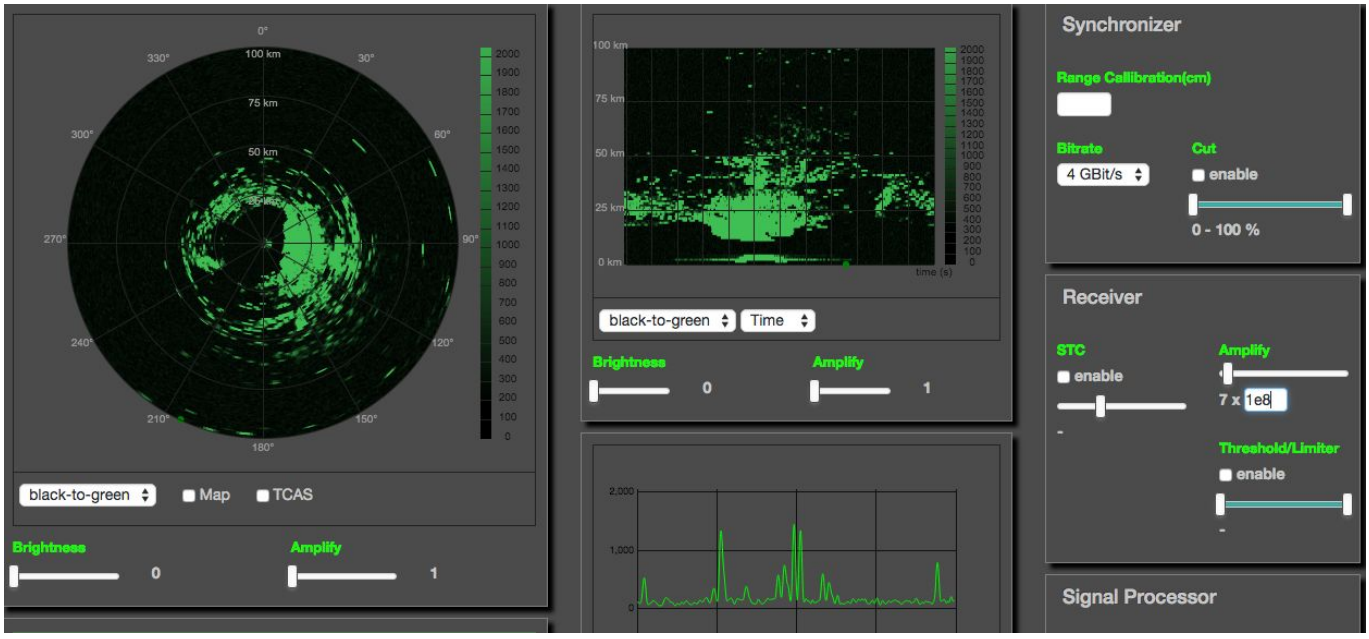
PSR & SSR Simulator



The SkyRadar PSR & SSR Simulator is part of SkyRadar's modular Radar Training System. It can be added plug-and-play to the CloudServer and is operated through SkyRadar's FreeScopesSoftware.

Description

It includes the simulators on Pulse, CW, FMCW, SAR, eSAR, SSR, ADS-B, TCAS and more. A comfortable pseudo-pilot screen allows to set the scene and to place aircraft (with different positions, speed and height) in the sky. An unlimited amount of concurrent Controller Work Positions (CWP) can analyze primary and secondary radar images through scopes like A-Scopes, B-Scopes or PPI-scopes.

