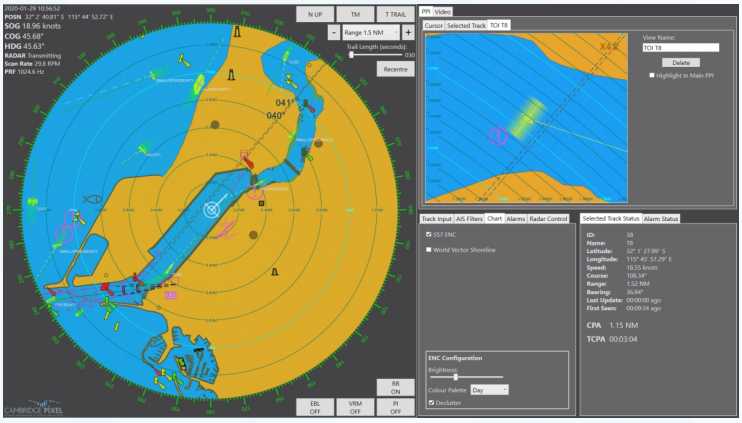
Maritime Display Framework

Cambridge Pixel's Maritime Display Framework is a PC-based software development package that can be used to create customised user interfaces for the display of primary radar data and secondary transponder information, aimed at the maritime market.



The Maritime Display Framework includes the ability to display scan-converted primary radar video, radar track information, electronic charts, secondary transponder information and also camera video.

The Maritime Display Framework has various tools available for processing of information common to maritime displays. For example, the ability to generate predictive vectors and other ship movement information displayed on a Plan Position Indicator (PPI), calculations of a tracked object's course, speed, closest point of approach (CPA) and time to CPA (TCPA). This allows prediction of a danger of collision with other ships - typically used in automatic radar plotting aid (ARPA) solutions.

The Maritime Display Framework is written in the C# language and is designed for development of a Windows WPF-based client application. The Maritime Display Framework's default configuration can be used to provide a functional maritime display solution without any development. The framework can be extended to include customised software modules that provide bespoke functionality.

The modular software design separates the controls that perform display functions and controls that interact with the radar transceiver, allowing a common display to be used for a variety of radar antennas and transceivers. The aesthetics of the display solution can be customised - for example, to look the same as an existing Integrated Bridge System.

Features:

- Windows 10 touch screen compatible
- Supports resolutions from HDTV (1920x1080) up to 8K UHD (7680x4320)
- Multiple map support (On/Off-line):
  - S-57 / S-63 electronic charts
  - World vector shoreline map
- Up to 350 radar and/or AIS targets
- Track input from SPx Server
- Auto Track Initiation (ATI)
- Manual track creation
- AIS display filters, including: range, ahead only, moving only, large ships
- Main PPI radar display with multiple highlighted rectangular Regions Of Interest (ROI) for selected tracks and following cursor
- Multiple rectangular displays for CCTV feeds
- Electronic Bearing Lines/Variable Range Markers/Parallel Index Lines
- Radar transmit control and status information
- Heading Up, North Up, Course Up modes
- True Trails and Relative Trails options (0 to 600s)
- Range scale adjustment (0.125-96 NM)
- Navigation data receipt in NMEA 0183 format
- User-defined display colour options, e.g. compass rose, own ship symbol, radar video
- User-defined ahead-only Field Of View
- Programmable CPA and TCPA alarms and alarm status
- Acquired target data including lat/long, course, speed, range, heading, CPA, TCPA
- Day/dusk/night display options
- Instant update of trails (afterglow) when adjusting display settings
- User-definable target and trail colours

Target Tracking

Target tracks from primary radar video are produced by the SPx Server application. SPx Server is an advanced radar video processing solution that includes peak-picking, smoothing, sub-sampling, ATI, CFAR thresholding, scan-to-scan integration, FTC, STC, offset/gain adjustment and also supports user-defined modules. SPx Server produces primary radar track reports in:

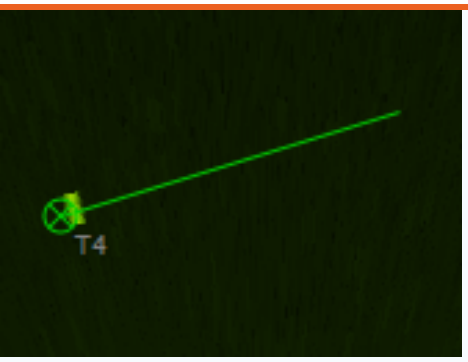
- SPx format
- Industry-standard ASTERIX CAT-48
- NMEA 0183 TTM format
- Primary radar video may be output in ASTERIX CAT-240 format

