

Control Rooms

Make Better Decisions with Workstation Integration

Workstation integration provides more accuracy and efficiency in control rooms and operations centers by changing the dynamic by which operators interact with multiple computers and control systems. Operators make more effective decisions by accessing the right information, at the right time, and in the right place, using industry-leading image processing techniques. Workstation integration is a fundamental and transformative change to the decision-making process, not merely an incremental enhancement.

This white paper:

- Focuses on decision-making as the first priority of control rooms
- Examines the threats to effective decision-making
- Presents the merits of workstation integration techniques

First Priority *Make more effective decisions*

The first priority of a control room is to make accurate, timely, and competent decisions. Operators must make instant judgments based on text, data, and graphic information from multiple computers and control systems. Many of these systems run automated processes, but rely on a human operator to intervene in exception-type situations. Other systems require continuous monitoring with correctional or control inputs by the operator as needed.



Make more effective decisions. Operators make better decisions when they are empowered with the most important information in their immediate field of focus.

The primary challenge, for each operator, is to get appropriate information from every system that drives the decision, without being confused or sidetracked with non-essential input.

Perfect Storm *Threatens effective decision-making*

In countless control rooms and operations centers around the world, a Perfect Storm is looming that threatens the integrity of decision-making. The elemental force driving this storm is a growing surge of information propelled by an ever-increasing proliferation of separate computer and control systems. This seething sea of data overloads the senses to the point where the meaning of the information is lost in clouds of visual clutter.

The financial impact of incorrect decisions may be impossible to

calculate, but the strategic repercussions are immense and quite tangible. In broadcasting or other customer service arenas, the impact may be higher expenses, lost revenues, and angry customers. In military command and control, industrial process control, or aviation, the cost could be human life.

Several elements threaten effective decision-making

Critical information is scattered and hard to find

The size and position of information, relative to an operator's field of view, is paramount in making good decisions. Ideally, information vital to the decision at hand would be directly in front of the operator, surrounded by important supporting information. Non-essential information would be de-emphasized and placed further out of the operator's field of focus to avoid confusion.

PROBLEM:
poor decisions

CAUSE:
disorganized information

ACCELERANT:
*proliferation of
information overload and
multiple, incompatible
systems*

Unfortunately, in most operating situations, important information is scattered across a wide field of view. And, to exacerbate the problem, the most critical information, for a given situation, may be at the far reaches, or entirely outside the operator's immediate field of focus.

Relative importance of information varies with the task

Information critical to making one decision may be unimportant to making another. The relevance of information varies frequently throughout different phases of a process and at different times during an operational day. Operators responding to an emergency require different data than for routine operations. Also, the skill and responsibilities of a given operator change the value and relative importance of information.

To further complicate matters, many systems were not designed with the issues and priorities of a control facility in mind. Critical data gets mixed with the non-critical, and frequently information unimportant for a given decision is more prominently displayed than the information actually needed.

