RADAR PRODUCT SUMMARY
V4
The SPx Software Family

Cambridge Pixel's SPx software is a collection of applications and development libraries for radar capture, processing, simulation and display.

RadarView for Radar Visualisation
This is a Windows application for the visualisation of primary radar video, along with graphics and secondary data. RadarView provides a multi-radar, multi-window display of radar data derived from a HPx card or a network source.

SPx Server for Target Tracking
This is an application for Windows or Linux that provides the functions of radar recording, network distribution of radar video, plot extraction and target tracking.

SPx Development
This is a package that supports the development of custom server and client radar applications. You can add radar processing capabilities into your existing software and build servers and clients. The Development package is available for Windows or Linux.

SPx Radar Simulator
This is a Windows application for the simulation of primary radar video, along with secondary sources and navigation data. Simulated data can be output via the network or as analogue signals using the HPx-300 card.

RadarWatch Maritime Display
A flexible situational awareness Windows-based display for maritime applications, including port and harbour control, coastal surveillance and simple vessel traffic monitoring.

ASD-100 Air Situation Display
An integrated Windows display application for the acquisition, display and tracking of primary and IFF targets.

RDR Data Recorder
A multi-channel, multi-format Windows record and replay application for primary radar video, tracks, AIS, ADS-B, video, navigation data, screen capture and other network data formats.

VSD Security Display
A Windows-based application for the processing and display of radar and camera video, including camera control, slew-to-cue and integrated radar and video tracking.

USVx Radar Display for USVs
A Windows application that provides radar visualisation from a remote unmanned surface vessel (USV).
RadarView for Radar Visualisation

RadarView is a ready-to-run Windows-based primary radar visualisation client, which supports the display of multiple radar videos in multiple windows with maps, overlays, targets and camera video.

- Two channels of radar video (network or HPx input)
- Up to 5 radar windows, each with up to two radar videos
- Radar processing
- Record and replay
- Underlay maps
- Radar analysis tools
- Track display including ASTERIX CAT-10 and CAT-48
- Radar input as ASTERIX CAT-240
- User-definable maps
- Overlay graphics (range rings, compass, targets)
- AIS and ADS-B display
- PPI, B-Scan and A-Scan displays
- Radar control
- True/relative motion support
- NMEA-0183 navigation input
- Heading-up and north-up options for moving platforms
- Camera video display and control
- MSSR data monitoring and display
- Windows 7, 8 or 10
SPx Server for Target Tracking

SPx Server radar processor interfaces to a wide range of radars to provide radar processing, plot extraction and target tracking. Widely deployed in command and control, navigation, security and ECDIS applications, SPx Server provides a wide range of advanced capabilities, for primary and secondary radar processing.

- Radar processing
- Plot Extraction
- Target Tracking
- Distribution Server
- Primary and IFF radar
Receipt of radar video from network (ASTERIX or proprietary interfaces) or radar signals (HPx series hardware)

Processing (filtering, masking, clutter processing, interference suppression, thresholding)

Plot extraction with plot merging

IFF decoding and plot extraction

Multi-hypothesis, multi-model target tracking

Highly configurable tracking engine

Area-dependent tracking parameters

NMEA-0183 input for moving platforms

Distribution of radar video as ASTERIX CAT-240

Distribution of tracks as ASTERIX CAT-48 or CAT-10

Record and replay

Local display for set-up and maintenance

Windows or Linux versions

Remote control from host

Supports redundant radar input with auto selection (with HPx-400 card)
SPx Development

The SPx Development package is a toolbox of libraries, tools, utilities, sample applications and comprehensive documentation that supports the development of server or client applications using Cambridge Pixel’s radar processing software.

