

Marine Electronics 101

VIBS Woman's Day 2018



Pacific  Yacht Systems
marine electronics & electrical

design • installation • service • support

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Agenda



- Making sense of all your options
- A quick overview:
 - chartplotter/MFD, apps, depth sounder, radar, AIS, autopilot, camera
- Q&A

Selection Criteria



- Consider your boating preferences
 - Howe Sound vs. Inside Passage
- Start with what you have
- All-in-one vs. multiple displays
- Do you navigate from one or two helms
- Buttons vs. touchscreen or both



Other Considerations



- Feature-rich vs. simplicity
- iPad / Smartphone integration
- Electrical system capacity
- Brand specific advantages



Brand Specific Advantages



So many choices? Each one offers something different. Which brand is what?

- Garmin
- Simrad
- B&G
- Raymarine
- Furuno
- Lowrance

Chartplotter (MFD)



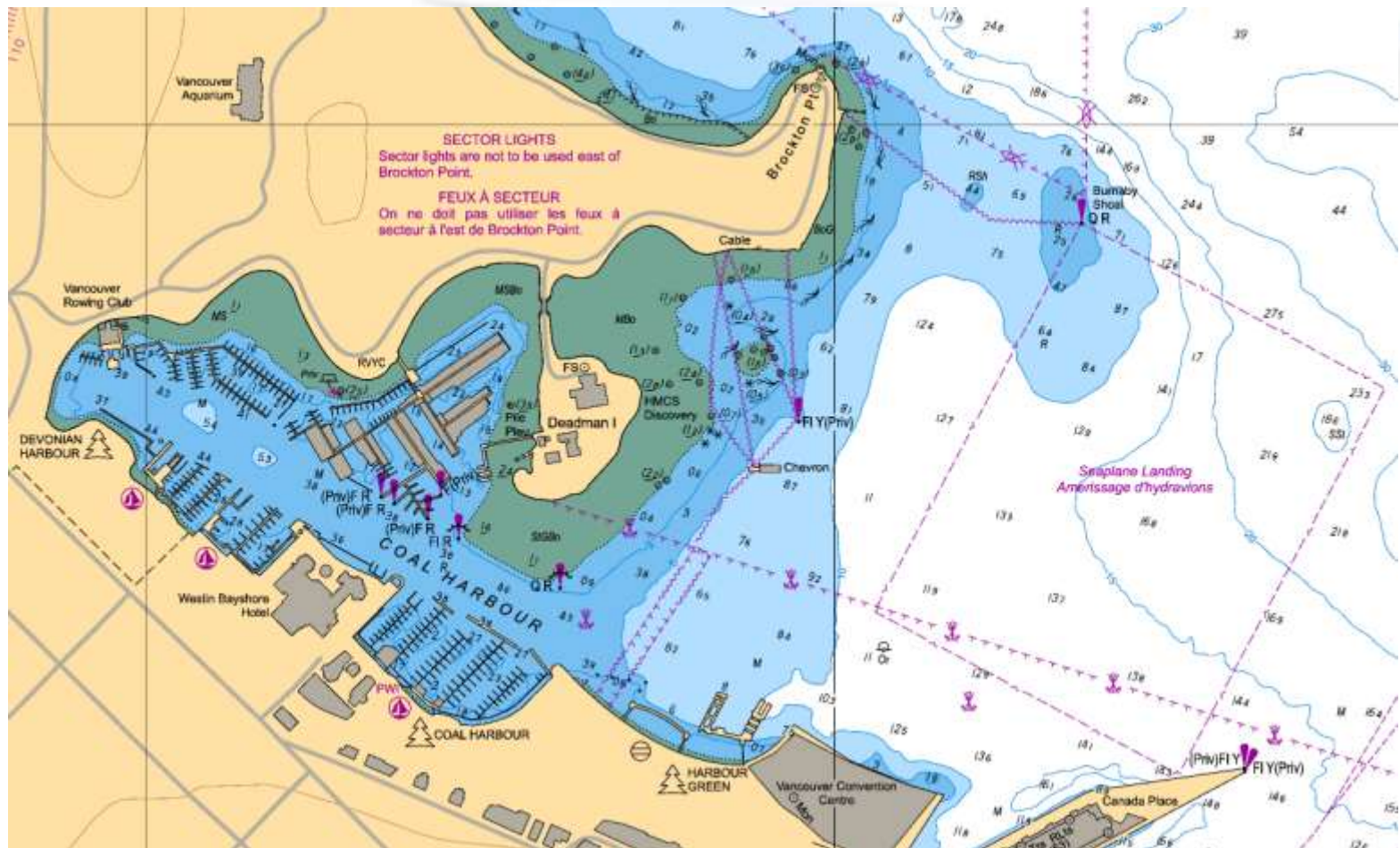
Some differentiators to consider:

