RFVIEW® RT

MISSION & PURPOSE

RFView® is the industry leading open-air RF propagation modeling and simulation (M&S) tool for:

Hardware-in-the-Loop Testing	Aircrew/Guardian Training	AI/ML Training + Data
Signal Processing + System Development	Mission Planning	Gaming

For more than 30 years, RFView® has successfully supported advanced development projects for both government and commercial customers worldwide.


Built on ISL's industry-leading multistatic RF phenomenology engine, RFView® provides characterization of target returns, direct path signal, ground scattered signal (clutter for radar), direct path signals from interferers, and ground scattered interference signals.

API ARCHITECTURE

ISL has developed RFView® leveraging GPU hardware and advanced parallel computing techniques as the exciting solution to the real-time, high-fidelity radar simulation problem. The engine provides state-of-the-art GPU pipeline features such as RTX Ray Tracing support for multibounce wave simulation, solving Maxwell's Equations in real-time for unparalleled realism. It consists of a fully scriptable application engine that can execute rendering commands and return data in real time, either on the same PC as the user application or using a remote TCP/IP connection. The engine natively supports terrain, moving/animated models, real-time mechanical physics (including ocean physics), vehicles, buildings, and trees. Combining these features with radar-specific knowledge and expertise, ISL has developed a radar simulation package capable of real-time radar image generation, clutter map generation, and simulated receiver data.

Fully polarimetric

Multi-channel

Mono-static/Bi-static/Multi-static

Ground-based radars

Airborne radars
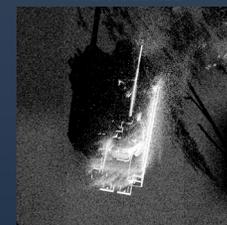
Space radars

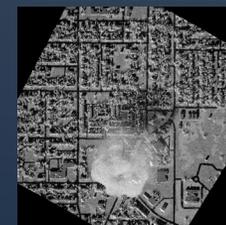**Simulated receiver data**
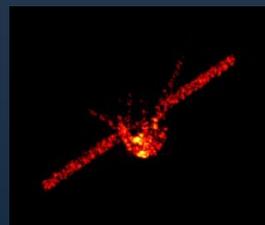
ISAR Example: Real Data
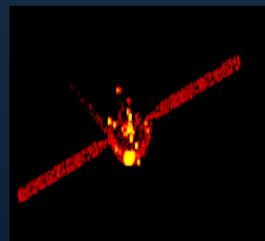
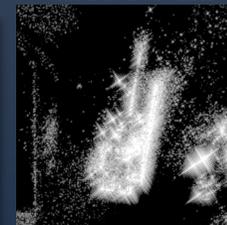ISAR Example: RT Simulation

FASTER THAN REAL-TIME FOR ANY APPLICATION

Multibounce
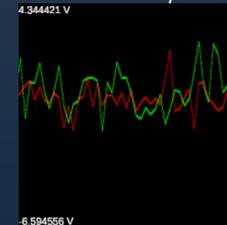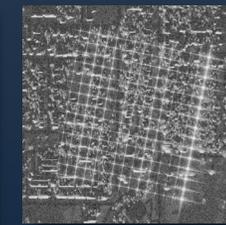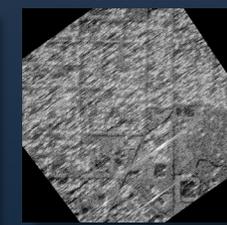
Weather/Volumetrics