Multiple systems create chaos

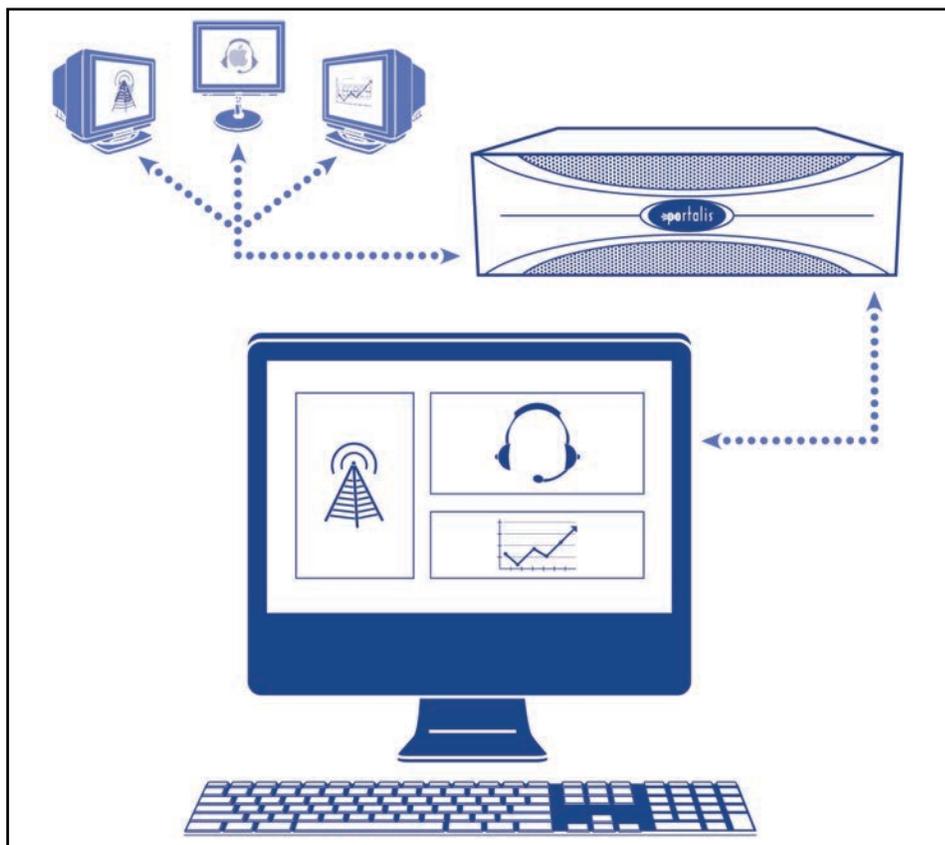
Operators working simultaneously with three, four, or more different systems is a common sight in most control rooms. Operators are mired in complicated and confusing work positions with displays and keyboards strewn around control centers. Legacy systems are often impossible to integrate and newer systems frequently run incompatible hardware and operating systems. These systems have untold hours of development. They are not easily replaced, modified, or integrated.

The results of this chaotic predicament are obvious to even the novice observer, but the solution, to date, has been surprisingly elusive.

Solution Control information presentation

To dissipate the Perfect Storm, enable the operator to access, organize, and interact with crucial information from all systems, at a single integrated workstation.

Workstation integration combines visual information from various incompatible systems onto a single workstation display without having to re-design or change each independent system. Modifying the individual control systems, which 2 come from a variety of different sources, would be difficult at best or impossible at worst. However, workstation



Control information presentation. Access, organize, and interact with crucial information from all systems using workstation integration techniques.

integration, using visual processing techniques, dissolves the need to modify these various systems anyway.

Deliberately organizing relevant information from different systems enables the operator to make more accurate, timely, and competent decisions.

Summary and highlights of workstation integration techniques

Thumbnails

Sometimes all an operator needs is an overview of the state of a system. In this case, a high quality, real-time, thumbnail display better provides the required information. An operator can see at a glance that everything is working properly or that a problem exists which requires attention.

Thumbnails are extremely useful for dealing with multiple systems since they can be grouped together in the main field of view. This allows an operator to efficiently monitor all systems simultaneously without having to scan outside the area of visual focus.

Sub-windows

At other times, the operator must focus on a specific area of a complex and visually “busy” display. In this case, a sub-window can be extremely important for maximizing operation efficiency. A sub-window is an area, in a complex display image, that has specific information of current interest to the operator. An operator can create a separate window that focuses only on that area of interest from a complex display. The operator can also resize the sub-window to magnify the

information, if necessary, to make that data more prominent and emphasize its importance.

Powerful tool

The remarkably intuitive combination of thumbnail and sub-window technology creates a powerful tool for enhancing decision-making. The operator simultaneously has a complete overview of all systems and the ability to emphasize and focus on specific information that is critical at the moment.

Relative positioning

The relative positioning of information significantly impacts the way it is perceived and used. On most computers, users can create layouts of information, from various applications, in individual windows, and can switch back and forth between applications at will. An integrated workstation extends this capability, of creating layouts of information, to independent systems, where each window contains the display from a different computer system.

Some windows will show the complete display from each system, either as a full resolution image or a high quality real-time thumbnail. Operators can also add other windows that emphasize crucial or specific information from a portion of a operators can shift the focus of control between system windows, operating all systems from a single keyboard and mouse.

Save and recall

Operators frequently need to see the same layouts of information to perform their jobs effectively. With workstation integration, each

operator can create and optimize a unique set of layouts that work perfectly in sync with his or her specific job function and work style. Most importantly, the operator can save each layout of information for instant recall at a later time.

This capability is vital to effective decision-making. Operators can now better organize, control, and use critical information. Control room performance improves dramatically. Operators handle repetitive routine tasks more efficiently, and, more importantly, they address emergency situations more effectively.

