

Modern Training for Modern Navies

# ViSTIS<sup>®</sup> Virtual Ship Training and Information System



A company of  
ThyssenKrupp  
Marine Systems

**TKMS Blohm + Voss Nordseewerke**



**ThyssenKrupp**

# Training the Navy of the Future

Naval training goes high-tech in response to longer deployments, budget

## CHALLENGE #1

Using original equipment as training hardware is extremely expensive, immobile and inflexible

In practice, crew members are trained in various geographical locations. Specialist training and crew team training programmes are also decentralised. The provision of training hardware for each training location is costly and inefficient.

## The ViSTIS® Solution

ViSTIS® is capable of simultaneously providing virtual systems and equipment, or an entire virtual ship, all at multiple locations.

Individual and Team Training can be conducted in the classroom and beyond.

Team Training can include team members from other locations using public and/or private networks, enabling future crew members to start team training whilst still deployed elsewhere.

## CHALLENGE #2

Minimum manning as a measure to reduce personnel costs

Reduced manning levels on modern ships mean individual crew members have multiple roles and tasks. More complex knowledge must be absorbed than on current ships.

## The ViSTIS® Solution

ViSTIS® ensures consistent training quality and can respond to the learning styles and speed of each individual.

ViSTIS® enables a higher level of practical training than traditional methods using costly hardware. All course participants can simultaneously perform practical tasks without any risk to themselves or the navy's equipment.

The Intelligent Content Management system permits effective access to documentation and can be used directly on board the real ship to support daily work.



## constraints and cuts in human resources



### CHALLENGE #3

#### Periodic crew exchanges and personnel fluctuation

Crew exchanges whilst a ship remains in its operational area require a number of additional crews on land that must have follow-on training and practical preparation before deployment aboard.

Additional training slots are required for new recruits and reserve personnel. As the ship stays in the operational area, transit times can no longer be used for these preparations. Hence training capabilities must be independent of the ship and other training hardware.

#### The ViSTIS® Solution

ViSTIS® can supply as many virtual ships as needed, replicating the environment of any specific ship.

Ensuring sufficient server resources and computer classroom spaces allows the provision of as many training ships as are needed, making ViSTIS® a cost effective solution for replacing original hardware in modern training.

### CHALLENGE #4

#### Strong emphasis on Team Training and Combat Readiness

As crews are increasingly exchanged whilst their ships remain in operational areas, there is a need for an effective preparation phase and a safe method of checking the replacement crew's combat readiness.

This has to be achieved with minimum use of existing ships in order to save costs.

#### The ViSTIS® Solution

ViSTIS® allows flexible training from small teams to full crews and beyond. The focus of team training is on crew members applying the exact procedures and protocols for their respective jobs and tasks so that the team succeeds.

The system trains team work as on a real ship, in training sessions simulating a ship's handling and operation under various conditions that include system and equipment malfunctions.



**Around the world, navies are facing the challenge of higher operational speeds. They are encountering difficulties retaining skilled personnel – and must ensure that smaller ship companies are able to operate increasingly complex systems. Decreasing budgets add to the challenge.**

**These realities place greater pressure on training systems to be flexible, relevant, cost effective and all encompassing. ViSTIS® provides the solution.**



### **What is ViSTIS®?**

ViSTIS, the Virtual Ship Training and Information System, is an interactive, scenario-based team training system giving modern navies the capabilities to conduct technical, procedural, and tactical training, completely independently of real ships or hardware.

ViSTIS® trains officers and ratings of any rank, experience level, or function under normal or extreme conditions, and includes emergency and battle situations.

### **Cost Effective Training**

In comparison with procuring training hardware for every system of a navy, ViSTIS® provides considerable cost savings while raising training productivity by using any computer based training location.

Replicating the “Virtual Ship” as often as required gives navies the possibility to simultaneously train as many crews as needed without putting real ships, systems, equipment or crews to risk. ViSTIS® minimises the training time required on board. Furthermore, it improves the safety and productivity of on-board training sessions as trainees have already got to know their ship and what must be done to fulfil their roles.

### **Highly Realistic 3D Graphics**

The ship and its systems and equipment is visualised in a high quality 3D environment, using the world leading professional gaming engine CryENGINE® 3 from Crytek.

Virtual ships and environments look and behave in a realistic manner. Instructors and trainees are represented by lifelike uniformed, ranked avatars, with hair, faces and natural body shapes.

Training scenarios include various environmental and weather conditions in virtual depictions of real operational areas which is achieved by integrating actual geospatial data into the system.

