simflex4

Full Mission Bridge

Technical specifications

We are pleased to present an interactive PDF with technical specifications for the Full Mission Bridge. The information below will guide you in reading the PDF.

When placing the mouse over the blue dot, boxes with additional information will appear. To close these boxes, click on the dot.

If a box is open in the PDF, it will show in the printed version.

Feel free to contact us in case you do not find the relevant information.

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FORCE TECHNOLOGY

Full Mission Bridge with integrated Bridge System

A Full Mission Bridge from FORCE Technology delivers full user-configurable layouts that enable support for training with all types of vessels.

The customized design allows you to have an influence on the design and colours used, selection of instrumentation and functional requirements.

With the SimFlex4 simulator package, users can combine Full Mission Bridges, Part Task Bridges and Desktop Trainers – the implemented software supports all platforms and is easily configurable to any combination the user may wish.

SimFlex4 is approved and certified according to the DNV 2.14 Class A standard and the Danish Maritime Authority for a wide range of courses even beyond the IMO requirements.

The simulator package allows full integration to many 3rd party vendors of maritime equipment such as Radar/ARPA and ECDIS (single and IBS), GMDSS, GPS, PPU, DP, etc. through standardized industrial protocols.

The Full Mission Bridge utilizes a proprietary communication system that is fully integrated into the SimFlex4 simulator package. The system supports devices such as VHF/DSC, MF/HF, PA, Intercom, Satellite telephones (Inmarsat), EPIRB, NAVTEX, standard telephones, etc. The individual components of the Full Mission Bridge are selected with focus on high professional quality with extended vendor warranties. This ensures the user a system with an excessive life time as compared to similar systems and a very low need for maintenance, all resulting in a TCO well below expectations.

Simulator Technology in SimFlex4

The structure behind the scenes

How do we ensure that our crew has the needed competence level? Can this vessel type call our port? Which weather conditions are limiting our operations ?

Our simulator has the answers!

The design strategy behind SimFlex4 is a modular approach that enables each module to function individually. When working with multiple instruments and multiple bridges in a scenario, it is important that the overall system will function if a single module drops out. In that sense, each bridge will continue even if another module/bridge is not available.

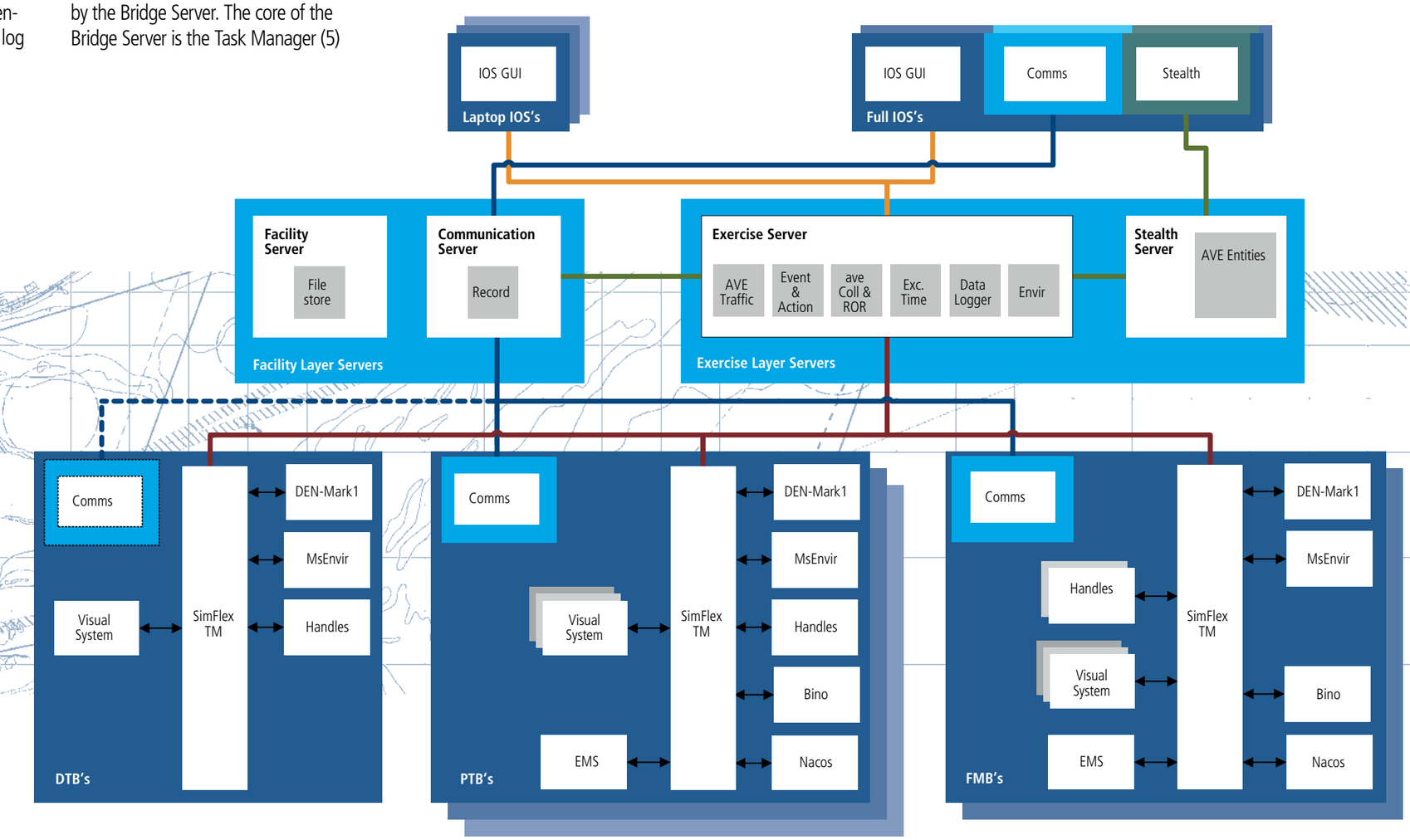
Every simulator is built around a Facility Server[1] sharing exercises, ship and environment data as well as space for log files and CCTV recordings. The Facility Server is supported by the Communication Server[2] controlling all audio and CCTV streams from radios and cameras. An exercise scenario is controlled by an Exercise Server (3) that records data of time, events, vessel position, rules of the road, environment parameters etc.

