TECHNOLOGY RESOURCE TRANSFER & CONSULTING
TROUT GmbH

TROUT GmbH
Parkstraße 28
34119 Kassel
Germany
www.trout-gmbh.de

TROUT GmbH is a business enterprise specialising in information technology and systems engineering.

We are a research and development company (R&D) with highly qualified employees, specialized in the development of sophisticated software-based systems according to standards in areas ranging from aerospace technology to medical engineering. Our interdisciplinary solutions require expert system understanding and extensive technical knowledge, as a matter of course.

The company's success rests on the founders' combined scientific expertise gained in many years of project work in various fields, together with their strategy, finance and operations know-how and strong business insights.

The TROUT business model is based on our ability to carry out all aspects - all the services / activities and roles at all stages - of challenging science and engineering development projects as required (project-specific services), as well as on the development of our own systems according to our requirements and the requirements of partners within a development consortium. These developed systems are considered products with a defined status - predominantly prototype – to be sold and / or developed to series in a joint-development team.

TROUT was founded in 2004 by Dipl.Phys. Martin Bussas and Dipl.-Ing. Hartmut Fischer.

Project Objectives

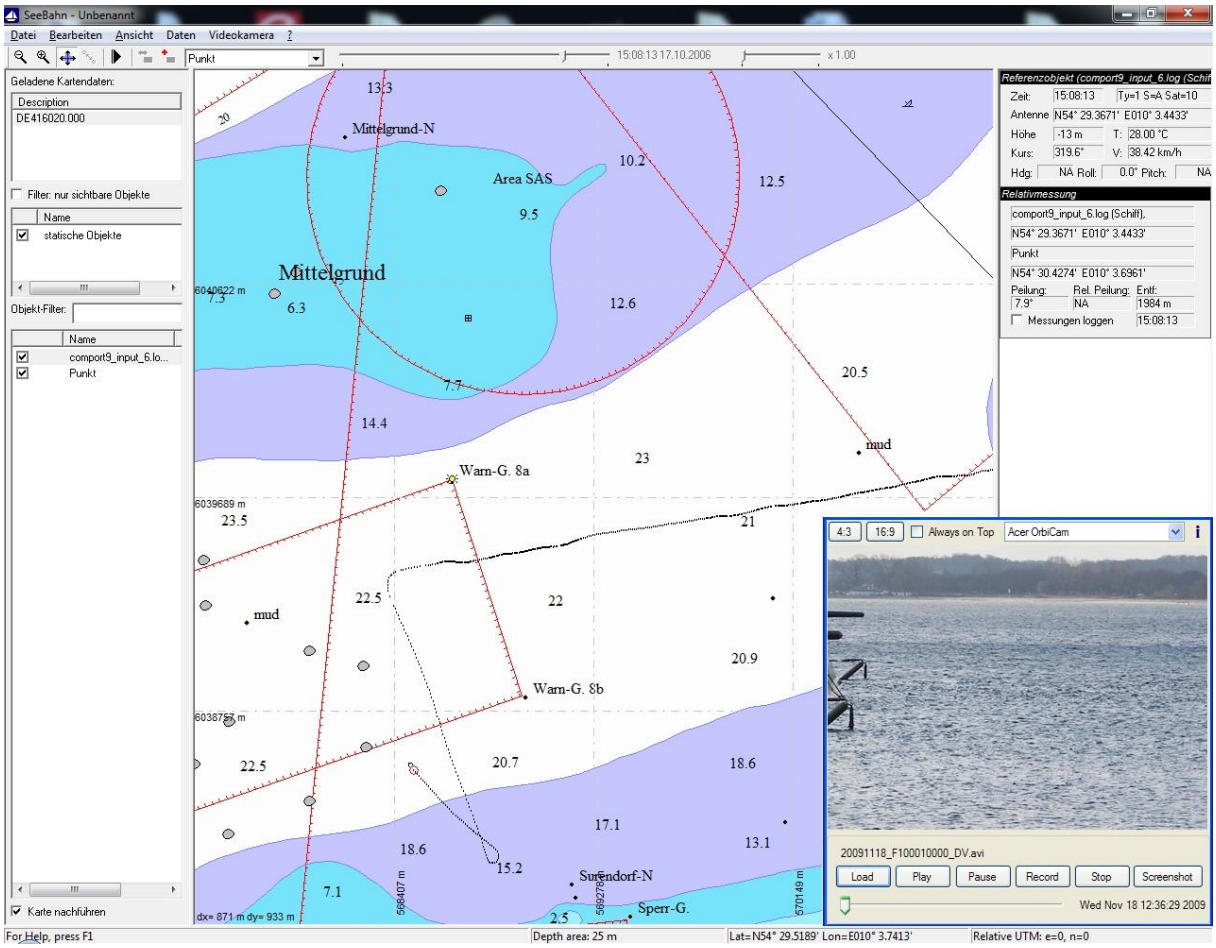
The objective of SeeBahn is to visualize different types of moving objects at the seaside.

