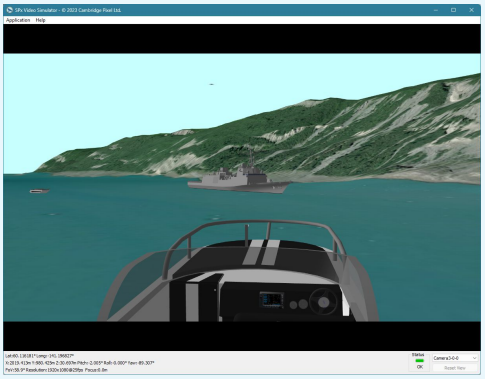
SPx Video Simulator



Cambridge Pixel's SPx Video Simulator is a software product that simulates a camera and PTZ (pan tilt zoom) controller. The simulator responds to standard PTZ camera positioning commands in ONVIF or PELCO formats and generates representative video streams, for example in RTSP format. The video streams contain video data derived by rendering a 3D model of a scene that may contain moving targets and terrain. Based on the position and orientation of the camera, and the position of real-world targets, the output video stream is constructed in real-time to depict the view from the camera. Multiple virtual PTZ cameras can be positioned within a real-world scene and controlled remotely using serial or network camera control commands.

Features:

Simulation
- Real-time update for camera position and view
- Loadable 3D target models (COLLADA format)
- Configurable target motion profiles
- Configurable camera position on moving platform
- Terrain database for target visibility and display

Camera Positioning
- Configurable camera position
- Static camera or mounted on moving platform
- Dynamically adjustable PTZ
- ONVIF and PELCO-D interfaces

Camera Types
- PELCO-D interface
- Nexus CGI
- Network camera control
- Multiple cameras and PTZ platforms
- Configurable field of view

Video Output
- Configurable video frame size from SD to HD
- RTSP or ONVIF output
- H264 or MJPEG encoding
- Configurable frame rate

Software
- Windows 11
- Uses SPx Radar Simulator (supplied) for scenario generator
- GUI control for configuration and monitoring
- Remote API (C++ library) for configuration and control

Support Developers

The simulator is an invaluable tool for system developers building complex sensor processing and display applications where a video source is desired for development and testing, but when a physical camera and positioning platform may not be available. The simulator responds to camera control commands like a real camera, and generates representative video for a 3D world built from terrain and moving targets.

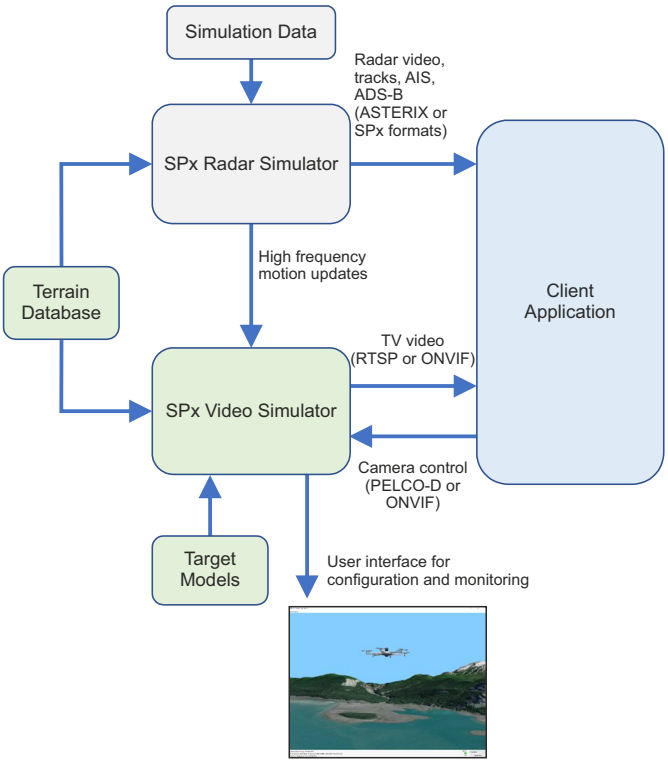
Training Systems

The simulator provides a key component in a training and simulation system, where it is desired to create representative camera display images - for example, to be displayed along with radar imagery. The simulation can contain any number of configurable moving targets (boats, ships, planes, drones, vehicles and people for example) and the simulated video will show the correct rendering of the targets for any combination of static and moving camera scenarios.

Radar and Camera Simulation

SPx Video Simulator uses Cambridge Pixel's related product SPx Radar Simulator, which defines and manages the scenarios of moving targets. When used together, a unified simulation of radar and video displays can be built. For situations requiring only video simulation, SPx Radar Simulator acts as the scenario generator only.

The key components of SPx Video Simulator are shown in the diagram below:

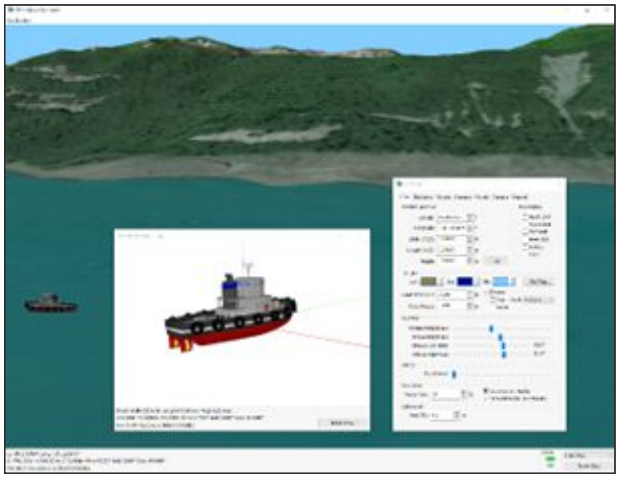


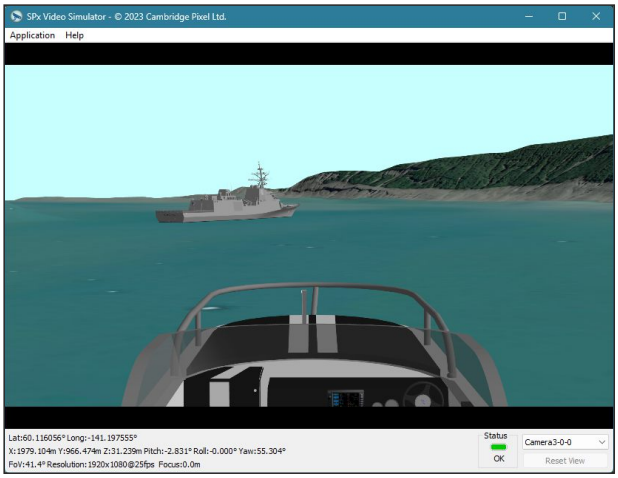
SPx Video Simulator Specification

CP-16-173-03, Issue 1.1

DATASHEET

Given a lat/long location for the camera (whether moving or static), SPx Video Simulator generates a real-time image of the view that the camera can see from that location. This incorporates terrain that is visible from that location, as well as any targets. In the above example, a moving drone is visible in the first image and a ship in the second. The video image is correctly updated in real-time to reflect the motion of the targets in the world and the motion of the camera platform itself.





Targets moving in the scenario have properties including a 3D model that is used to render the target for the current camera view.

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