Each bridge, no matter configuration or size, consists of a Bridge Server (4) and a number of instruments commanded by the Bridge Server. The core of the Bridge Server is the Task Manager (5) that controls and commands messages between internal and external modules – both software-based instruments and all hardware panels.

In the core, the mathematical model DEN-Mark1 (6) operates the own ship. The DEN-Mark1 mathematical core has been validated in numerous cases against model tests and full-scale measurements.

The three most important environmental influences, current, wind and waves, are modelled accurately from the best source available.

The bridges are supported by both the Instructor Operating System (IOS) (7) and the Debriefing/Replay facilities. Both communicate through the Exercise Server and get resources from the Facility Server.



NOMENCLATURE

AVE: Autonomous Virtual Entity
Stealth: Free flight view of environment
Envir: Model of the physical environment
MsEnvir, Handles, Bino = subsystem/instruments
IBS: Integrated Bridge System
EMS: Emergency Management System

Manoeuvring Console

Available consoles for the SimFlex4 Full Mission Bridge

The centerpiece of the simulator - the manoeuvring console offering a high degree of customisation.

In determining your needs for the layout of the Full Mission Bridge, the centre manoeuvring console is essential.

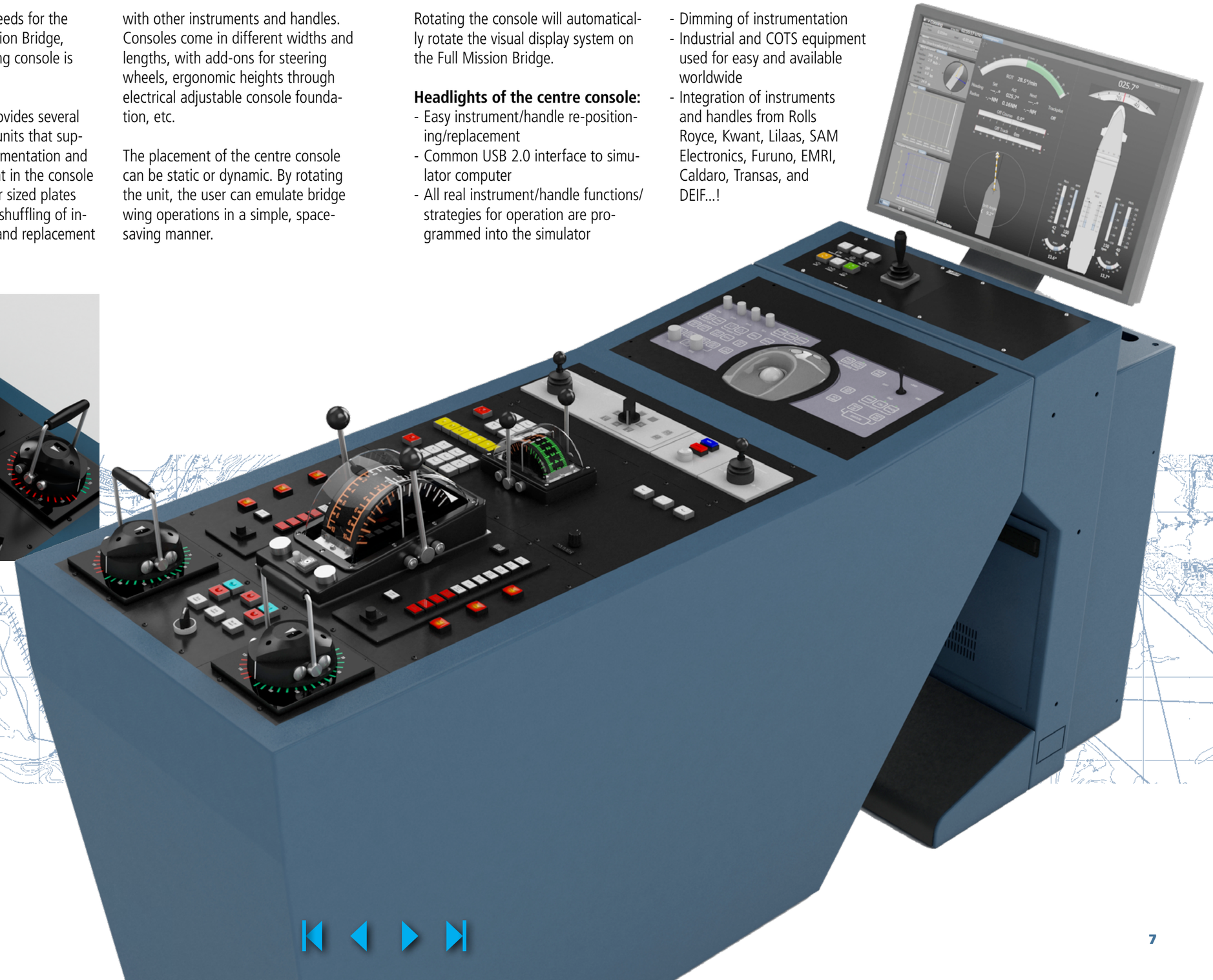
FORCE Technology provides several configurable console units that support all kinds of instrumentation and handles. All equipment in the console is mounted in modular sized plates that enable very easy shuffling of instrument positioning and replacement with other instruments and handles. Consoles come in different widths and lengths, with add-ons for steering wheels, ergonomic heights through electrical adjustable console foundation, etc.