Features

It includes the following simulators:

- Primary Surveillance Radar
  - Pulse
  - Constant Wave (CW) / Doppler
  - Frequency Modulated Constant Wave (FMCW)
  - Synthetic Aperture Radar (SAR)
  - inverse Synthetic Aperture Radar (iSAR)

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Release: 18.01.2018

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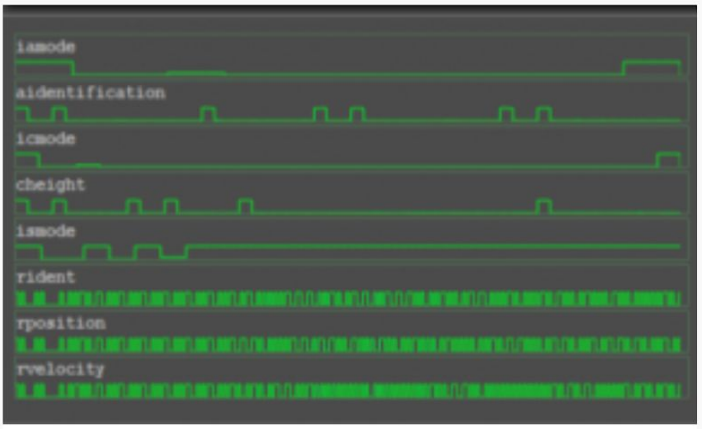
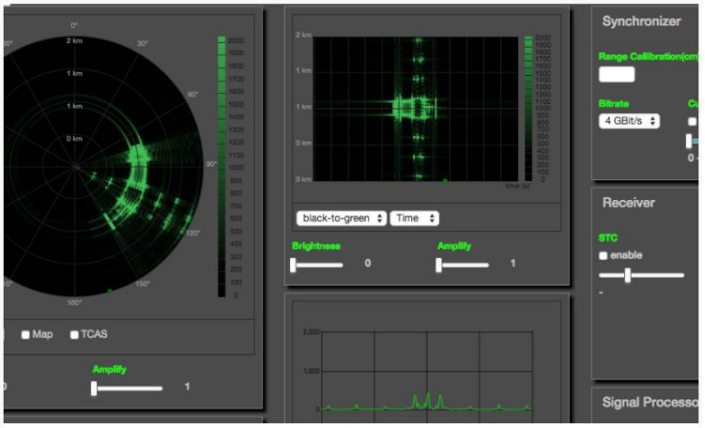
- Secondary Surveillance Radar
  - Mode-A/C
  - Mode-S
  - ADS-B
  - Collision Avoidance (TCAS) and Minimum Height Alert

The system can be operated through ethernet or wireless networks. A minimum of 8 pseudo-pilot positions (PPP) can provide concurrent airspace settings. The number of concurrent users (controller work positions CWP) is not limited and can exceed 500 concurrent students.



FreeScopes User Interface for Secondary Surveillance Radar



Measuring the RCS of an aircraft in the B-Scope

Topics

The simulator works with

- Pseudo Pilot Positions (PPP)
  - PPPs allow to choose and place aircrafts in the airspace, to set speed, course, position and altitude
  - In addition, the PPP is the control center for application-dependent controls e.g., for environmental reflections, polarization, range resolution, angle resolution, etc.

- Controller Work Positions (CWP)
  - CPWs represent the view of the air traffic controller
  - All CWPs include a PPI-Scope, an A-Scope and a B-Scope, and application dependent controls such as sliders for brightness and amplification in the scopes, filters such as Sensitive Time Control, Signal Amplification, Threshold/Limiter or the function of Moving Target Indication.