**ViSTIS® has been designed to provide any imaginable training situation ranging from a simple on-board familiarisation to activities on a fully simulated and interactive virtual ship.**

**It connects to simulations and virtual worlds, includes other forces and enables complex team-training scenarios such as a helicopter landing, Air-to-Sea battles or complex multi-ship missions**

# The Virtual Ship Training

## Innovative Simulation Framework

Systems and equipment are fully interactive and react realistically to operations, just as on the real ship. This is ensured by a foundation of simulations of the ship's systems and equipment, which are linked up to the virtual operation panels and monitoring devices.

The Simulation Framework allows connection and integration of existing simulations via HLA or DIS programming interfaces.

Alternatively, System and Equipment functionality as well as Software Systems can be emulated for training at much lower costs than simulation. The modular and extendable architecture allows a Virtual Ship solution to match any training budget. The various system simulations are interconnected through the ViSTIS® Simulation Framework, where the 3D ship itself is the student's human-machine interface.

## Virtual Shipbuilding

ViSTIS® is designed to be highly flexible and modular, it can display any type of ship, vessel or any other complex system or equipment.

The 3D data is taken from the shipyard's and systems supplier's 3D construction process to ensure a high level of accuracy. The inbuilt configuration management capabilities offer the flexibility to simulate every single ship of a type with their differences in design and configuration instead of simulating only the First of Class (FoC) or a generic class ship model.

## Distance Learning Concept

Team Training Scenarios in ViSTIS® can be accessed from various geographical locations. Trainees and instructors can access their training ship, courses and scenarios from any location, utilising public and private network connections, hence saving travel costs and minimising absence from home.

Crew members can easily take parts of their training programmes home and train on their gaming console or home computer.

More complex or classified training scenarios are conducted in secure training locations, using secure networks.

## Intelligent Management Features

The integrated *Course Management System* regulates access to courses, scenarios and content.

Security levels ensure that users can only access data, content, rooms and systems that match their security classification and real world access rights. The system can handle the career data of each participant and tracks activities, assessment results, and performance information.

The *Learning Content Management* system is responsible for ensuring that the student always has access to the most up-to-date information, exactly when and where the information is required.

Recordings of training scenarios are managed and shared to offer best-practice examples, ensuring that knowledge and experience are captured for future generations.

## ViSTIS® ADVANTAGES

- Lower procurement and running costs
- Increased availability and flexibility
- Dangerous situation training
- Less strain on the real ships
- Increased efficiency through inter-activity
- State-of-the-art training technology



# and Information System: **ViSTIS**



## Innovative Content Organization

The primary content in ViSTIS® is the ship itself, with its accurate 3D systems and equipment. It can be created in 3D by the customer or through ViSTIS® Professional Services. This 3D data can be an automated by-product from the 3D construction design process, or created by hand in a 3D modelling software or using other techniques such as laser scanning of existing systems.

The second content type is the detailed data of systems and equipment plus (where applicable) the underlying simulations.

The number of simulations and their respective detail levels can vary based on the learning goals for the training.

Scenarios represent the third content type within ViSTIS®. They bring the exact procedures and required steps to the visualised systems and their simulations and are the skeleton for the training content.

All steps within a scenario can be tracked and assessed. Scenarios are created once through an intuitive editor and can then be conducted many times, either in a demo, training or assessment mode. In ViSTIS®, these three content types are wrapped together in the mission modules, which are grouped by department.

## Mission Modules

Mission modules can have different levels of details, depending on the type of training to be conducted and on its required depth.

A mission module (for example, deck services) includes the high quality 3D model of all necessary systems and equipment, with simulated and emulated functionalities required to train the exact roles within a specified department. Additionally, they include the required training scenarios either for team and/or single user training.

ViSTIS® integrates any type of media that can be used to support training. Standards-based learning modules can be integrated into the scenarios and additional information for any available assembly and selectively released to trainees. This content can either be drawn from the ViSTIS® Media Data Base or a connected external system (e.g. IETD Systems, CMS Systems).

ViSTIS® features a What-You-See-Is-What-You-Train Editor (WYSIWYT Editor), making scenario creation, content authoring and information delivery easy and effective.

Once created, scenarios can be delivered to target gaming platforms or PCs in real-time, without extra work or computing power.

## ViSTIS® AVAILABLE MISSION MODULES INCLUDE:

- Ship Platforms
- Deck Services
- Ship Handling
- Navigation
- Fire Fighting / Damage Control
- Medical Support
- Logistics
- Tactical Communication
- Combat Management
- Fleet Management

