

**ST TRAINING & SIMULATION
SHOWCASES LIVE TRAINING AT SEA AND COALITION TRAINING NETWORK
AT IMDEX 2003**

Singapore – 10 November, 2003 – ST Training & Simulation Pte Ltd (STTS), a subsidiary of Singapore Technologies Electronics Limited (ST Elect), has developed a system which enables various forces to train seamlessly together in coalition exercises.

At IMDEX 2003, STTS will showcase an example of its capability together with the Republic of Singapore Navy and the United States Navy in a coalition exercise scenario. This solution will highlight its capability on a large scale involving RSN ships at sea as well as USN personnel both in Singapore as well as in Dam Neck, Virginia - all participating in a single virtual exercise.

STTS has extended the training scenario to encompass both flight and Unmanned Airborne Vehicle simulators. This demonstrates a capacity to integrate various types of simulators – live, virtual and constructive, to provide complete hierarchical training for joint operations from the commanders to the operators.

Highlights of the Show will include:

a) Live Training & Networked Coalition Training

The IMDEX show will highlight two key RSN capabilities – the ability to conduct live training at sea as well as coalition training networked via simulators on shore both locally and overseas. An integrated view of the progress of the demonstration exercise

will be displayed at the Reality Centre in the STTS booth. This will be accompanied by commentary by RSN and USN personnel which include the following scenario:

- The USN will employ two craft in the scenario, one located at the Expo and the other located in the US.
- Two RSN ships at sea will play the role of live participants in the scenario.
- The other scenario participants will be run from simulators at the STTS display including:
 - Two Distributed Mission Fighter Stations representing F-16 playing an interdiction and attack role.
 - A Naval Combat System Emulator that will simulate an Action Information Station as well as a Harpoon station to simulate an opposing force ship.

All other scenario participants will be computer generated.

Other displays provided will be the:

- Stealth view –a 3D perspective of the scenario using computer graphics.
- Tactical Situation Picture – a 2D plan view, providing a common representation of the tactical scenario.
- Live Video Feed – The live video feed will be provided from the BFTT located in the US as well as from a RSN ship at sea.

b) Fleet Instrumented Sea Training System (FISTS)

The FISTS system provides the means for the RSN to train with their operational equipment in a virtual environment. Termed “live” training to denote the use of live equipment, the system embodies the concept of “train as you fight”. This is as the training equipment and the operational equipment are one and the same. The FISTS is unique in providing at-sea training.

c) Battle Force Tactical Trainer (BFTT)

The BFTT is the USN’s solution to live training. BFTT capability provides USN ships with “live” training capability. This allows ships to connect to a simulation network when berthed. In the exhibition, the actual shipboard systems are replaced by emulators which are connected via the BFTT to the simulation environment.

d) Advance Combat Emulator

The ACE is new addition to the STTS simulator repertoire, providing a cost-effective emulation solution to training operators of ship-board combat systems. Two ACE systems will be shown, the Action Information System and the Harpoon Firing Console.

e) Networking

Realization of the interoperability between these various classes of simulators is made possible through the use of standardized protocols. Three dissimilar standards were used in the displayed system – the older Distributed Interactive Simulation (DIS) used by BFTT and the state-of-the-art High Level Architecture (HLA) used by the DMFS and the unique FISTS' protocol. STTS' protocol engine provides a framework for converting and routing messages between the three systems, providing seamless interaction between the systems.

f) Distributed Mission Fighter Station

Developed as part of a larger mission training system, the DMFS is a single station from a multi-station networked simulator. Its role is to provide pilots with mission training specifically in missions with multiple participants – e.g. entire squadrons. Use of the High Level Architecture allows interoperability with other like simulators to realise large-scale multi-entity training.

g) Unmanned Airborne Vehicle Simulator

Though not part of the BFTT scenario, the UAV simulator can interoperate with the rest of the systems. The UAV simulator provides a means to train UAV pilots as well as ground crews on the operation of the UAV. The system provides training for the launch and recovery of the vehicle as well as the control of the vehicle during a mission.

Visit us at : IMDEX 2003, Booth no. 216, Singapore Expo Hall 3

For more details on the exhibits and scenario, please refer to the attached information sheet.