- Chartplotter Only vs. Multi-Function Display (MFD)
- Vector chart vs Raster
 - Vector: Navionics vs. C-MAP
- Screen size?
- Buttons vs. touch-screen vs. “hybrid”

Vector Charts



Raster Charts






Apps for Navigation



- Considerations:
 - Not a replacement for a marine chartplotter
 - Great as a second helm or for the crew
 - Raster or Vector Charts?
 - Internet access required?
 - Many navigation apps are all-in-one and include weather, tides, current, sonar, AIS



Navigation Apps - List



	<p>Charts & Tides</p>	<p>Uses vector charts built in along with the ActiveCaptain Cruising Guidebook</p>	<p>PROS -all in one charts, no need to download individual charts</p> <p>CONS -free version comes with a world base map but you must purchase the detailed marine charts</p>
	<p>Garmin BlueChart Mobile</p>	<p>Uses vector charts, ActiveCaptain POI, search, routes, waypoints, GRIB weather conditions, dew points, temperatures, wind direction and speed, water temp, wave heights and period, celestial data, measuring feature, and real-time tracking</p>	<p>PROS -Built in weather features -Route-making abilities -wirelessly transfer routes to your Garmin networked chartplotter -Plan & view routes on iOS devices</p>
	<p>iNavx</p>	<p>Digital chart display that can also display AIS data for you on the marine charts within the app</p>	<p>PROS -supports AIS</p> <p>CONS - Requires an AIS receiver and a WiFi network</p>

Navigation App - List



	Marine Charts	<p>A complete chart plotter solution using NOAA charts</p>	<p>PROS</p> <ul style="list-style-type: none"> -charts are automatically updated every 7 days from NOAA servers -download ahead of time to use offline -includes real time weather <p>CONS</p> <ul style="list-style-type: none"> -subscription to premium weather is \$ 17.99 per month -3 day tides
	Navionics	<p>Includes Nautical Charts, SonarCharts™, Community Edits and 1 year of Chart Updates. Tracks, Routes, Distance, Markers, Wind Forecasts, Sync my Data, Photos & Videos and Sharing</p>	<p>PROS</p> <ul style="list-style-type: none"> -use to update your Raymarine plotter cards and SonarCharts -includes tide and currents -find fuel prices <p>CONS</p> <ul style="list-style-type: none"> -you can download the free version to try but then you have to purchase the charts -does not support AIS

Navigation App



Navionics

PROS

- Built in weather features
- Auto Routing
- Geo-tagged articles
- use to update your Raymarine plotter cards and SonarCharts
- includes tide and currents
- Wind forecasts
- Share your adventures using FB, Twitter or email