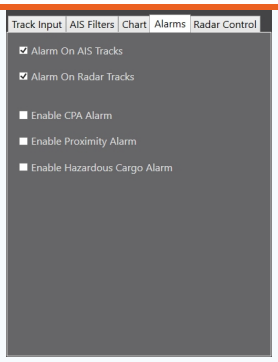
Camera Video

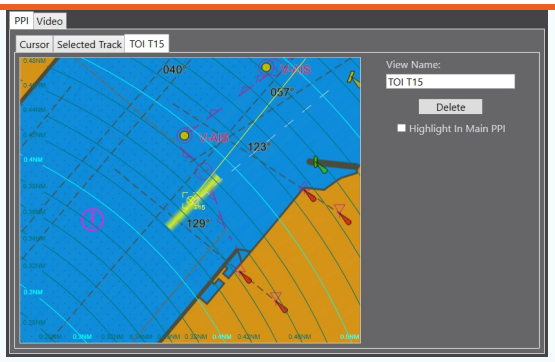
The Maritime Display Framework supports receipt and display of a single RTSP stream of camera video data in H264 format. Using the Maritime Display Framework development library, the following enhancement options can also be added:

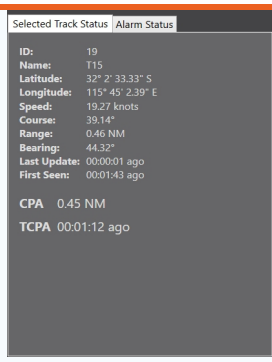
- Multiple streams of camera video
- Receipt of video streams via ONVIF
- Graphical overlays over the camera video
- Camera control

DATA SHEET









Track Fusion

Track information from SPx Server and from AIS reports are available for display by each client. The primary radar video echo, its extracted track and the AIS report would typically be shown co-located on the PPI window; individual track information (for the radar video track and AIS report) is shown in the Track Status tab.

Optionally, SPx Fusion Server can take in tracks from multiple radar trackers and other sources such as AIS and ADS-B and correlate them to identify where they correspond to the same physical target. The output of SPx Fusion Server is a stream of fused tracks on the network, such that the fused picture does not have duplicated tracks for targets from different sources.

Multiple window display

Each display client supports secondary rectangular display windows for (a) zoomed views of the PPI area and (b) camera video inputs.

Each of the secondary PPI views can automatically centre the target in the window and the view area can be highlighted in the main PPI window as an ROI, allowing high resolution views of multiple tracks to be maintained easily.

Radar Control

Radar control, including the radar antenna and transceiver, is available within the SPx Server application for various radar models from a variety of manufacturers. A display client can control one of the currently supported radars via the SPx Server control interface.

Extensions to the Maritime Display Framework and/or the SPx Server, for support of additional radar controls (either in the form of extended controls for currently supported radars, support for the latest models in a manufacturer's range or addition of a new radar) are available on request.

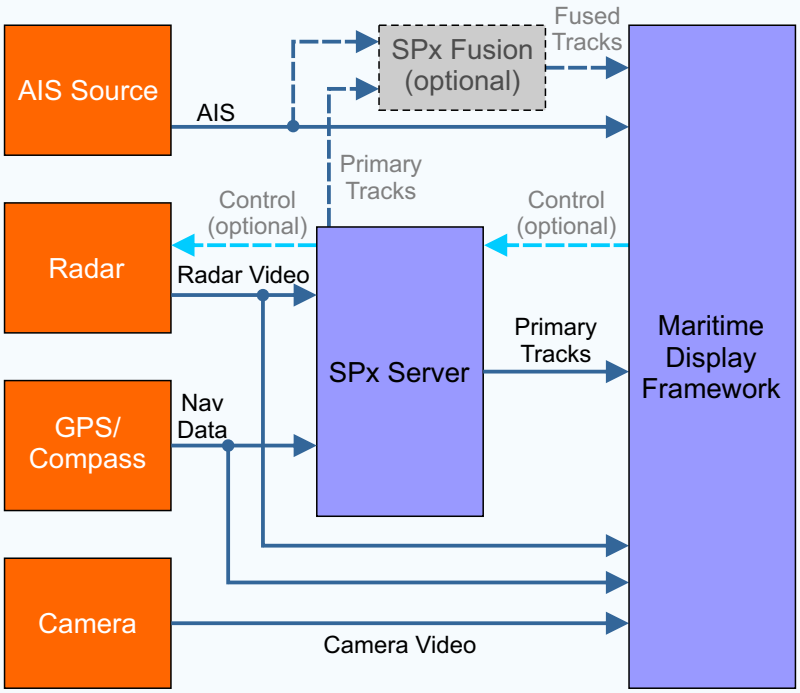
Support is available for a variety of radar models from manufacturers including: Furuno, Hensoldt, JRC, Raymarine, Simrad, Sperry, and Terma.

Alarms

Comprehensive alarm capabilities, including target track alarm type (AIS or radar), proximity, CPA and target dependence (such as hazardous cargo status provided in AIS) are available. Attributes such as audible alarms, target symbol flashing and colour change are also available.

Within the Maritime Display Framework development library, further enhancement options can be added. Configurable alarms for exclusion zones, boundary 'trip wires' and speed-based alarms can be supported. Alarm conditions can be logically configured and can take into account track sources. Alarm actions can also be individually tailored to include triggering of a closed contact for an external alarm system.

Alarms are local to each instance of the client display.



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