About STTS

STTS was incorporated in 1996 as a subsidiary of ST Elect. Its 230-strong workforce offers expertise in providing one-stop solutions, from software applications and development of

STTS AT IMDEX 2003 – INFORMATION SHEET

Introduction

Large-scale military conflicts today are fought by coalitions of nation states rather than by any individual nation state. Such arrangements reap many economic and political benefits. However, command and control requirements for such a heterogeneous coalition are significantly more complex.

This has been further exacerbated with use of computer technology for command and control. In the past, command and control was realized using analog voice and signal communications. This is no longer sufficient or effective as participants now use sophisticated combat management systems to manage operations and these need to exchange significant amounts of data among themselves in order to maintain a consistent situational state.

As such combat management systems vary from nation to nation, as well as across forces within a single defence establishment, a system to allow interoperation of these combat management systems becomes vital for coalition operations.

ST Training and Simulation, Pte Ltd (“STTS”), a subsidiary of Singapore Technologies Electronics Limited (“ST Elect”), the premier simulation solution provider in Asia, has recognized this need and has developed solutions which provide the Republic of Singapore Navy with a means to train.

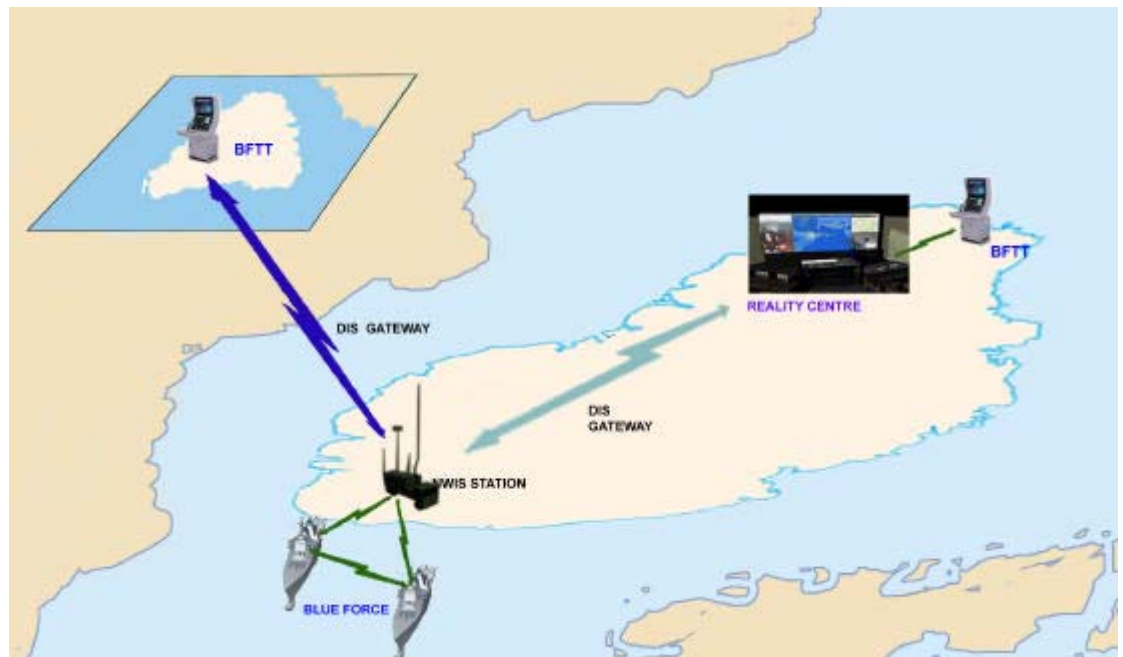
The IMDEX show will highlight this capability on a large scale involving RSN ships at sea as well as USN personnel both in Singapore as well as in Dam Neck, Virginia - all participating in a single virtual exercise.

In order to demonstrate to utilization of both naval, air and intelligence assets within the coalition exercise, STTS has extended the training scenario to encompass both flight and Unmanned Airborne Vehicle simulators. This demonstrates a capacity to integrate the major types of simulators – live, virtual and constructive to provide complete hierarchical training for joint operations from the commanders to the operators.

