/27 9:06 pm 7/27 10:36 pm 7/28 1:06 am 7/28 4:06 am 7/28 7:06 am

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NOAA's NATIONAL OCEAN SERVICE

POSITIONING AMERICA FOR THE FUTURE

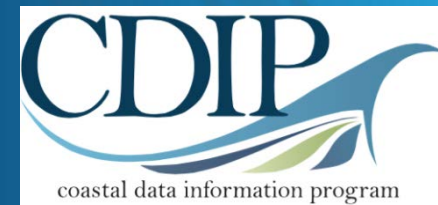
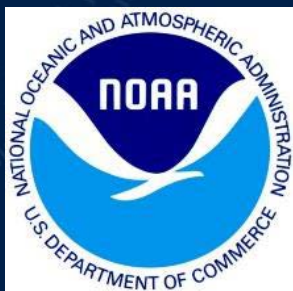
Who is Involved

Stakeholders



& PIER 121 USERS

Partners providing critical observation/geospatial information



LA/Long Beach – Lessons Learned

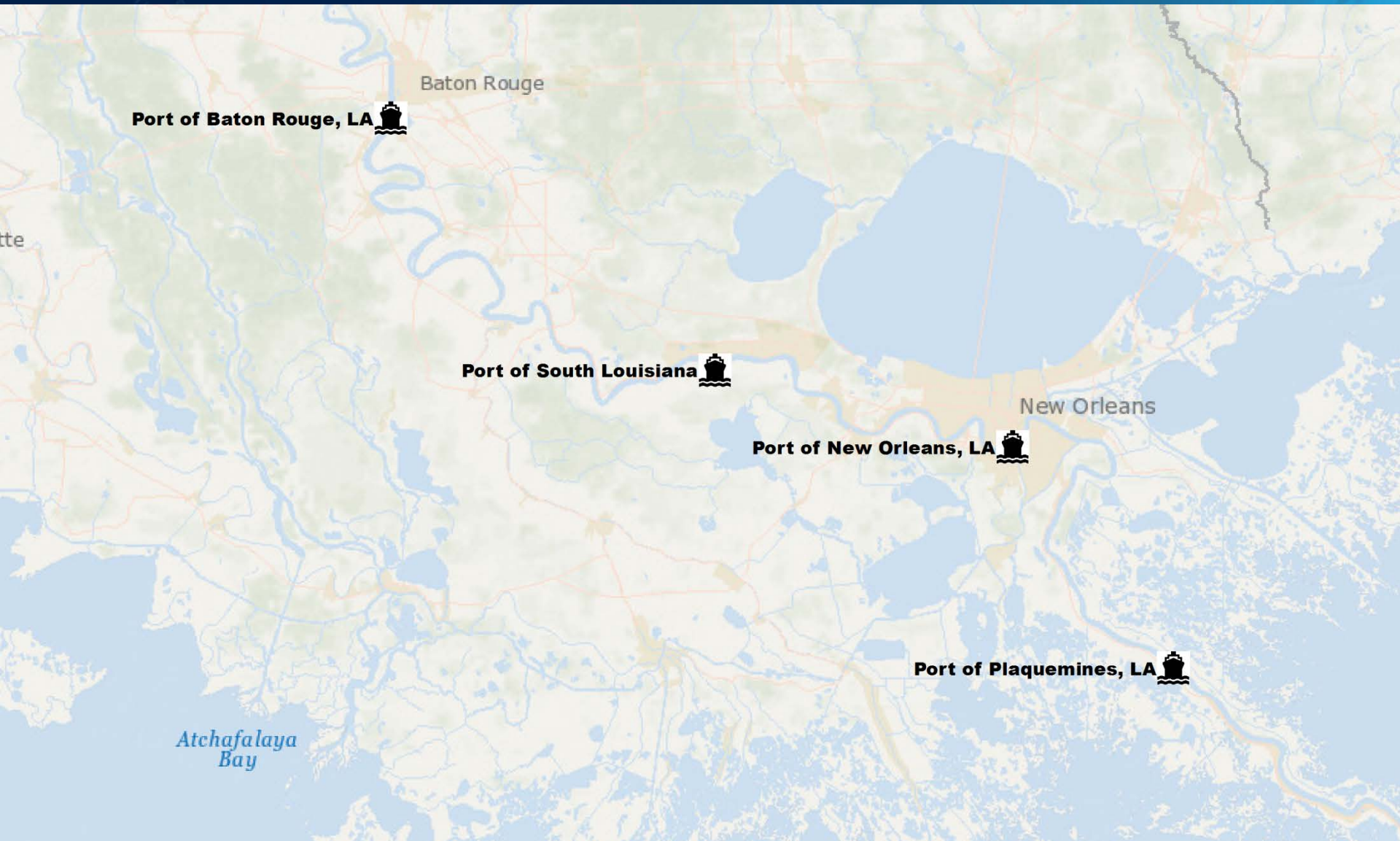
- Precision Navigation needs for an area vary
- Similar needs will exist in other areas but will require both national as well as tailored solutions
- Need to identify gaps as well as specialized needs in partnership with RAs and others
- Need to integrate data streams and improve delivery of them
- Need a systematic approach to soliciting precision navigation needs for other areas



Where to next?



Mississippi River Ports and Delta



Who are the Precision Navigation Customers?