CONS

- Does not have AIS



Navigation App



Garmin BlueChart

- Plan & view routes on iOS devices
- wirelessly transfer routes

PROS

- Built in weather features
- Route-making abilities

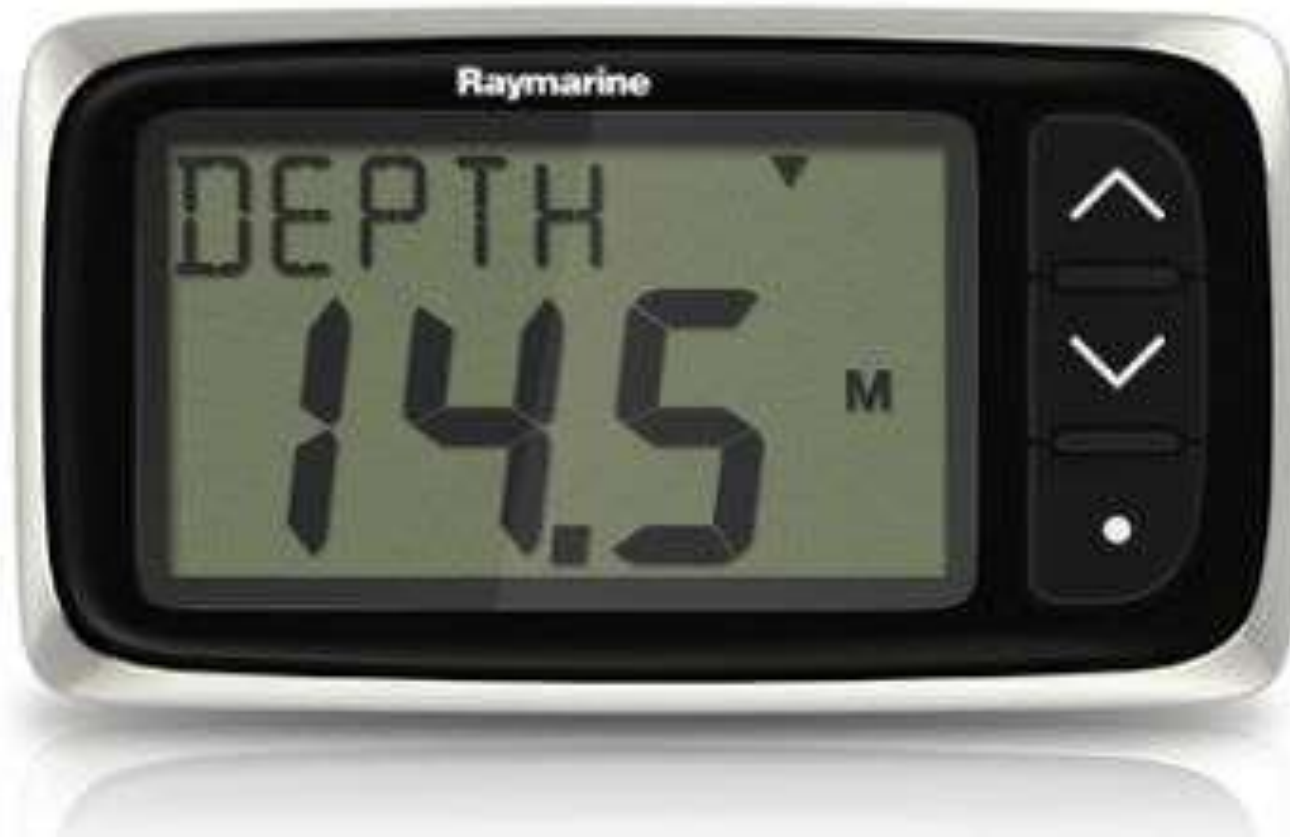


Sounders / Sonars / Fishfinder

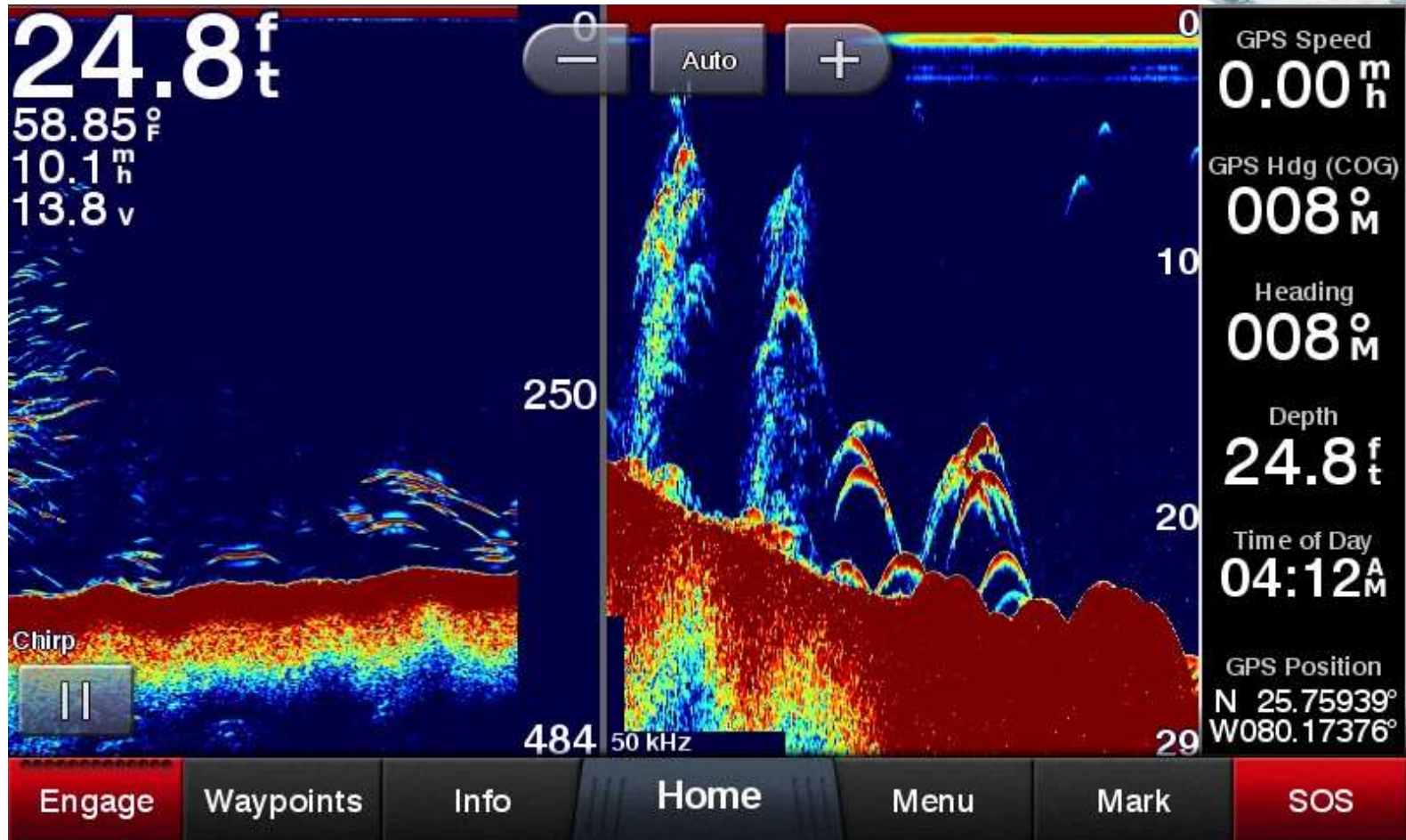


- Purpose:
 - Depth sounder or fish finder
- Options:
 - Thru-hull
 - In-hull
 - Transom-mount transducers