Highlights

The IMDEX show will highlight two key RSN capabilities – the ability to conduct live training at sea as well as coalition training networked via simulators on shore both locally and overseas. The following diagram demonstrates the training concept:

As shown in the diagram above, the conduct of the demonstration exercise will be displayed at the Reality Centre in the STTS booth.



- The Reality Centre will provide an integrated view of the exercise as well commentary by RSN and USN personnel.
- The USN will employ two craft in the scenario, one located at the Expo and the other located in the US.
- Two RSN ships at sea will play the role of live participants in the scenario.
- The other scenario participants will be run from simulators at the STTS display including:
- Two Distributed Mission Fighter Stations representing F-16 playing an interdiction and attack role.
- A Naval Combat System Emulator that will simulate a Action Information Station as well as a Harpoon station to simulate an opposing force ship.

All other scenario participants will be computer generated.

Exhibition

STTS will present a subset of the simulators within its repertoire. The following diagram shows the various simulators and training systems within the display:

The key components are as follows:

Reality Centre

The reality centre provides the audience with a complete view of the progress of the scenario. It is also used to provide presentation material to introduce and explain the course of the training.

A number of displays will be provided:

- *Stealth view* – this provides a 3D perspective of the scenario using computer graphics. Such a view provides excellent representation of the spatial relationship of the various participants in the exercise.
- *Tactical Situation Picture* – A 2D plan view, it provides a common representation of the tactical scenario which is easy to understand and manage. It can also be superimposed over cartographical maps.
- *Live Video Feed* – The live video feed will be provided from two sources – the BFTT located in the US as well as from a RSN ship at sea. The feeds will show the operation of the Combat Information Centre during the conduct of the scenario and will be presented with audio.

Fleet Instrumented Sea Training System (FISTS)

The FISTS system provides the means for the RSN to train with their operational equipment in a virtual environment. Termed “live” training to denote the use of live equipment, the system embodies the concept of “train as you fight”. This is as the training equipment and the operational equipment are one and the same. The FISTS is unique in providing at-sea training.

Battle Force Tactical Trainer (BFTT)

The BFTT is the USN’s solution to live training. BFTT capability provides USN ships with “live” training capability. This allows ships to connect to a simulation network when berthed. In the exhibition, the actual shipboard systems are replaced by emulators which are connected via the BFTT to the simulation environment.

Advance Combat Emulator

The ACE is new addition to the STTS simulator repertoire, providing a cost-effective emulation solution to training operators of ship-board combat systems. Two ACE systems will be shown, the Action Information System and the Harpoon Firing Console.

Networking

Realization of the interoperability between these various classes of simulators is made possible through the use of standardized protocols. Three dissimilar standards were used in the displayed system – the older Distributed Interactive Simulation (DIS) used by BFTT and the state-of-the-art High Level Architecture (HLA) used by the DMFS and the unique FISTS’ protocol. STTS’ protocol engine provides a framework for converting and routing messages between the three systems, providing seamless interaction between the systems.

Distributed Mission Fighter Station

Developed as part of a larger mission training system, the DMFS is a single station from a multi-station networked simulator. Its role is to provide pilots with mission training specifically in missions with multiple participants – e.g. entire squadrons. Use of the High Level Architecture allows interoperability with other like simulators to realise large-scale multi-entity training.

Other exhibits

The following systems will also be exhibited, though not part of the BFTT scenario but can interoperate with the rest of the systems.

Unmanned Airborne Vehicle simulator

The UAV simulator provides a means to train UAV pilots as well as ground crews on the operation of the UAV. The system provides training for the launch and recovery of the vehicle as well as the control of the vehicle during a mission.

Conclusion

STTS will be exhibiting a rich display of live, virtual and constructive training system at IMDEX'03. The systems will demonstrate interoperability with the infrastructure developed by STTS - ensuring all participant experience a single synthetic environment.

With this display of simulators and trainers, the RSN/STTS IMDEX exhibition promises to be the star attraction of the show.

Visit us at:

ST Training & Simulation Pte Ltd, Booth no. 216
Singapore Expo Hall 3

Contact at IMDEX 2003:

George Goh
Deputy Vice President, Marketing
ST Training & Simulation Pte Ltd
Tel: (65) 6413 1309
Fax: (65) 6482 6162
Mobile: (65) 96303181
Email: gohg@stts.com.sg