Starting in the Gulf of Mexico

- Mariners
- Port operators
- Pilots
- Commercial shipping companies/agents



Issues on the Mississippi River

- Today's charts are not meeting the needs of today's mariners (higher resolution, with real-time overlays)
- There are low under-keel clearances on the river.
- Waves dominate in the approaches during winter storms.
- Currents are problems in bends and entrance to SW Pass.
- Air gaps on bridges are tight and getting tighter.
- Better water level forecasts are needed.
- Water levels are dominated by riverine discharge.
- Fog is a frequent problem.
- Diverse vertical datums need harmonization.
- Anchorages are crowded and fouled by revetments.



Benefits of addressing these issues

- Maximize loading at the port of departure to take economic advantage of shipping to port of arrival.
- Increase the planning and expanded use of anchorages for safe and efficient logistics.
- Allow ships to plan ahead for bridge clearance for smooth, safe port operations and fuel savings.

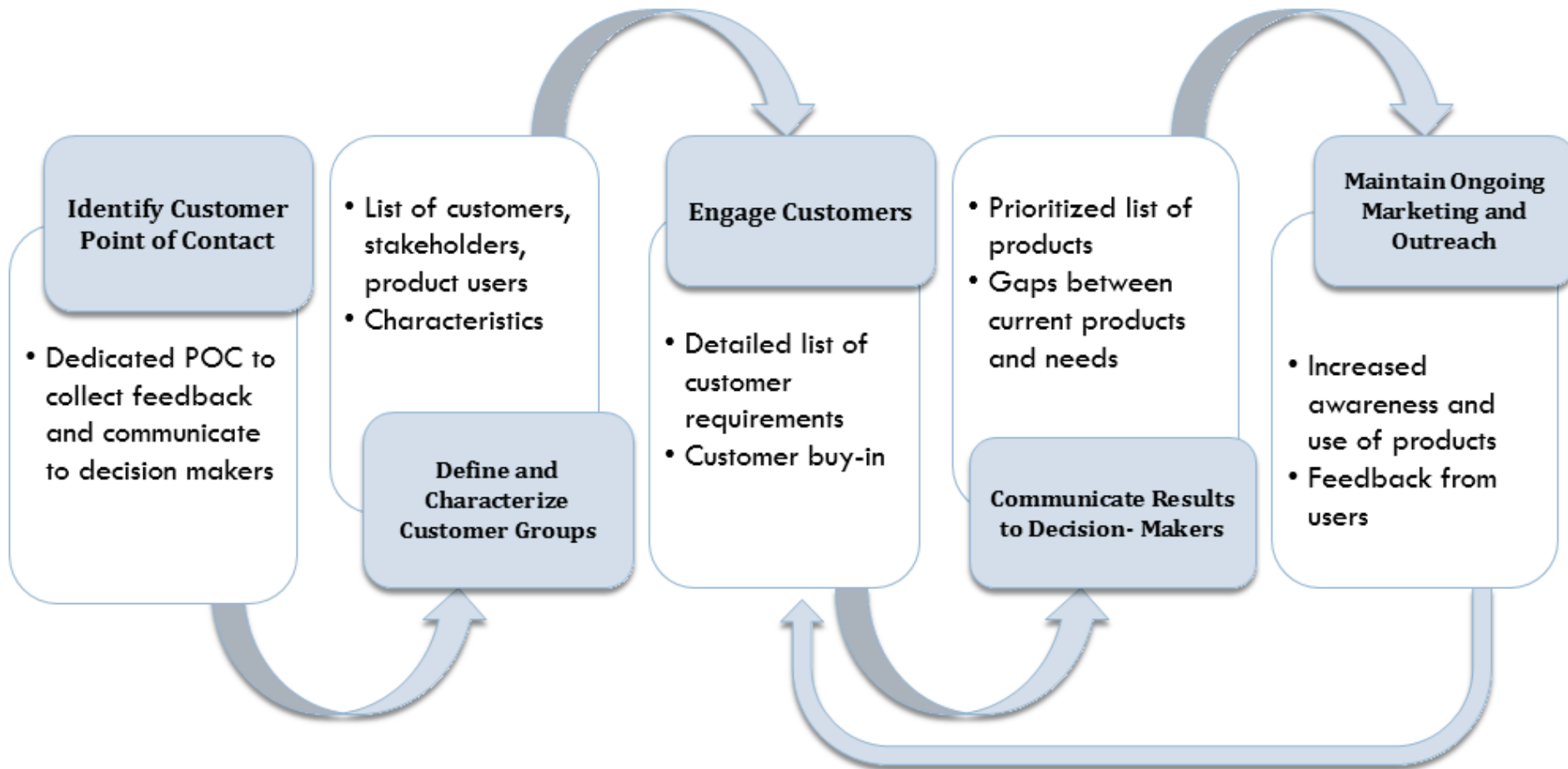


Example Responsive Products/Tools/Data

- Enhanced and integrated decision support tools
- Develop/expand risk reduction nowcast/forecast models
- Provide chart information in standard formats
 - Portable Pilot Units, iPads
 - Vessel Traffic Control Systems
- Advance chart of the future
 - ENC 2.0
 - Overlays (high resolution bathy, tides, currents, waves)
- Fill observation gaps to support the above



Customer Engagement Strategy



Next Steps

- Exchange regional contact information for NOAA (Nav Mngrs and others) and IOOS RAs
- Engage RAs in customer engagement strategy, starting with Gulf of Mexico
- Exchange information on precision navigation requirements
- Plan for future customer engagement elsewhere, clarify respective roles and responsibilities
- Other?



Thank You



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