The placement of the centre console can be static or dynamic. By rotating the unit, the user can emulate bridge wing operations in a simple, space-saving manner.

Rotating the console will automatically rotate the visual display system on the Full Mission Bridge.

Headlights of the centre console:

- Easy instrument/handle re-positioning/replacement
- Common USB 2.0 interface to simulator computer
- All real instrument/handle functions/strategies for operation are programmed into the simulator
- Dimming of instrumentation
- Industrial and COTS equipment used for easy and available worldwide
- Integration of instruments and handles from Rolls Royce, Kwant, Lilaas, SAM Electronics, Furuno, EMRI, Caldaro, Transas, and DEIF...!



Available consoles for the Full Mission Bridge

Modular design for easy rearrangement

Adapting the simulator to the large range of vessel types available requires great diversity in the choice of console and instruments.

When designing the bridge, a large number of requirements must be met – primarily availability of instrumentation and information.

The SimFlex4 bridge elements include narrow and wide consoles, motorized elevations for steering stands, 30 degree and 45 degree corner modules, modules for support for 3rd party instrumentation and steering wheels, grab-on safety bars, monitor stands, etc.

All elements are designed to align in a modular fashion – you can combine the elements to form a complete bridge structure, a specially designed bridge wing or an additional secondary command centre – there are almost no limitations.

A new development in recent years is the implementation of bridge wing training – transfer of function and staff to the bridge wings and communication between wings and centre bridge.