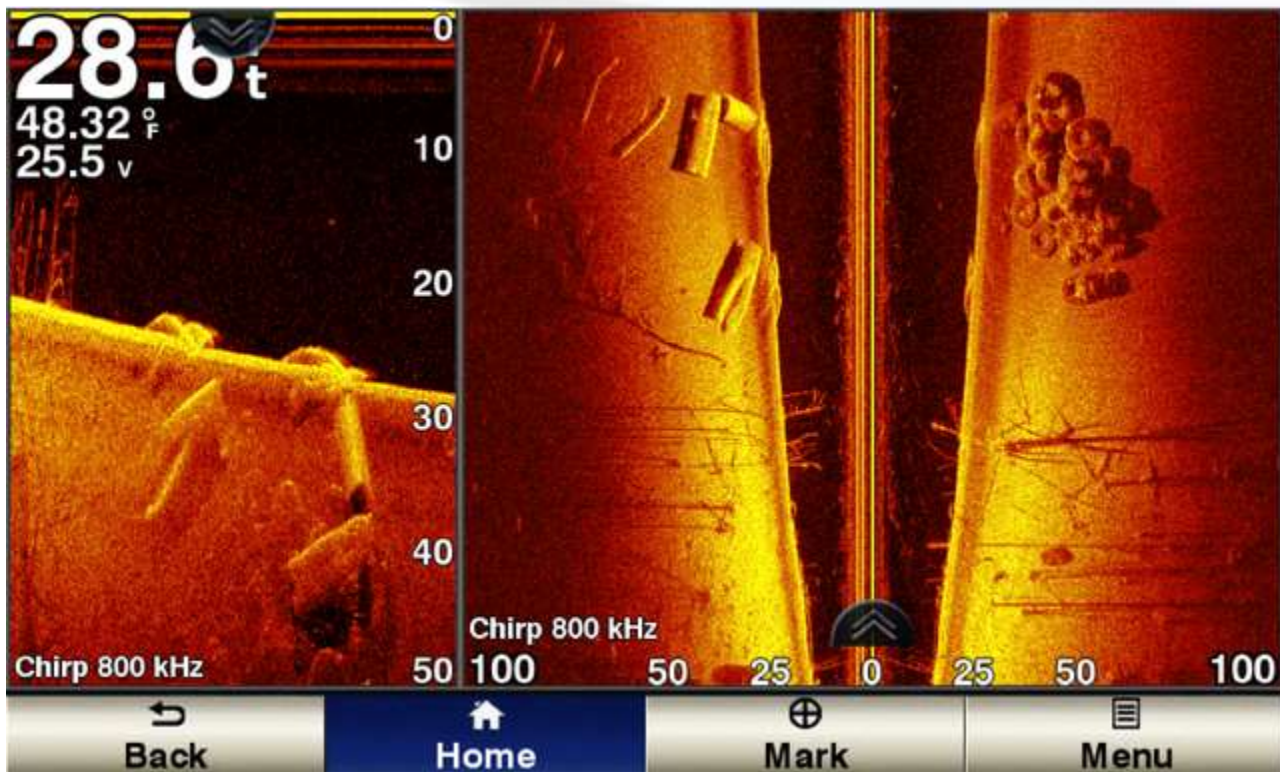
Depth Sounder



Traditional Sounder



SideVu & DownVu

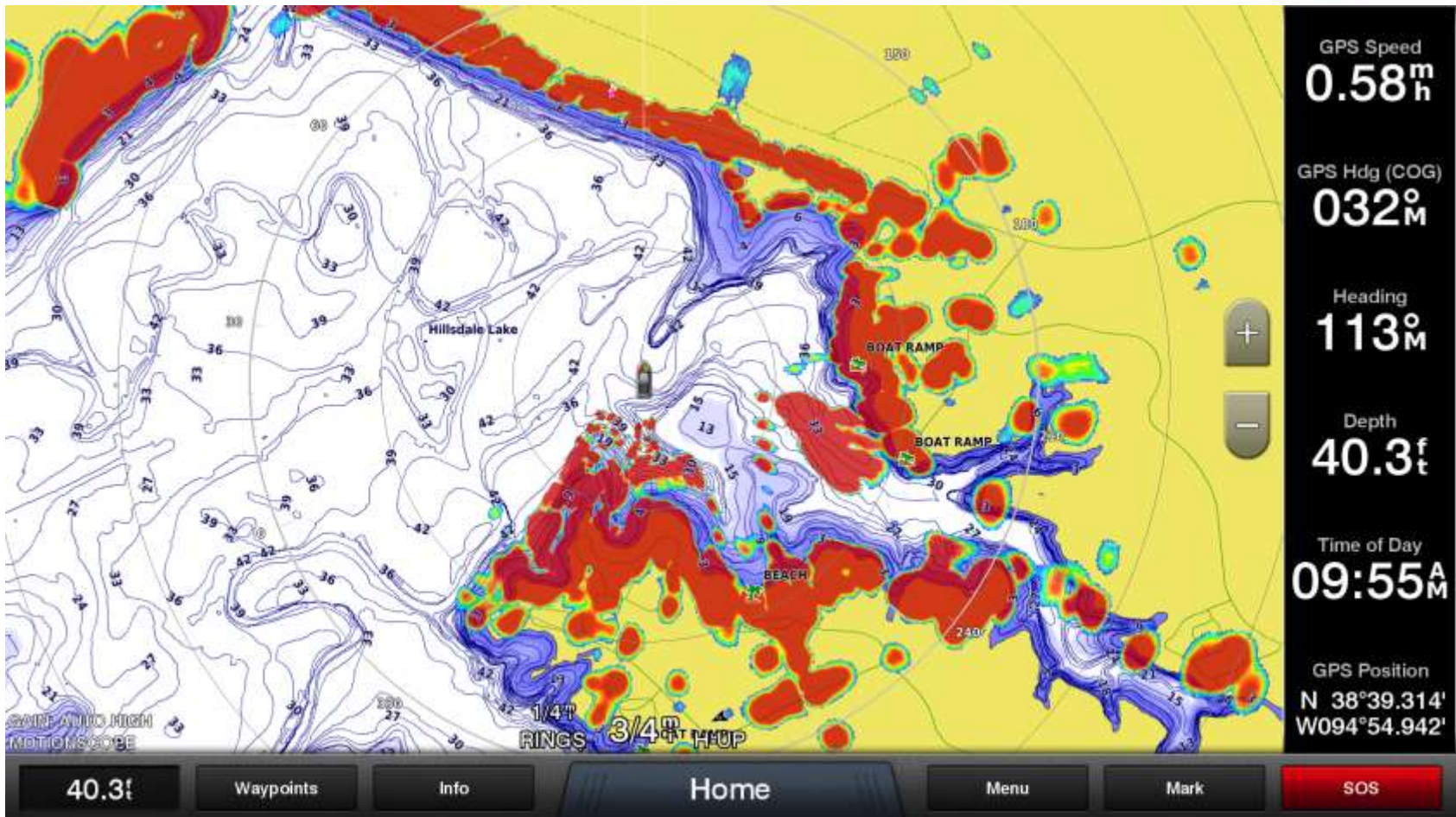


Why Radar?