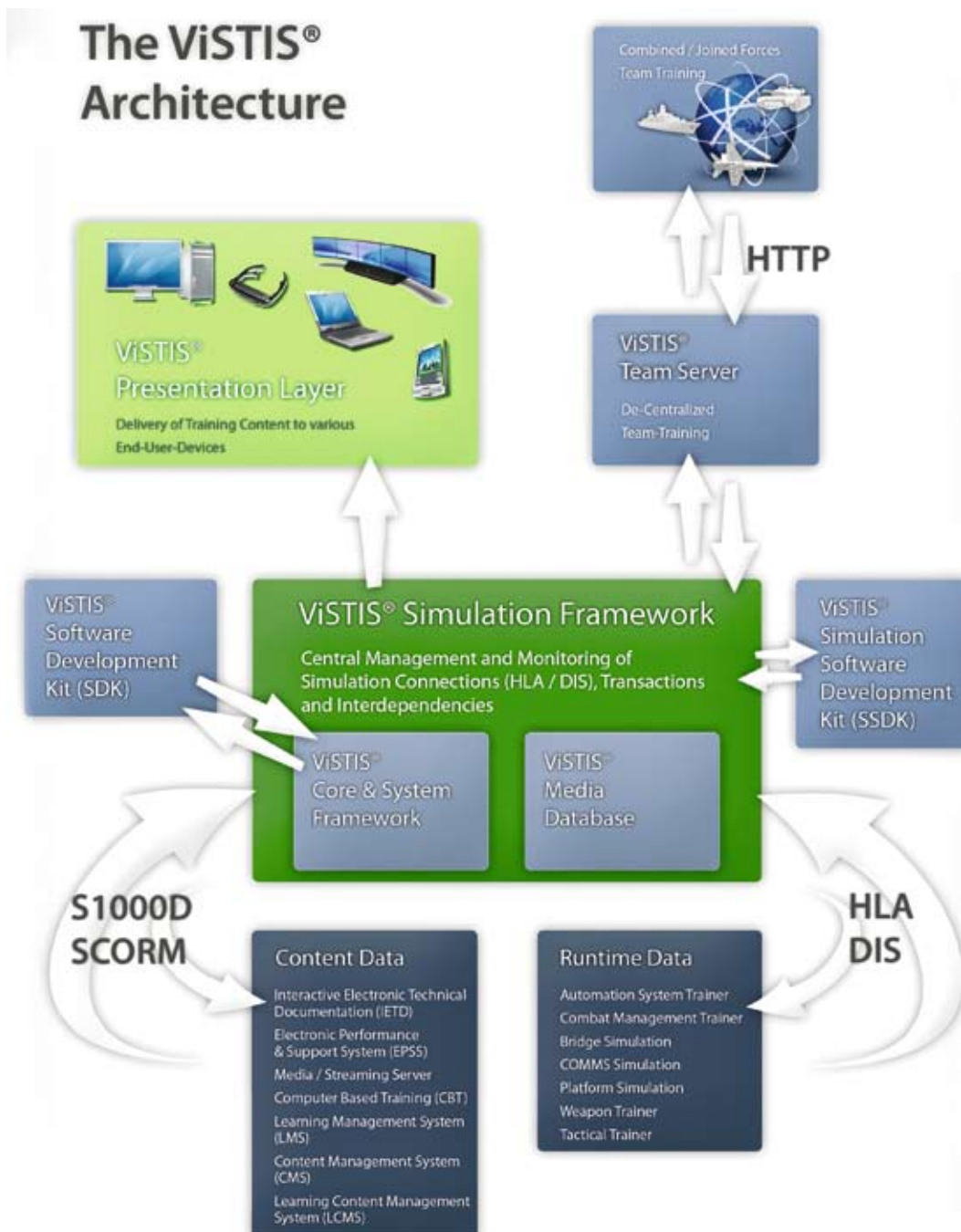


## Reliable, future-proof Enterprise Architecture

The standards based systems architecture and flexible, modular design of ViSTIS® allows navies to engage in the development and maintenance of their training system and to extend it with additional system modules, mission modules and/or additional Ships.

ViSTIS® makes use of state-of-the-art technology, programming techniques and standards, utilizing the capabilities of proven Enterprise Middleware applications, to ensure high availability and security.

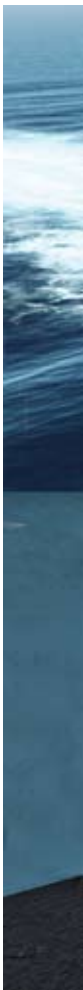
Its various sets of Application Programmer Interfaces enable customers to integrate and deploy future technologies and concepts, allowing effective and state-of-the-art training within the life cycle of the ship and beyond.



## ViSTIS® PROFESSIONAL SERVICES

Beside flexible ViSTIS® licensing options, various professional services to successfully deploy, operate and maintain ViSTIS® are offered, which include:

- ViSTIS® Integration and Implementation Services
- 3D CAD Workflow and Modelling Services
- Training Concepts
- Scenario Authoring and Design
- Training Content Authoring and Conversions
- ViSTIS® hosted and maintained Servers
- Train the Trainer Courses



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