The distance alone from the centre bridge to the wings can hinder normal communication. FORCE Technology has been able to combine both function and placement of the wing to support this type of training.

Integration of handles

Any 3rd party handles can be integrated

The great selection of manoeuvring handles from 3rd party vendors requires knowledge and skills to understand and interface to SimFlex4 to fully utilize the equipment and enhance the training value for the trainee.

Customized solutions
FORCE Technology can deliver a standard Full Mission Bridge based on high-quality instrumentation and handles.

This will, of course, create a bridge with a generic set-up supporting most ship bridge configurations.

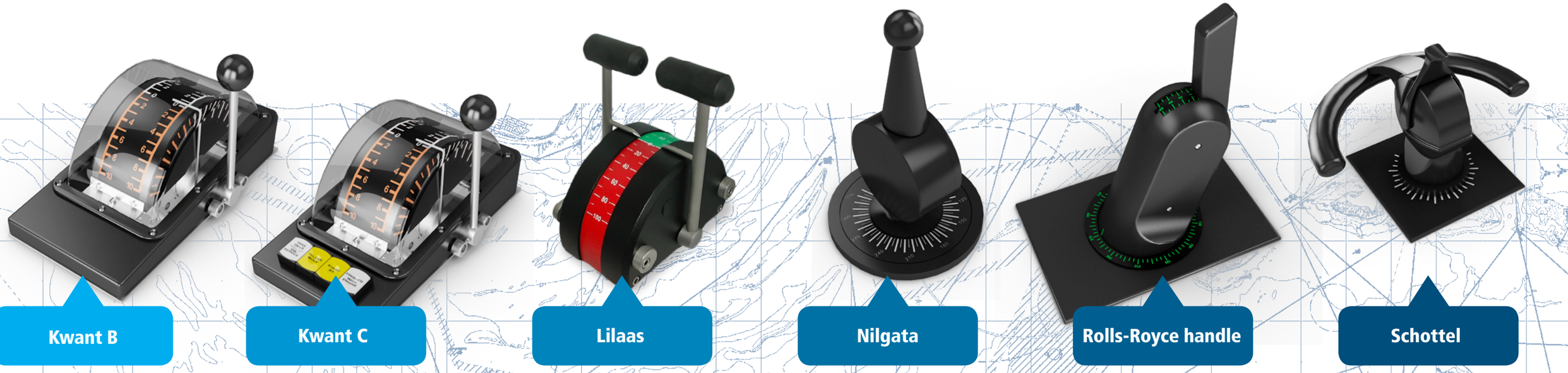
The user often seeks a realistic training environment on the bridge.

Replicating the real ship bridge – such as a cruise vessel with extensive instrumentation and specially designed consoles or a simple tanker with limited instrumentation – is a simple manoeuvre in SimFlex4.

Full Mission Bridges can also be used to replicate more advanced vessel types such as Offshore Supply Vessels, Jack-Up Vessels etc.

These vessels require a far more advanced integration of functions on the bridge - it may involve forward and aft bridges with controls of DP, anchores etc.

Voith controls



Kwant B

Kwant C

Lilaas

Nilgata

Rolls-Royce handle

Schottel

Instructor and Debriefing Station for Full Mission Bridge

With focus on the working environment

The instructor or operator of a Full Mission Bridge is the person with the overall view of the training session. This position requires a simple, logical and menu-oriented interface to reduce operator workload and input requirements. The instructor station itself must be ergonomically designed to support many hours of operation. Besides, monitors and controls must be within reach for easy access.

FORCE Technology has designed an instructor station that fulfills these requirements. The layout of the instructor station will, of course, be designed in close cooperation with the user and with input from the Human Factors theory.

The station can consist of monitors for direct control and monitoring of the Full Mission Bridge's functionalities as well as a number of devices for control and interaction through communication and visual aids.

The instructor station consists of:

- Main monitor with chart, ship and exercise information
- Touch screen to control all communication and selection of video sources from the bridges
- Monitor and joystick for stealth view – free flight in the exercise area
- Communication handset and headset

The instructor station allows the instructor or operator to set up, design and modify exercises, and it will provide full exercise control and monitoring.

One instructor station can control one exercise for one or multiple bridges in joint exercises.

Debrefing

One of the most important parts of simulator training is evaluation of the effort – the debriefing.

The instructor will be able to select material for evaluation of the training among the various recorded audio and video channels.