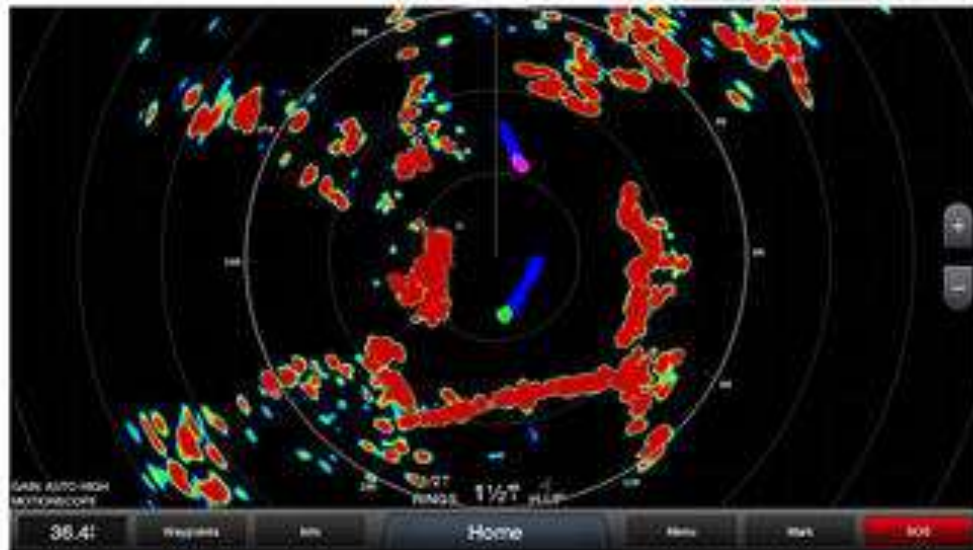


- Ability to “see” boats and land without your sight
 - Great for fog, night, and positional awareness
 - Track boat movements
- Line of sight only
 - Cannot see around corners
- Range Varies
 - 16 NM plus

Radar Overlay Image



Radome Radar



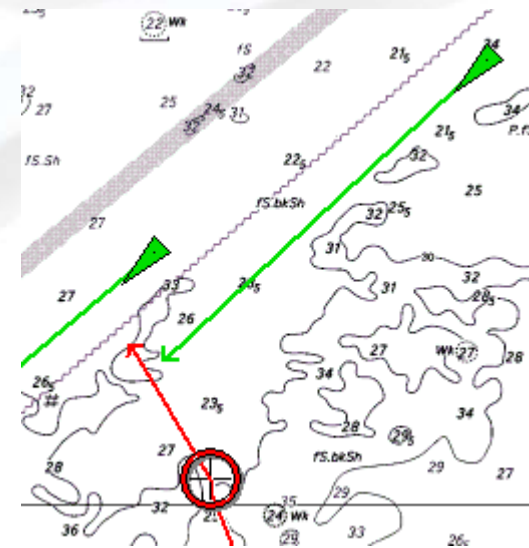
Open-Array Radar



AIS Fundamentals



- Purpose: Increase Vessel Safety ↔ Reduce VHF Traffic
 - Automatic Exchange of Navigation Information
 - Vessel to Vessel
 - Vessel to Shore
- Periodic Broadcasts of Vessel's Own Data
- Made Available to
 - All AIS-Equipped Vessel Operators
 - Shore-Based Traffic Control Operations