“We chose Cambridge Pixel’s solution because of their advanced software solution and flexible product architecture”
- BAE Systems
• SPx include files and libraries for Windows or Linux
• Collection of examples and sample applications with source code
• Comprehensive documentation
• Technical support from radar and software experts
• Radar acquisition (signals, ASTERIX)
• Test patterns and scenarios
• PPI scan conversion (multi radars)
• B-Scan display
• A-Scan display
• Overlay/underlay display mixing
• Record/replay
• Compression/decompression
• Network streaming
• Clutter processing and clutter mapping

• Filtering, gain control, thresholding, scan integration
• Area-based processing
• Plot extraction
• Target display rendering (AIS, primary, secondary)
• Graphical widgets
• Range rings, EBL, VRM, parallel index lines
• Map display
• AIS receipt and decode
• NMEA-0183 receipt and decode
• Camera interfacing and control
• C++ software interface
• .NET and Java interface (restricted functionality)
• Visual Studio 2010, 2012, 2013, 2015 or 2017
SPx Radar Simulator

SPx Radar Simulator provides a capability to generate synthetic real-time radar video, along with tracks, secondary data and navigation data.

- Radar output in ASTERIX CAT-240 or signals with HPx-300 card
- Define complex scenarios with moving targets and moving radars
- Multiple radar support
- Terrain modelling and line-of-sight considerations
- Configurable radar characteristics
- Overlay synthetic targets on real radar
- AIS or ADS-B targets
- Racon and SART support
- Track simulation (ASTERIX CAT-10, CAT-48, TTM and multilateration)
- Generate primary, IFF or MTI video
- NMEA-0183 navigation data in and out
- Synchronise to external simulation generator if desired
- Generate video from external track inputs
- Full graphical editing of scenarios
- Runs under Windows 7, 8 or 10
SPx Fusion Server

The SPx Fusion server is used to combine primary tracks (e.g. from SPx Server) and secondary tracks in any combination.

The Fusion Server is a ready-to-run Windows or Linux application.

- Receives ASTERIX (CAT 1, 10 or 48) tracks
- Support for AIS (NMEA-0183)
- Support for ADS-B (ASTERIX CAT 21)
- Combines tracks from overlapping radars
- Hands over tracks from adjacent radars
- Consistent track labelling
- Options for 2, 4, 8 or higher sensor inputs
- Configurable weighting and priority
- Moving platform support
- Remote control over network interface
- Windows or Linux versions
RadarWatch Maritime Display

RadarWatch is a flexible situational awareness display for maritime applications, including port security, harbour control, coastal surveillance and simple vessel traffic monitoring.

RadarWatch provides an integrated presentation of radar video, tracks, camera data, AIS, mapping and alarm processing, offering a powerful, flexible and cost-effective maritime information system. RadarWatch works with a wide range of radar sensors and cameras, allowing system integrators to specify the right sensor for each application.

**RadarWatch Alarms**

RadarWatch includes a comprehensive capability for defining alarms that occur on configurable events. Alarms can be triggered on targets entering user-defined areas, targets passing through a controlled gate, or targets being in proximity to another target or to a reference point.

**Video Management**

Multiple daylight and thermal cameras can be incorporated into RadarWatch.

**Augmented Vision**

RadarWatch supports Augmented Vision, which is the overlay of target information onto live camera video to aid interpretation of the scene.

**System Configuration**

RadarWatch is designed to work with related software components from Cambridge Pixel, including the following:

- SPx Server for target tracking
- SPx Fusion Server for fusion of tracks and AIS
- RDR for data recording
- SPx Camera Manager to control multiple cameras

**Multi-screen, Multi-window**

RadarWatch supports multiple display screens, with windows for PPI display, camera, videos, track table and alarm controls. Windows can be resized and repositioned across one or several screens.
ASD-100 Air Situation Display

ASD-100 is a software application that supports the receipt and display of primary and IFF radars for air situation awareness.