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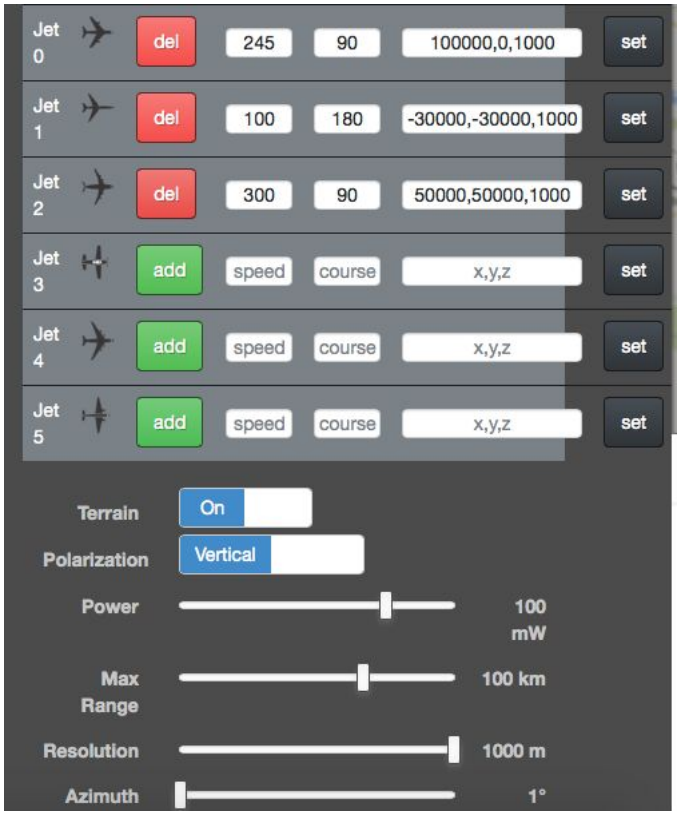
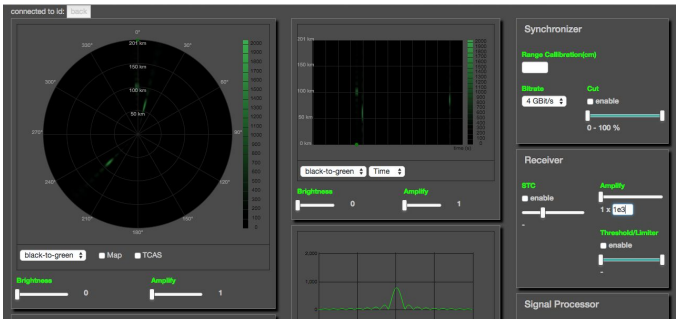


Pseudo Pilot Display



Controller Work Position of the FMCW

Radar Modes

- PSR Pulse
  - Object detection, environmental reflections, clutter processing, optimisation of radar display settings,Radar Cross Section analysis, Sensitive Time Control, threshold and amplification, change of polarization, etc.

- CW / Doppler
  - Speed

- FMCW
  - Object detection, optimisation of radar display settings, Radar Cross Section analysis, change of polarisation, Sensitive Time Control, threshold and amplification, etc.

- SAR and iSAR
  - Radar Cross Section analysis
  - Optimisation of radar display

- SSR Mode A/C and Mode S
  - Sidelobe Suppression, uplink format (UF), downlink format (DF), DBS registers, ADS-Principle.
  - Visualisation of PPI (aircrafts on map), B-Scope, A-Scope, pulse graph, visualisation of data packages embedded in the signal
  - TCAS

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Parts

FreeScopes consist of:

- One (1) simulation server
- One (1) license for SkyRadar Simulation Server software utilization
- One (1) Operating manual in English language freely downloadable.

Prerequisites

- Computers with latest HTML5 enabled browser. Current versions of Chrome, Firefox, MS Internet explorer, Opera and Safari are able to read HTML5.
- One (1) Cloud server

Extensions

- SkyRadar Cloud Server
- All applications of the SkyRadar Modular Radar Training System Family

SkyRadar's FreeScopes software is the only radar training software available in the market, which is accessible by an unlimited amount of concurrent users, . Also the broad coverage of solutions required for ICAO and EuroControl ATCO and ATSEP training programs as well as IATA qualifications makes SkyRadar the preferred choice of many aviation academies and IATA TrainAir Plus accredited institutions. Also, many universities and military academies use FreeScopes within their qualification, education, training or research programs.

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PSR & SSR Simulator

The PSR & SSR Simulator is a sophisticated simulation software which is delivered on a rack server. Learners can access the simulations through any recent generation HTML5-enabled browsers on any operating system. Computers get access the LAN or Wireless LAN, enabled through the SkyRadar Cloud Server.