AIS Overlay over Chart

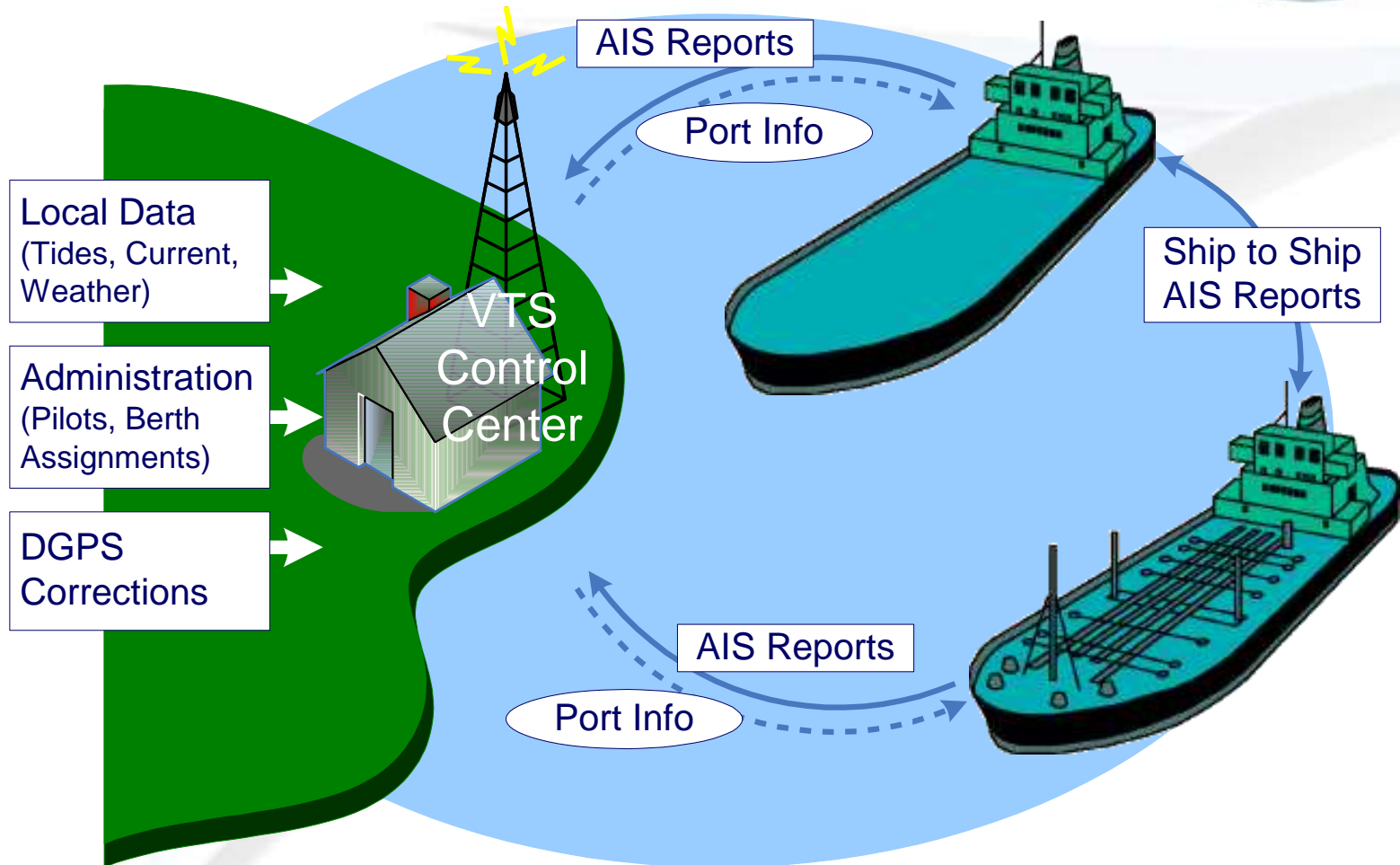


AIS Benefits



- Displays surrounding traffic
 - See local commercial traffic
 - Plan a narrow passage or bridge
 - Hail other vessel by name
- Receive-only vs transmit & receive
- Collision alarm

AIS Network



AIS Integration



Autopilot Benefits



- “2nd Hands” to steer boat
 - Steady track (save fuel)
 - Offset current and wind
 - Emergency help
- Steer boat to
 - Heading
 - Waypoint
 - Route