System Description

SeeBahn (S57 Mission Planning) is used for real-time representation of moving objects at sea. Relative measurements can be performed online and offline. Video recordings can be synchronoused to the data flow. Possible data sources are NMEA data streams, hydrophons, automatic ship identification system AIS and position data from downlink stations. Several moving objects at sea can be detected over a distance of up to 25 kilometers at the same time with a telemetry system. The system has the following features:

- A display of high-resolution S57 vector nautical charts
- Automatic tracking of moving object
- UTM coordinates or Lat/Long coordinates can alternatively be displayed
- User defined coordinate system
- AML display for ammunition layer
- Support of Windows XP/Vista/7/8

The following figure shows a screenshot from the SeeBahn application.



Realization of a S57 vector chart layer: objects being able to be put on the chart graphically interactively, stored and loaded again. The storage format is ASCII text, the stored files can be changed with a text editor. The objects can get names which are displayed correspondingly. All objects are fully scalable, mobile objects can be activated and deactivated for data logging. The different objects will be visualized as follows:

- Ship is a rectangle with a triangle on top, mounting position of GPS aerial, hydrophons and the ship reference point.
- Drilling rig with circles in the corners.
- Areas, course lines, circles with available radii, crosses and icons (mines, anchor ...).
- Tracks with initial, middle and final marking (pressure measuring chain).
- Tracks with a fictitious prolongation for calculation of a deviation (course line).
- Symbols for object supervision (Bell, Fish).
- Objects can visibly/invisibly be switched over a menu.

Ship guidance along a set course:

- Master station with reset function and deleting possibility of single tracks.
- Position of one's own (geographical in degree and minutes).
- Course and speed for calibrating purposes.
- Course and distance to a mobile object as well as to the cursor position.
- Deviation to set course and counter-course, algebraic sign is selectable for A-B, B-A.
- Parallel courses and circle courses can be made simply.

Guidance and supervision for mobile objects (boat, diver):

- Master station .
- Position of one's own (geographical in degree and minutes).
- Course and speed.
- Course and distance to every other object (incl. master station and cursor).
- Deviation (+/-X, +/-Y) of the set course.
- Visual identification of the mobile objects which are not provided with data.

Data logging:

- Raw data from the interfaces are recorded unchanged.
- For the check of the interface the raw data can be seen in a window.
- Generation of event files at every start of the data logging. Logging of time, serial number and position.
- The average speed as well as start and stop time are registered in a log file.
- One log file per ship/object.
- For the produced event files a replay possibility is created.

Data interfaces for the serial assignment with a variable data frequency (to 10 Hz). The accompanying formats are NMEA and proprietary formats, free COM port /UDP port assignment:

- GPS own vehicle.
- Special interface for precise heading.
- Multiplex.
- Direct signals (drifting mines...).

Ethernet interface for Metric and BGT ground station with data logging in QLAT format and replay possibility in the offline mode.

Integration of GeoTIF tiles

- Resolution 1:50.000.
- Resolution 1:25.000.

Video Functions

- Recording and playback of video in a separate window.
- Automatic detection of system cameras (Firewire and USB).
- Video window is flexible and can be placed anywhere.
- Video Inputs: 2x analog (Composite or S-VHS) and 2x digital.
- Automatic generation of a still image of the displayed video images when calling the event function.
- Free choice of CODECs.
- Synchronised video and data streams:
    - Fixed correlation intervals.
    - Playback option with time slider.

Telemetric System

- Adjustable frequency range 218...238 MHz.
- Transmission power 5 W.
- Multiplex Mode.
- Chanel raster 12.5 / 25 kHz.
- Interfaces RS-232 / 422.
- Data trasnsfer rate 1200...38400 bps.
- Data format asynchrony.

Status

System is available.

TROUT GmbH
Parkstraße 28
34119 Kassel
Germany
www.trout-gmbh.de

Managing directors

Hartmut Fischer	h.fischer@trout-gmbh.de	+49 561 810497-10
Martin Bussas	m.bussas@trout-gmbh.de	+49 561 810497-11

Project manager

Martin Bussas	m.bussas@trout-gmbh.de	+49 561 810497-11