No software, No drivers, Instant integration

Advanced technology provides instant integration of disparate systems. The pro-xi requires no software drivers to support connected systems, thus eliminating compatibility complexity.

Conclusion Conquer chaos of the Perfect Storm with integrated, intuitive decision-making

Making good decisions, the first priority of control centers, is threatened by a Perfect Storm of information inundating control room operators. The force of the storm creates a surge of poorly organized information strewn across multiple system displays.

Leveraging workstation integration techniques enables operators to effectively organize, control, and use critical information to make better decisions. Operators simultaneously work with information from multiple systems

workstation integration

on a single display. Thumbnails and sub-windows support seeing the big picture while focusing on critical details. Information can be arranged, saved, and recalled to support specific tasks. All of the above is possible without having to change or modify existing legacy systems.

Workstation integration combines intuitive techniques of information presentation with enhanced operator control. Operators can now conquer chaos of the storm and make decisions better, faster, and more accurately.

Call Portalis today to learn more about workstation integration and how this advanced technology can improve your operations and enhance the return on investment (ROI) of your existing command and control infrastructure.

**workstation integration
enables operators to
make better decisions**

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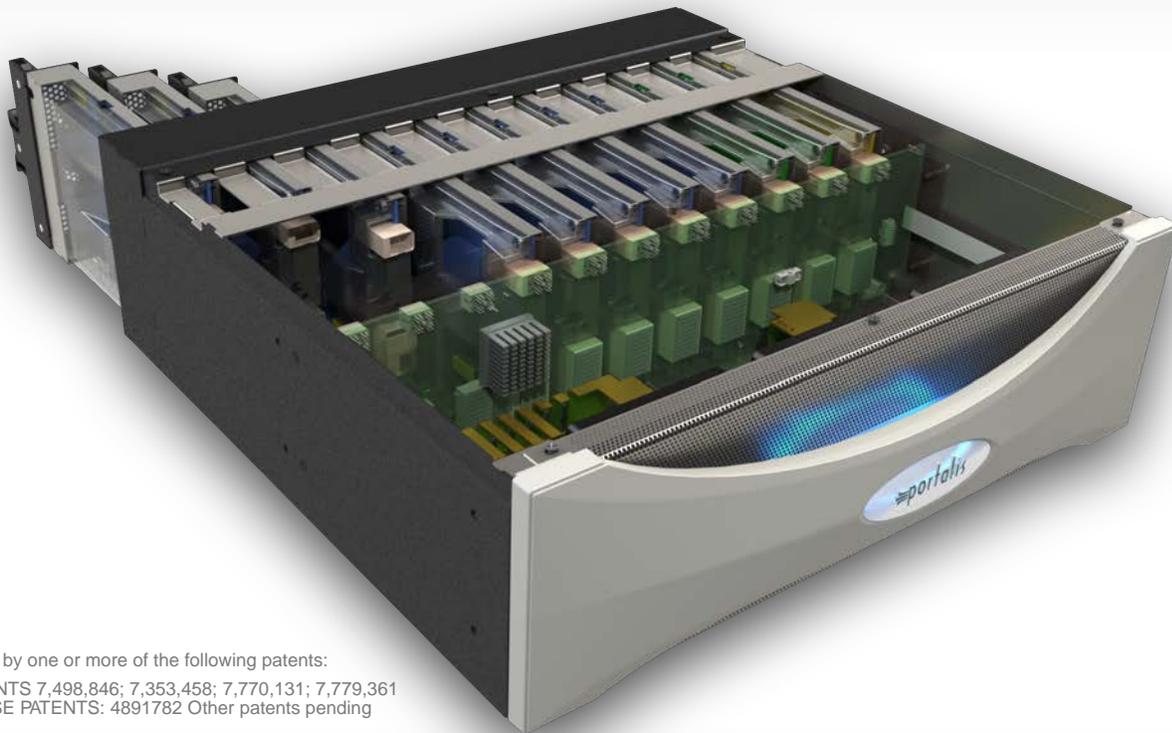
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Protected by one or more of the following patents:

US PATENTS 7,498,846; 7,353,458; 7,770,131; 7,779,361
JAPANESE PATENTS: 4891782 Other patents pending

Exploit scalable integration. Implement workstation integration without the complexity of systems and software incompatibilities.