It allows for

- plug-and-play availability in all SkyRadar CloudServer based infrastructures
- no installation or maintenance of the software on the student computers (apart from exceptional cases, e.g. in the context of ILS, when voice communication is required)
- 100s of concurrent users, working simultaneously on the same applications and radars (enabled through a private cloud server, located at the customer site).
- drastically reduces system costs per user and makes SkyRadar the most economical training system (using real radars!) in the world
- allows for easy and effortless expansion of the system (e.g., when adding additional primary or secondary radars)
- accelerates the learning curve of students, as they are accustomed to the comfortable SkyRadar learning environment

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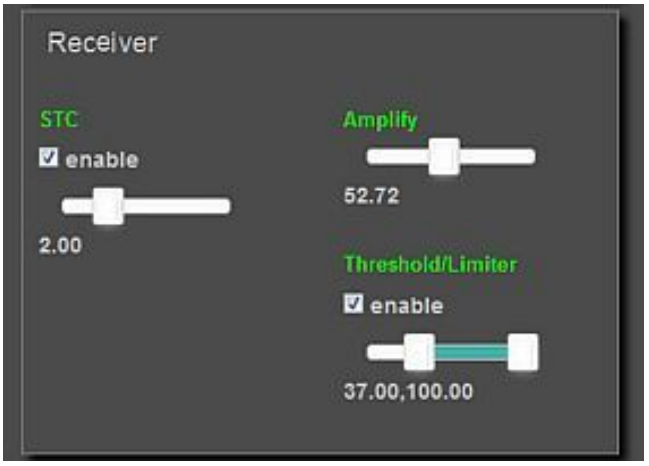
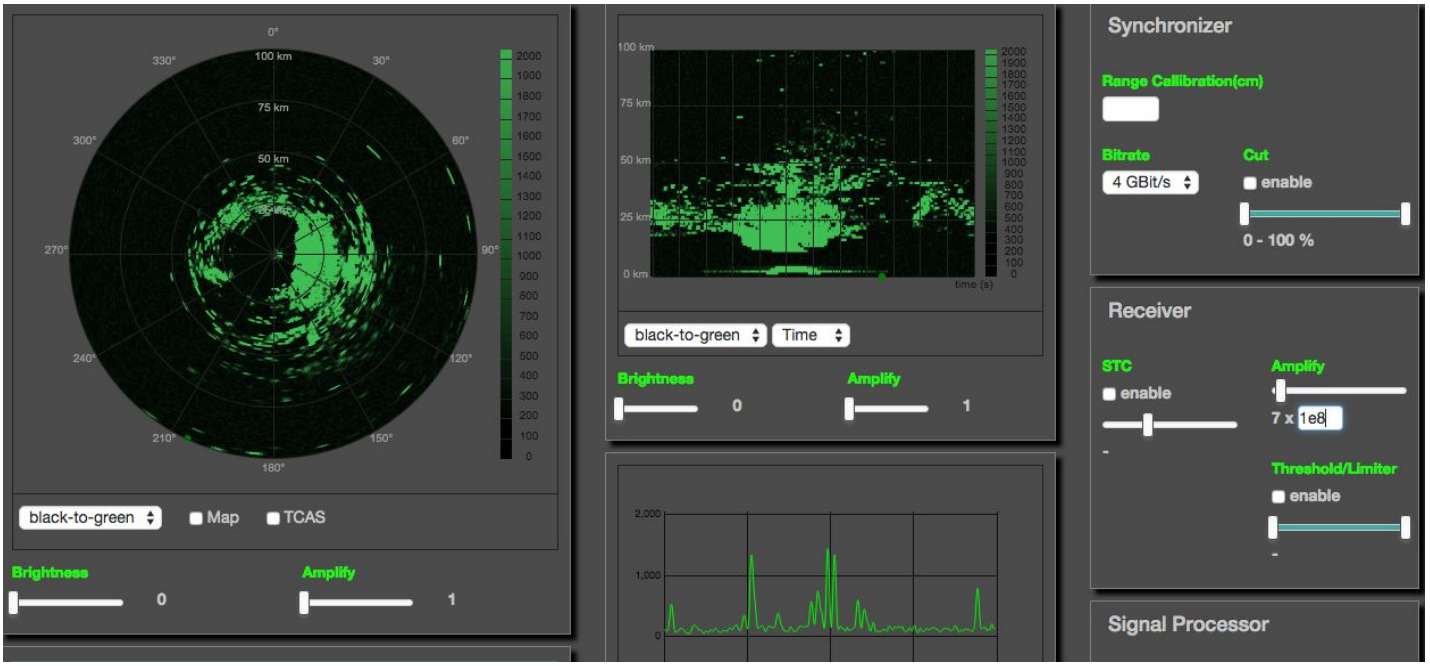
Primary Surveillance Radars

