

CYBICOM ATLAS DEFENCE - BRIDGE SIMULATOR

PRESAGIS' SUITE OF MODELING & SIMULATION SOFTWARE ENABLED CYBICOM ATLAS DEFENCE TO DEVELOP ITS BRIDGE CONCEPT DEMONSTRATOR FOR THE SOUTH AFRICAN NAVY ON TIME AND WITHIN BUDGET.



AT A GLANCE

Customer // Cybicom Atlas Defence

Country/Region // South Africa

Domain // Maritime

Application // Bridge Simulator

Presagis Software // STAGE

// Vega Prime

// VAPS XT



CUSTOMER BACKGROUND

Cybicom Atlas Defence (CAD) has been a Presagis customer since 2007 and currently uses Presagis software tools to design and develop simulation systems primarily for the South African Navy. Examples of deployed systems by CAD include an integrated periscope simulator, a helicopter flight deck trainer, and a helicopter flight simulator.

BUSINESS CHALLENGE

In May 2013, the South African Navy provided requirements for a ship bridge simulation solution to help reduce the Navy's training costs and increase user skills and experience via simulation-based technologies.

In order to build a bridge concept demonstrator, CAD used Presagis' suite of software tools to develop and deploy the underlying simulation application for the prototype. As a self-funded R&D project, the key challenge for CAD was to keep development costs low while developing a prototype within a 3-month timeframe.

SOLUTION OVERVIEW

The bridge simulator developed by CAD is an advanced concept demonstrator with a number of sophisticated features. The simulator includes the latest version of the CAD Compact Tactical Aid (CTA)—a simplified command and control system—designed to facilitate the overall control and situational awareness of Navy boats.

CAD's bridge simulator comprises of four locally designed and built consoles and a bespoke instructor workstation. The throttle and steering controls are also locally designed and manufactured.



“The combined development tools offered by Presagis cannot be matched by other vendors in the modeling & simulation market”

- Malcolm Behrens, CEO
Cybicom (Africa) Technologies (Pty), Ltd.

CAD's bridge simulator is driven from an instructor station using Presagis STAGE. This software tool allows for powerful scenario simulation for multiple land, sea, and air targets. Each platform has the effective ranges and detection probabilities for the various sensors and effectors calculated in real-time.

WHY CAD CHOSE PRESAGIS

The interoperability of Presagis' simulation, visualization, and human-machine interface (HMI) tools, and their tight integration with third party extensions such as DI-Guy made Presagis a clear leader in the marketplace.

In order to accelerate the application development process, the CAD team reused development efforts from previously deployed simulation systems based on Presagis STAGE and Vega Prime. For example, developers were able to easily tweak ocean parameters in order to provide a visually impressive view from the simulated bridge. Combined with a simple motion model, developers were able to provide impressive ship dynamics and responses.

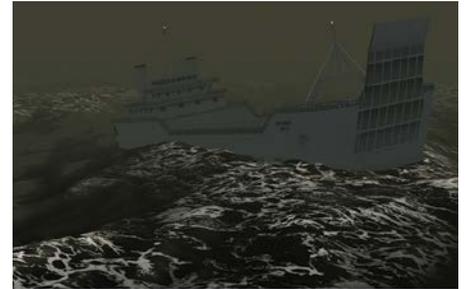
The CAD team also used Presagis VAPS XT to rapidly develop interactive conning and propulsion displays for the bridge simulator without depending on external graphic designers to complete the design work.

What's more, fast and efficient technical support from Presagis enabled the CAD team to quickly address any technical challenges they encountered. Quick turnaround times were critical in meeting the company's tight timeline.

