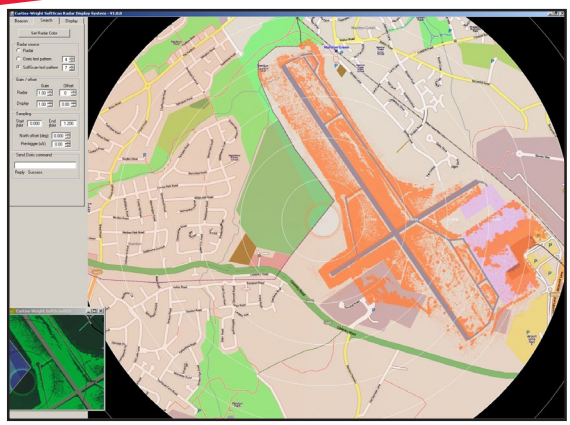
Fact Sheet

SoftScanRDS

High-Performance Software Radar Scan-Conversion Application



Features

- Ready-to-run rendering of multiple radar sources
- GPU-accelerated software scan conversion
- Very high-performance radar display
- Multiple radar display windows
- PPI, Ascan and Bscan display formats
- Multiple radar sources per window
- Real-time resizable and movable windows
- Very low CPU utilization
- Option to extend functionality using SoftScan libraries

Introduction

The SoftScanRDS application is built with Curtiss-Wright Controls Embedded Computing's SoftScan libraries to provides high-performance radar scan-conversion, using unique GPU-accelerated algorithms. SoftScanRDS uses the processing power of today's modern COTS graphics offerings to provide unrivalled scan-conversion performance with minimal CPU utilization.

Scan Conversion

SoftScanRDS receives polar-format radar video inputs either directly from radar acquisition hardware or distributed via network, and renders Plan Position Indicator (PPI) for each of them. SoftScanRDS uses the signal processing power available in modern GPUs to provide powerful algorithms that ensure there are no holes or spokes in the displayed image, even when zooming in at long range, and also ensures that all single-point targets are displayed.

GPU-accelerated algorithms allow SoftScanRDS to provide significantly higher performance compared to CPU-hosted implementations. When supported by the GPU, SoftScanRDS handles high-resolution displays such as 2k x 2k or 2k5 x 2k with no impact on overall performance.

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Control and Configuration Features

Each of the radar windows is configured through a set of controls that select which radar (or test) source is to be rendered, and allow the control of various display-related parameters including:

- Radar color
- Gain and offset
- Sampling ranges
- North offset
- Range rings
- Fade time
- Maps and underlays

The window contents can be panned and scaled using a mouse or trackball, with the option to display the latitude/longitude and range/azimuth to which the pointer's current position refers.

Host Platforms

The SoftScanRDS application runs on Windows®-based computers that have an OpenGL® 2.0 compatible graphics processor.

Functional

- Processing capability includes
  - False color support
  - Programmable thresholds
  - Cross azimuth filtering (improved target outline determination)
  - Scan-to-scan integration
  - Supports random-scan, sector-scan, reverse-scan inputs
  - Moving platform support

Radar Input

- Direct from radar acquisition hardware
- Network distributed radar video from Curtiss-Wright's RVP radar distribution software
- Internal test pattern generator

Performance

- Typical performance figures with 1.8 GHz Intel® Core™2 Duo CPU and NVIDIA® 7300GT (512 MB memory) GPU:
  - 2k x 4k at 120 rpm (~5% CPU loading)
  - 4k x 4k at 120 rpm (~10% CPU loading)
  - 4k x 8k at 60 rpm (~10% CPU loading)
- CPU loading is primarily due to decompression of radar video from network

Display

- PPI
- Support for range rings and cursor label (range/azimuth and latitude/longitude) above each rendered radar video
- Support for bitmap charts and other underlays below each rendered radar video
- Multiple radar display windows
- Multiple radar sources
- One or more radar sources in a single display window
- Real-time resizable windows (rendered video in the window is preserved during resize)
- Smooth real-time zooming and panning
- Programmable radar colors
- Variable-persistence smooth fading with up to 256 levels

Software

- Requires x86 host platform with Windows operating system
- Requires OpenGL 2.0 compliant graphics processor and drivers
- Extensible architecture to add new or custom capabilities using SoftScan API library (available separately)