EMPOWERING SIMULATOR INSTRUCTORS WITH NEXT-GEN TECH

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L3Harris | Power Systems and Simulation

Bernard Gagnon - Senior Manager, Engineering - Power, Space and VR Systems
About Us

L3Harris Technologies
HQ: Melbourne, Florida, USA
NYSE: LHX

Integrated Mission Systems
Space and Airborne Systems
Communication Systems

Montreal, Canada

L3 MAPPS Inc.
Naval ● Power ● Space
Automation ● Simulation & Training
Power Systems Product Portfolio

Newcomer and Classroom Training Technologies for Effective Personnel Development

Full Scope Operator Training Simulators/Upgrades for Operator Licensing

3D Visualization and Immersion De-risking Plant Design → Team Training → Decommissioning → Digital Twins

Early Learning Technologies

Technology-enabled Training Services
Build-Own-Operate-Train

Plant Control Computers CANDU Plant
Digital Control Hardware and Electronic System Reverse Engineering

Simulation Assisted Engineering for Plant Design, Development and Deployment
Introduction: Orchid® Instructor Station

• Touch devices are readily available and more popular than ever
  – More powerful, lighter, better displays
  – Various brands, sizes, functions, etc.
  – Different operating systems (Windows, iOS, Android)

• Interacting with gestures available for mobile devices and desktop PCs

• Although classic Orchid® Instructor Station usable on touch devices, user interface not optimal

• L3Harris’ latest generation instructor station designed for mobile devices and desktop computers
  – Single user-interface

• Orchid® Instructor Station [Touch] deliveries (installed and ongoing): Canada (1), France (4), Romania (1), Slovenia (1), Switzerland (1), Turkey (1), UK (3), USA (6)
Instructor Station Software Evolution

IOS Station (3G)  Irix (Unix)

(Isis<sup>TM</sup> (4G)

Windows

Orchid® (5G)

Windows

Orchid® (6G)

Windows
Overview

• Touch-enabled instructor station
• Simplified user interface for desktops and Windows tablets
• Windows 10/iPad-like functionality (swipe, flick, slide and pinch)
• Includes all expected instructor stations control features (e.g. freeze/run, store/restore, insert Instructor Actions, etc.) and advanced features
Instructor Station Basics

• Orchid® Instructor Station allows users to
  – Create/Edit scenarios
  – Freeze/unfreeze the simulation
  – Store/restore any plant condition
  – Backtrack/replay all operator actions
  – Speed-up/slow-down simulator
  – Interactively introduce plant malfunctions
  – Monitor and track operator performance
  – Monitor, record and plot all parameters
  – Perform control room panel diagnostics
  – Execute commands directly from Word with easy-to-use capture mode
  – Generate training performance records and reports
User Convenience

- Configurable Home Screen
  - Enable/disable tiles
  - Zoom in/zoom out
  - Layout configuration
  - Creation of custom tiles for frequently used instructor operation
  - Language selection

- Navigation
  - Quick access to opened graphical displays
  - Easy access to tabulated items
  - Open/close function
  - Organize windows in desktop mode
• Advanced Charting
  – Offers modern charting functions
  – Overlay of different data sets (simulation vs.
    imported, simulation vs. recorded, calculation of
    tolerances)
  – Set markers for events based on condition
    evaluation or from Simulator Action Monitor
    (SAM)

• Scenario Manager
  – Automate scenario execution and data collection
  – Graphically create and run repeatable scenarios
    from library of objects
  – Student assessment with scoring based on
    predefined criteria
  – Automatic creation of scenarios from SAM
Seamless Integration

• Integrated user interface to browse between modeling schematics, system (active) schematics and virtual (soft) panels within the instructor station
Scenario Based Testing & Training (SBT²)

• Single button to run tests, collect data and generate report
• Schedule and run multiple scenarios
• Automatically collect and archive data for future analysis
  – Parameter values
  – Plant automatic actions and alarms
  – Operator and Instructor actions
• Compare data against previous results
• Very simple user interface
Scenario Based Testing & Training (SBT²)

- Execution Summary
  - Template selected
  - Server/Workspace/Configuration
  - Execution information (Start/End time, duration, etc.)
  - Test results (Pass/Fail)
  - Baseline used for the test → Reference data

- Autogenerated reports including scenario details
  - Initial condition used
  - Participant/personnel names
  - Scenario description, purpose, date, time, etc.
  - Attach relevant files (data, procedures, tests, etc.)
  - Test results
Demonstration
Conclusions

• Orchid® Instructor Station - futureproofing simulator instructor stations

• Fully loaded instructor station with expected and advanced features

• Orchid® Instructor Station
  – Intuitive and convenient user experience with touch gestures
  – Built-in tools to empower instructor control of simulator sessions
  – Seamless navigation between instructor-specific pages, soft panels and modeling schematics
  – Powerful scenario-based testing and report generation
  – Great for young and seasoned simulator instructors and instructors of the future

• Bonus: Orchid® Instructor Station available for L3Harris and third-party simulators