The simulator operates the following primary surveillance modes:

- Pulse
- Constant Wave (CW) / Doppler
- Frequency Modulated Constant Wave (FMCW)
- Synthetic Aperture Radar (SAR)
- inverse Synthetic Aperture Radar (iSAR)





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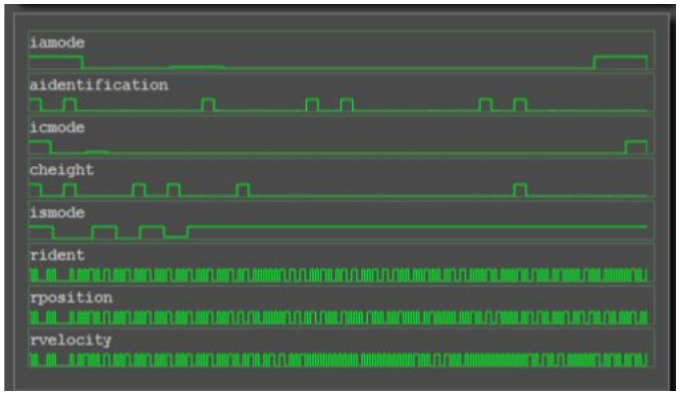
FreeScopes also serves as GUI for secondary surveillance radar. It provides the following user interfaces:



- PPI Scope with information of key aircraft data as 3rd dimension (Visualization of DF17 Squitter Signal)
- Visualization of interrogation and downlinks as pulse diagrams as well as in a table Surveillance Radars

Using FreeScopes as a standardized user interface for Pulse, Doppler, CW, FMCW and SAR / iSAR simulators, it provides all important scopes and control elements for the application.

- Scopes: A-Scopes, B-Scopes, Plan-Position-Indicator for PSR, Synthetic Aperture Radar Screen (SAR), inverse SAR (iSAR)
- PPIs: SSR Mode A/C and Mode S, ADS-B
- Pulse Diagrams and table Sidelobe Surpression, uplink format (UF), downlink format (DF), DBS registers
- Pseudo-Pilot Screens
- Control Elements: Amplifiers and controls for synchronizer, receiver, signal processor (filters and amplifiers), motor control, as well as controls for the scopes (amplification, color setting, etc)