The system makes it possible to back up debriefing exercises on a separate data storage device (e.g. external HD or USB devices), allowing off-line debriefings later.

Full Mission Bridge

Specifications

IMO STCW-95 incl. the 2010 amendments

Achievable Training:
- All STCW competence requirements in STCW table A-II
- Navigational Bridge Watch Keeping and assessment
- Shiphandling – general and ship / Port / Waterway specific
- Bridge Team Management
- Crew Resource Management
- Emergency Response
- Ship to Ship Operation
- Tandem/SPM mooring
- Cable laying
- Master/Leadership assessment
- Towing operations
- Emergency Towing
- Radar/ARPA /ECDIS course
- Train the Simulator Trainer and Assessor

Simulator capabilities
- Up to 10 simultaneous bridges in same exercise
- Linked simulators over internet
- Own ships 6DOF
- Up to 150 target vessels (6DOF)
- All targets on route, WP > 1000
- Exercise duration > 24 hours
- Live authoring
- Environment
  - Range XX nm x YY nm
  - Animated objects
  - Radar data 3D
  - Depth data > xxx.xxx points (direct from chart)
  - Current data (direct or from external source)
  - Navigational equipment

Visual system
- BridgeView4
- Seamless multichannel on both projectors and monitors on up to 40 channels
- MultiView capability – several individual visual systems per bridge, main, wings, separate channels
- Embedded Warping and Blending
- Photo realistic texturing
- Directly interfaced to 3D StudioMAX
- Visual effects
  - Glare and trace from light sources
  - Reflections
  - Shadows
  - Smoke
  - Wakes and bow wave
  - Propeller wash
  - Visibility and Precipitation
  - Ocean waves
  - Breaking waves
  - Coastline waves
  - Ice
- Visual objects
  - Buoys
  - Mooring lines
  - Navigation lights
  - Search and Deck lights
  - Flags and signals
  - Binocular
  - Periscope
  - Animated objects (wind mills, radars, flags, anchors, winches etc.)
  - Sun, moon and stars
  - Clouds
  - Rain clouds
  - Whales
  - Airplanes and helicopters

Console configuration
- 5-9 consoles per FMB
- Custom-made alloy consoles
- Colour by customer selection
- Low weight suitable to motion platform
- Modular instrumentation, easy re-fit
- Easy interchangeable for re-arranging bridge layout

Selectable controls and instrumentation
- Dual engine throttle
- Water jet controls
- ASD handles from any vendor
- VSP handles
- Steering systems (miniwheels, sticks, steering stand, etc.)
- Thruster panels
- Emergency systems
- Communication (VHF, DSC, MF/HF, PA, IC, SAT, etc.)
- Engine control systems
- Doppler Log
- Log
- Wind direction and force
- Clinometer
- Temperature (air and sea)
- GPS (DGPS, Glonass)
- Gyro compass repeater
- Magnetic compass
- AIS repeater
- Alarm panels (engine, fire, watertight doors, etc.)
- Flags and navigational signals
- Sound controls (horn, bell, gong, etc.)
- Anchor, winch and mooring control
- Conning display
- ENC display (or type specific ECDIS)
- RADAR display (or full ARPA enabled type specific RADAR)
- Touch enabled instruments

Full Integration
- L-3 SAM Electronics NACOS XX-5 and Platinum
- Furuno
- STN Atlas
- Rolls Royce
- Kwant
- Lilaas
- Transas
- Maris
- And many more

Hardware and software
- COTS equipment
- High resolution monitors and projectors WUXGA
- High Performance nVidia® Graphics Adapter
- Intel® Xeon Processors
- LAN with Gbit and Fiber Optic capability
- Microsoft® Windows™ 7 Professional 64-bit OS
- Microsoft® Windows™ Server 2008 Standard 64-bit OS
- SimFlex4

Nemko

CERTIFICATE

www.nemko.com

FORCE Technology
Simulation and Information Dept.
Denmark

has implemented and maintains a Quality Management System which fulfills Nemko's provisions for Management System Certification and the requirements of the following standard

ISO 9001:2008

The certificate covers the following activities:

Design, manufacturing, installation and servicing of software and hardware for maritime simulator systems/units/components

Oslo, 2011-12-15

Pål Eddie
Nemko AS, Certification Department

IQNet

Certificate number: 900804
First time issued: 2005-12-15
Expires: 2014-12-15