- Primary and secondary (IFF) radar input
- Primary and IFF radar video display
- IFF Decoding (Using SPx Server)
- Target tracking (Using SPx Server)
- ASTERIX CAT-48 (tracks and CAT-240 (video) support
- Primary + IFF fusion (Using SPx Fusion Server)
- Map display options
- History trails
- Target label display (configurable)
- Rulers and intercept calculations
- Flight plan handling
- Touchscreen optimised
- Safety alerts (ASTERIX CAT 4) using SPx SafetyNet
- Multi-operator support
- Windows 7, 8 and 10
- Built-in screenshot saving
- Multiple radar support
- QNH information display
RDR Data Recorder

The RDR Radar Data Recorder provides a multi-channel, multi-format record and replay application to support a wide range of recording requirements. Supported inputs include radar video, tracks, AIS, ADS-B, camera video, network packets and computer screen recording.

- Record and replay of radar and related data
- Radar recording from signals (with HPx card) or ASTERIX CAT-240
- Track input (ASTERIX CAT-48 or CAT-10)
- Camera video (H.264)
- AIS input (serial or network)
- ADS-B input
- Recording of remote computer screens
- Navigation messages (NMEA-0183)
- General network packets (TCP or UDP)

- On-request or scheduled recordings
- Timeline display supports quick-look of recording and replay
- Event recording (user-generated, network messages, automatic events including radar failure, mode changes etc.)
- Control via web interface, local GUI or remote API
- Database storage with SQL Search
- Windows 7, 8 or 10
VSD Security Display

VSD provides an integrated display of radar and camera video for security applications.

- Primary radar input from network or signals
- Multiple radar support
- Radar display
- Map underlay
- AIS or ADS-B input to screen friendly targets
- Automatic target tracking
- Receipt and display of multiple camera videos
- Logging of tracks, alarms and operator notes
- Camera control (PELCO-D) from on-screen or physical joystick
- Slew-to-cue of camera from radar tracks
- Video tracking (from thermal or daylight camera)
- Alarm generation on targets in areas, crossing gate or coastline approach
- Touch-screen optimised
- Windows 7, 8 or 10
- Built-in Help
USVx Radar Display for USVs

USVx is a software application to support the visualisation of radar data from a remote unmanned surface vessel (USV). Radar and track data may be sent from the vessel to the USVx software, which shows an integrated picture comprising radar video, tracks, maps and overlays.

- Receives and displays radar video
- Receives track reports from tracker on USV
- Tiled map data
- Shows USV and own-ship positions
- Remote control of radar (selected radars)
- Alert generation (proximity of target to USV)
- Displays tracks and AIS targets
- Fusion of primary tracks and AIS (with SPx Fusion Server)
HPx Hardware

HPx-200 – Radar Input Card
- PCI bus
- 2 x analogue video in
- 8 bits digital video in
- Trigger (RS422 or single ended)
- ACP/ARP
- Parallel azimuth
- 50 MHz sampling

HPx-250 – Radar Input Card
- PMC bus
- 2 x analogue video in
- 2 bits digital video in
- Trigger (RS422 or single ended)
- ACP/ARP
- Parallel azimuth
- 50 MHz sampling

HPx-300e – Radar Output Card
- PCIe (x1) bus
- 2 x analogue video out
- 8 bits digital video out
- Trigger (RS422 or single ended)
- ACP/ARP
- Parallel azimuth

HPx-400e – Radar Input Card
- PCIe (x1) bus
- Dual channel radar input card
- 2 sets of video, trigger, azimuth
- 8 bits digital video in
- Parallel azimuth
- 100 MHz sampling
- Supports redundant radar configurations

HPx-346 – Radar Input Card and Enclosures
- Self-contained radar in, network out
- Compact, low power
- ASTERIX CAT 240 output
Cambridge Pixel is a specialist UK-based developer of advanced radar processing components and applications. We are a Queen’s Award-winning company with exports to over 40 countries. Customers include radar manufacturers, who embed our technology in their sensors, and system integrators who incorporate Cambridge Pixel’s components into security, military, ATC, VTS and ECDIS radar applications.