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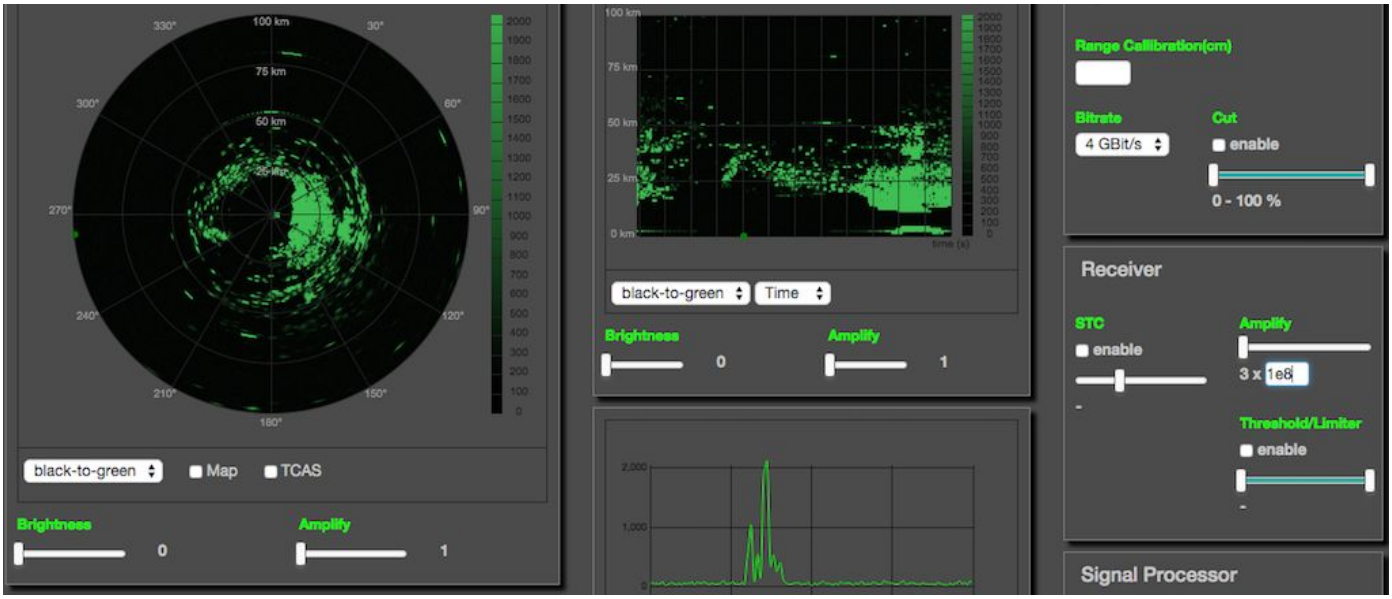

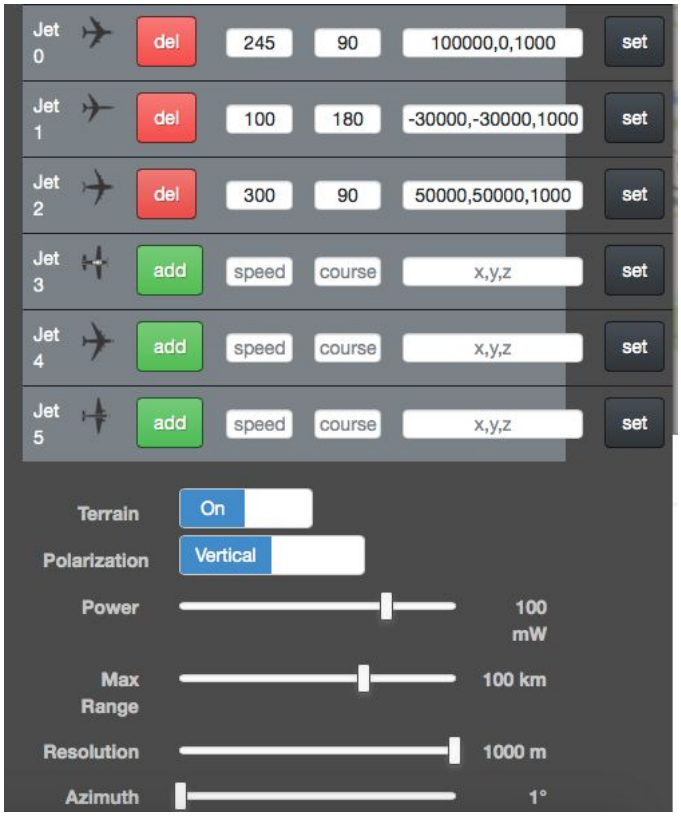

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