



SPx

Radar Video Distribution and Recording

Features

- Radar Video Compression
- Network distribution
- Open-standards
- ZLIB or ORC compression
- Low-cost hardware platform
- C/C++ library
- Built-in test generator
- Publish/subscribe data model
- Multicast or unicast distribution
- Signal Processing Library
 - Dynamic thresholding
 - Filtering
 - FTC
 - STC
 - Clutter suppression
 - Interference suppression
 - Scan to scan integration
- Integrated with SPx scan-conversion
- Cost effective hardware
- Highly configurable
- Part of an integrated product family
- Windows + Linux support

The SPx Radar Processing toolkit provides a set of high-performance software modules for radar video acquisition, processing and display. Included in the toolkit is a set of objects for radar video compression and network distribution. These objects are easily built into a Windows or Linux-based application to acquire, process and distribute radar video from a point of acquisition through to multiple display consoles, and provide a radar record and replay capability.

A key feature of SPx is flexibility. It provides a comprehensive set of radar processing and display capabilities in an extensible, open-architecture configuration. Full server applications for the distribution of radar video can be constructed with minimal programming effort, yet the flexibility of the library allows the implementation to be customised and expanded to incorporate new processing components.

The SPx signal processing library is an extensible toolkit of radar-specific functions that can be linked together to form a processing chain. Using this library, radar video can be processed to remove clutter, interference and enhance gain prior to network distribution and scan-conversion. Custom functions are easily incorporated into the processing chain.

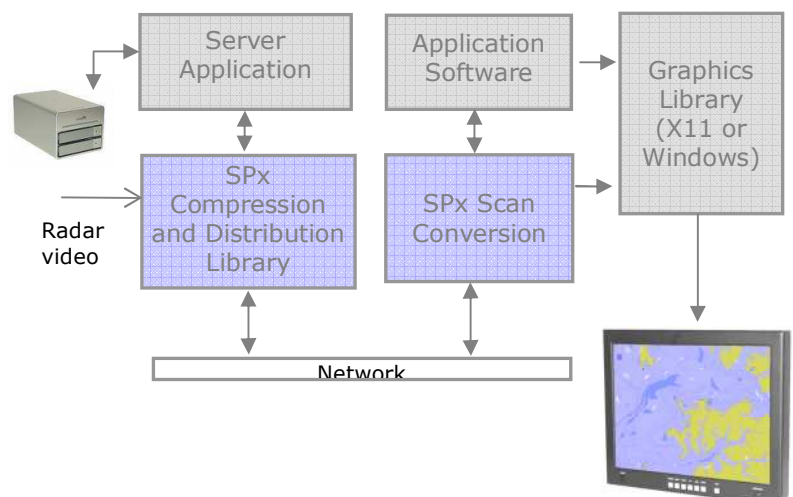
SPx Distribution

For distributed applications, in which the acquisition of video is on a different machine to the display, SPx supports different configurations built from standard SPx objects. In one situation, radar video may be scan-converted on a remote server and distributed as bitmaps to remote client displays for presentation with graphics. In another situation, SPx can distribute the compressed polar-format video to multiple display clients, where it can be scan-converted locally and mixed with underlay and overlay graphics. For scan-conversion, SPx provides a fully featured radar scan-converter that uses standard COTS hardware and graphics components, providing high-performance with low deployment and maintenance costs.

SPx Compression

SPx offers radar video compression based on the industry-standard ZLIB. Alternatively, video may be compressed with Cambridge Pixel's open-standard ORC (Open Radar Coding) standard, which requires less processing resource but typically achieves less compression. Both ORC and ZLIB are loss-less compression standards.

The SPx compression functions are integrated with SPx network distribution objects to provide a high-level software interface for sending and receiving vide across an Ethernet network. It is simple to combine the networking and compression objects to build a video server and Cambridge Pixel provide sample server applications as the baseline.



SPx Radar Video Distribution Specification

Architecture

Architecture: Client-server or integrated
Programming: C/C++ software library
Control: Programming API or servers.
Platform: Windows (XP/Vista), Linux/X11R6.
For other OSs consult factory
Processor: x86, PPC

Functional

Radar Inputs: Test pattern generator
Scenario generator
Network Video
Radar interface card (PCI, VME)
Replay from file.

Output: Network distributed radar video
(polar or scan-converted video)
Sector-based, real-time updates

Performance: Typical lossless compression ratios

Naval radar:
ZLIB: 3:1 to 6:1 20% CPU
ORC: 2:1 to 3:1 5% CPU

ATC radar
ZLIB: 8:1 to 12:1 20% CPU
ORC: 4:1 to 8:1 5% CPU

(60 rpm radar, prf = 1000, 4096 range sample per return, 3 GHz P4 processor.
Sample data for illustration and comparison only. Actual results will vary)

Compression: ZLIB, ORC, Raw

Processing: Peak-picking, smoothing, sub-sampling, thresholding, gain control, scan-to-scan
integration, FTC, STC, offset adjustment, sector blanking, range blanking,
dynamic thresholding, clutter processing, interference suppression.

Server-side Scan Conversion (Optional)

Architecture: Distribution of scan-converted video across network
Inputs: Compressed or raw polar video from hardware or network source
Outputs: Scan converted video bitmaps
Updates: Sector-based updates every 20 ms
Control: Full API for control of window size, view, colour, fading

Client-side Display Presentation

Network Receipt: Decompression of real-time video (scan-converted or polar)
Graphics Mixing: Alpha-blended graphics mixing with third-party charts (for example S57)
Display type: PPI, B-Scan, A/R-Scan
Scan conversion rate: Up to 120 rpm
Window sizes: Programmable from 32 x 32 to 2048 x 2048
Persistence: Programmable radar persistence with sweep, real-time or overwrite
mode (new data replaces old). Up to 256 levels of fade

SPx from Cambridge Pixel

SPx is a set of interoperable software components for radar processing, distribution and display. Other modules in the SPx family include radar compression, network distribution, radar processing and scan-conversion. Contact us for more information on the whole product family.

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