

A Flexible Simulator for Multistatic Radars

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Requirements for next-generation radar simulation:

Signal Level Simulation

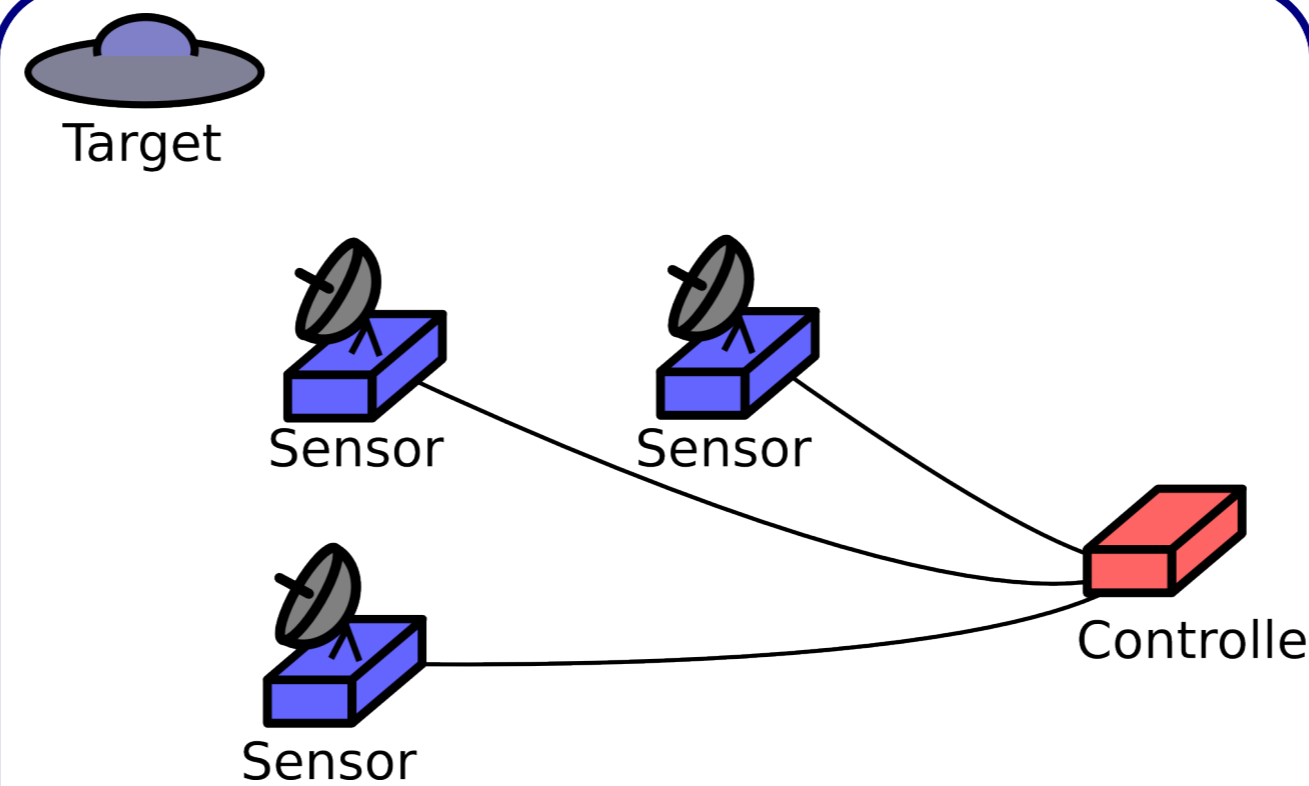
- Simulate samples from the ADC of the receiver

Flexibility

- Radar and Sonar
- Pulsed and Continuous Wave
- Monostatic, bistatic and multistatic
 - Any number of receivers, transmitters and targets
- Arbitrary waveforms, including wide and narrow band signals
- Active and passive (PCL)
- Electronic warfare (EW), such as jamming

Accuracy

- Accurate simulation of key radar phenomena
 - Amplitude of return signal
 - Phase, time and frequency (Doppler) of return signal
 - Noise, both internal and external to the radar system
 - Phase noise on local oscillators
 - Jitter on ADC and DAC clocks



•Multistatic Radar

- Traditional radar systems have one transmitter and one receiver
 - Sharing the same antenna
 - Known as monostatic radars
- Multistatic radars are more flexible
 - One or more transmitters
 - One or more receivers
- Advantages of multistatic radars
 - Flexible coverage volume
 - Multiple views of target
 - Operation with non-cooperating transmitters
 - e.g. TV and FM transmitters
- Netted radar is an extension of the concept of multistatic radar
- FERS fully supports simulation of multistatic and netted radars

The Implementation: FERS

Portability

- Implemented in portable ISO standard C++
- Runs on Linux, Windows, and others
- Results in standard HDF5 format
 - Easily import into Octave, MATLAB and many others

Extensibility

- Python and C++ extensions can easily be added to the system
- Easily extended XML script format

Freedom

- FERS is free, distribute under the GNU general public licence
- Download FERS from <http://www.sourceforge.net/projects/fers>