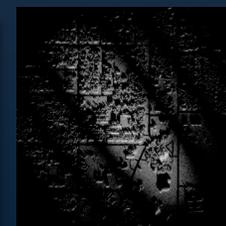Resolution Effects

Phase History I&Q

Electronic Warfare*

Motion Distortion

Doppler Distortion
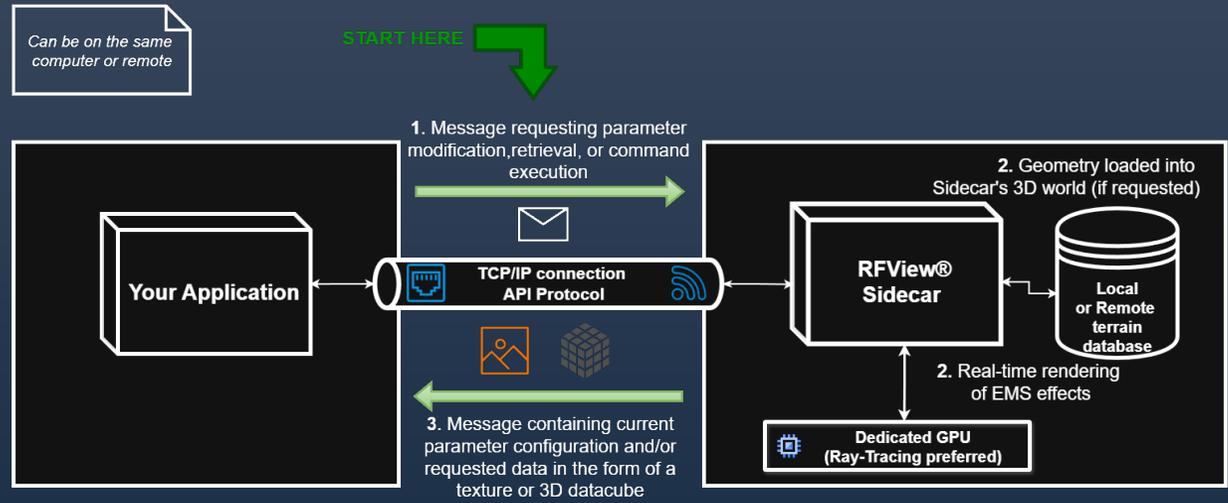
Antenna Patterns

Scanning Modes

And Many More Features
*Notional

RFVIEW® RT

THE APPLICATION PROGRAMMING INTERFACE

- Local or Remote Data Generation
- Languages:
    - C++   C   Matlab   LabVIEW
    - Or integrate existing libraries into your language of choice
- Complete documentation included with every release.
- Common Hierarchy Parameter, Command, and Data Retrieval System Through:
    - Graphic User Interface (GUI)
    - API
    - JSON Save Files
- Hundreds of parameters: platform position, aim point, antenna configuration, resolution, entities/targets, kinematics, etc.
- Commands for Loading Terrain/Scene, Unloading, and Triggering Data Generation
- Large data transfers
    - Provide Input to server
        - 3D objects: vertices, triangles, and textures
        - terrain elevation data)
    - Provide Output from server:
        - Synthesized Phase History I&Q
        - colored SAR/Scanning images

Can be on the same computer or remote

START HERE

Your Application

TCP/IP connection
API Protocol

1. Message requesting parameter modification, retrieval, or command execution

2. Geometry loaded into Sidecar's 3D world (if requested)

RFView® Sidecar

Local or Remote terrain database

2. Real-time rendering of EMS effects

3. Message containing current parameter configuration and/or requested data in the form of a texture or 3D datacube

Dedicated GPU (Ray-Tracing preferred)

```cpp
#include <RFviewSidecar.h>

if(!rfviewConnect("127.0.0.1"))
    exit(EXIT_FAILURE);

double newLat = 97.1241;
double newLon = -101.24231;
rfviewVector3 newVel;
newVel.x = 0.0f;
newVel.y = 5.0f;
newVel.z = 0.0f;

rfviewBatchSetStart();
    rfviewSetDouble("Platform/Latitude", newLat);
    rfviewSetDouble("Platform/Longitude", newLon);
    rfviewSetVector2("Platform/LocalVelocity", &newVel);
rfviewBatchSetEnd();

rfviewDisconnect();
```

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visit www.islinc.com for more information