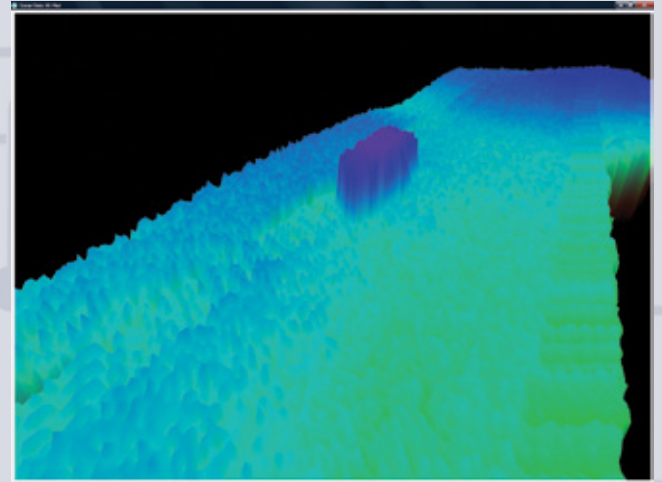
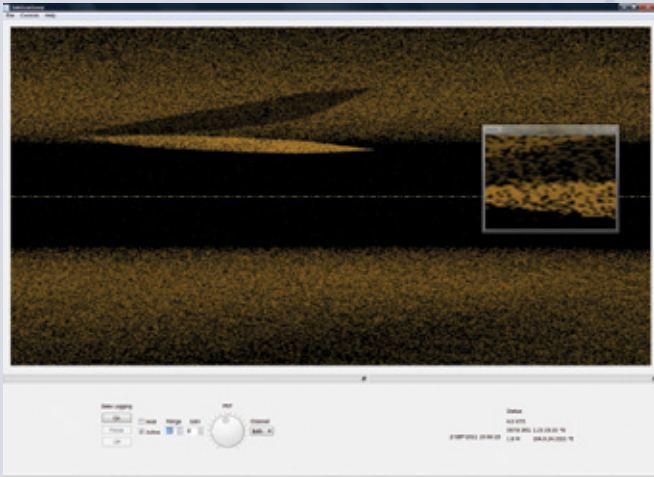




Image Soft Oy

SONAR SIMULATOR



Sonar Simulator

Technology

Image Soft Sonar Simulator uses the most advanced simulation technologies to approximate the sonar wave propagation by mathematical models. The main technology applied to the Sonar Simulator is Ray-tracing. This technology allows the Sonar Simulator to calculate the sonar wave propagation from point X to direction Y as it would in real life, but in this case in a modelled virtual environment. After the wave has been modelled, it is analysed step by step and mathematical rules are applied to it to make it reflect obeying the basic rules of physics.

Environment and objects

The virtual world is created from a grayscale image describing the depth measurement information and can be created either according to a real location or a synthetic one, which ever suits best for educational purposes. Other objects are created in to the virtual world according to the data received over HLA (High Level Architecture) from other participants of the simulation. These objects can be created corresponding to real objects' dimensions and shape.

Features

Sonar Types

- Scanning Sonar:** Measures to all directions around the sonar to detect underwater environment and objects.
- Side-scan Sonar:** Scans the shape of the sea bed under the sonar. Side-scan Sonar is used to create an image (or mapping) of the sea floor.
- Multi-beam Sonar:** Measures the depth of the water. Multi-beam Sonar is used for hydrographic survey measurement data acquisition.

Basic Features

- Range Adjustment:** Sonar measurement range can be adjusted by the user from the graphical user interface.
- Gain Adjustment:** Sonar signal amplification can be adjusted by the user from the graphical user interface.

Display Modes

- PPI mode:** The Plan Position Indicator is the basic display mode for the sonar, where sonar measurement results are displayed with colours as circles around the sonar location.
- B-Scan mode:** The B-Scan mode is used to measure doppler shifts of the sonar signal. These shifts are related to the speed of an object measure by the Sonar.
- Side-scan mode:** The Side-scan mode displays the mapped image of the sea floor.
- Multi-beam mode:** The Multi-beam mode displays the measured sea floor as a 2D or 3D contour.

Saving Simulation Data

The simulated measurement data from the Side-scan Sonar Simulator and the Multi-beam Sonar Simulator can be saved into files for post-processing and validating with third party software like Fledermaus™.

- Side-scan Sonar:** Simulated measurement data from the Side-scan Sonar Simulator can be saved into .XTF (eXtended Triton Format) files.
- Multi-beam Sonar:** Simulated measurement data from the Multi-beam Sonar Simulator can be saved into .GSF (Generic Sensor Format) files.

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