Hydraulic Autopilot



Wheel Autopilot



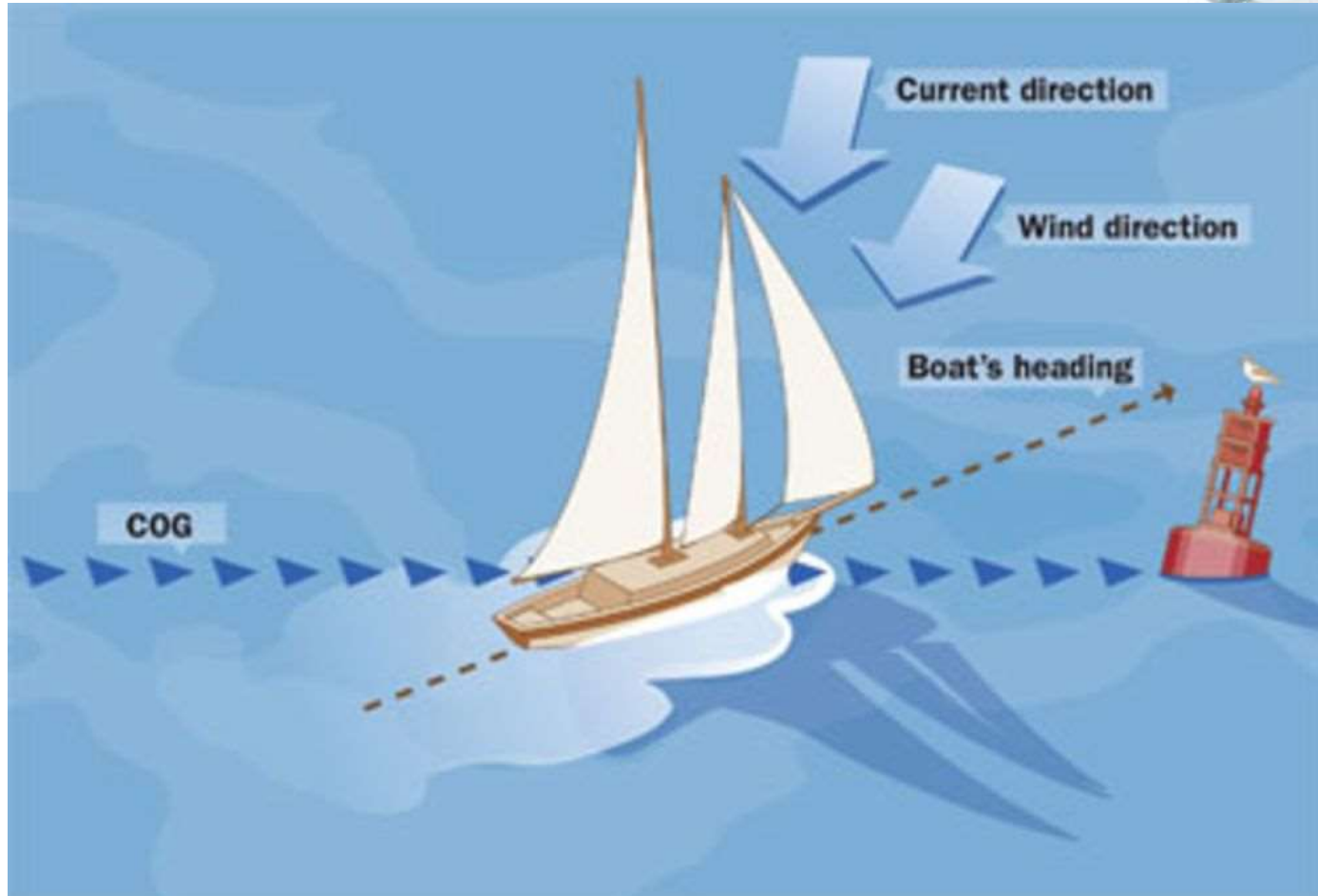
Autopilot to Heading



Autopilot to Waypoint



Autopilot Efficiency



Autopilot to Route



Home WPT Ves. 43°50' .532 N SOG 21.6 Kts COG 162° T Depth 37.3 ft Build Route X

Pos. 082°31' .493 W

5nm North-Up (Relative Motion)

Build Route

The suggested route passes close to areas where extra caution is advised when following. Check sections of the route that start and end with the caution symbol, for potential hazards.

OK

Use Wpt
Undo Wpt
Use Wpt List
Finish Build
Autorouting: On

Cameras



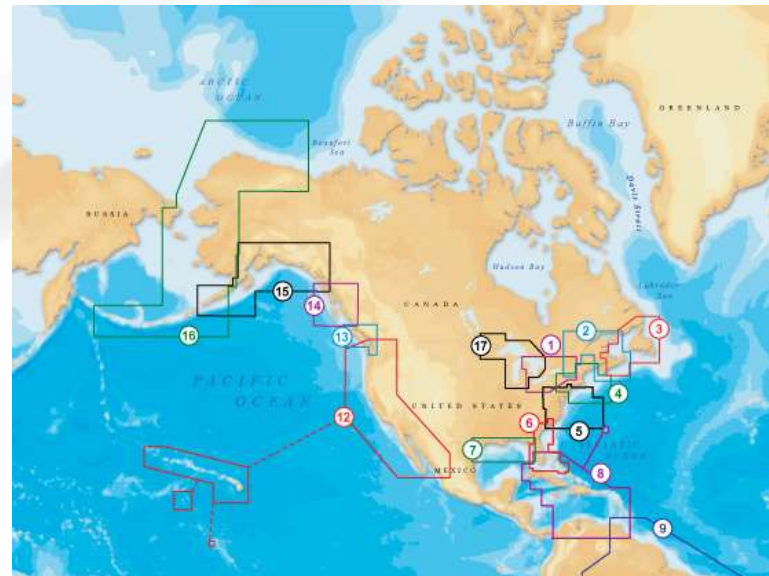
- Monitoring
 - e.g: engine room, lower helm, dinghy-tow, dockview
- Navigation
 - thermal night vision for travelling in low light conditions
- Security
 - galley or engine room and access it remotely through your smartphone



Conclusion



- It's your choice...
 - How do you use your boat?
 - Talk to people who use equipment you like
 - Talk to the experts
 - Research online
 - Try it out!



Connect with PYS



- Starting Point: PYS Electrical Audit for your boat
 - 90 minutes: Batteries, DC distribution, charger, alternator, inverter
 - Written report: observations & recommendations
 - Cost: \$189
- PYS Design Services for DIYers
 - Electrical system designed by PYS (collaborative and to code)
 - Installed by yourself or other outfit
- Pacific Yachting magazine - Monthly Tech Talk Column
- www.pysystems.ca 100s of articles
- Monthly email newsletter



Questions?

Marine Electronics

Full service shop delivering
marine electrical and navigation
solutions tailored to your vessel
and boating needs

Pacific  Yacht Systems
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design • installation • service • support