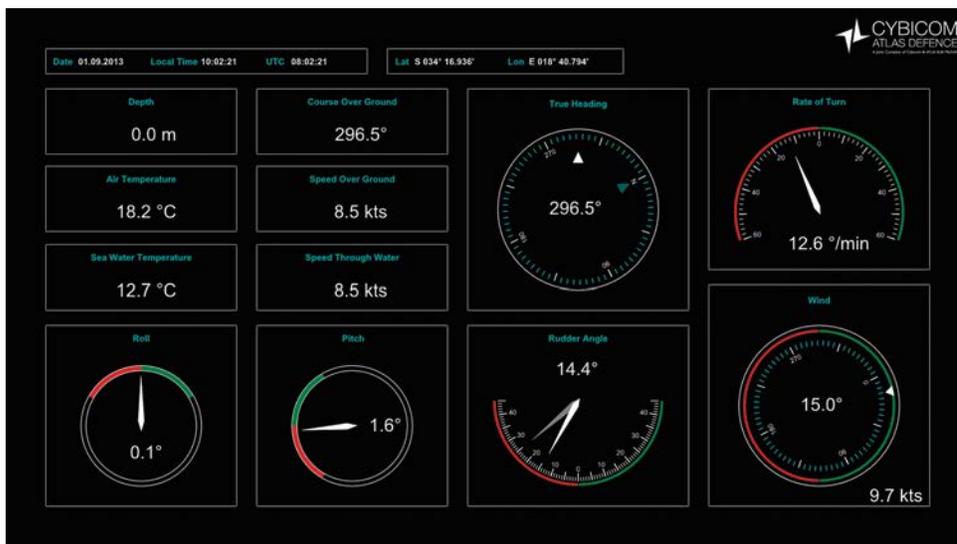
PRESAGIS TOOLS IN ACTION

Presagis software tools were extensively used to create the simulation scenarios and interactive displays, and visualize the end application:

- Image generation is based on the **Presagis Vega Prime** visualization toolkit (including the Vega Prime Marine and Effects modules) and displayed across a three-monitor video wall.
- The propulsion display was developed using **Presagis VAPS XT**. It reflects the propulsion system parameters in real-time as supplied by the bridge simulator ship model. This display can be upgraded to include the full set of integrated platform management system controls.
- A custom instructor workstation provides for instructor definition and control of the scenario and bridge simulator using the **Presagis STAGE** development kit. The instructor is able to control all environment aspects including sea states, weather, target movement, and engagements. All sensors and effectors (e.g., guns) are modeled for detection and hit probability.



Vega Prime Marine is an optional module for Vega Prime that allows users to realistically simulate full dynamic 3D ocean surfaces, ocean vessel characteristics and effects, and shallow water behavior.



The conning display was developed using Presagis VAPS XT and presents various navigation and sensor data necessary for command of the ship. This display can be customised to include a large variety of sensor information.

A major advantage of the Presagis suite of tools is that it enabled CAD developers to reuse data from previous development projects. Updates and enhancements to create the new simulation system required a fraction of the development time and resources, and hence kept costs down.

The hardware was assembled and installed in approximately 48 hours. The existing false-floor at the venue allowed for all cabling to be hidden resulting in an extremely neat and efficient installation. The software was pre-loaded onto new Alienware X51 hardware and final setting-to-work was completed in under a day.

“The reaction to our simulator by the South African Navy admirals and officers was 100% positive.”

- **Malcolm Behrens, CEO**
Cybicom (Africa) Technologies (Pty), Ltd.

DEPLOYMENT RESULTS

CAD successfully demonstrated its prototype at the South African Navy Simulation Symposium in September 2013. The bridge concept demonstrator was met with extremely positive reviews by the South African Navy. The ability to operate the prototype in the existing training environment helped to ensure that a reliable demonstrator was delivered in a timely fashion.

SUMMARY

CAD was specifically looking for a common development toolset that would not only serve the specific R&D project at hand, but also help accelerate future simulation development projects. Presagis' comprehensive and integrated suite of software tools provided CAD with an open and scalable simulation toolkit to develop and demonstrate its bridge simulator prototype to the South African Navy on-time and within budget.

About Cybicom Atlas Defence

Cybicom Atlas Defence (CAD) is a joint company between Cybicom Africa Technologies Pty Ltd and ATLAS ELEKTRONIK GmbH. CAD was originally created to provide in-country, local support for the combat suite installed on the South African Navy Heroine Class Submarines. The company has evolved from undertaking warranty related repairs to designing and developing graphical training simulators, interface stimulators, and constructing and integrating a land based Submarine Combat Suite for the South African Navy. CAD is a prime example of successful technology transfer that when coupled to an effective skills retention and development program leads to international award winning performance. The company is uniquely positioned to offer surface and subsurface naval combat system integration, image generation, and command and control simulation.

About Presagis

Presagis is a global provider of software for the development of modeling, simulation, visualization, and embedded display applications. Focused on building intimate relationships with its customers, the company provides integrated and comprehensive end-to-end solutions based on open standards, with a unique combination of commercial software tools, and professional development and advisory services.

Presagis makes the future safer by building software that helps its customers reduce development risk, improve time-to-market and lower costs in complex projects, in addition to developing DO-178 certifiable applications. With recognized expertise in the aerospace and defense markets, the company services more than 1,000 active customers worldwide, including many of the world's most respected organizations such as Boeing, Lockheed Martin, Airbus, BAE Systems and CAE.

