(intel®)

Standardization Simplifies the Delivery of Digital Signage Solutions

The Open Pluggable Specification (OPS) improves the interoperability between Intel® processor-based media players and a wide variety of commercially-available displays.
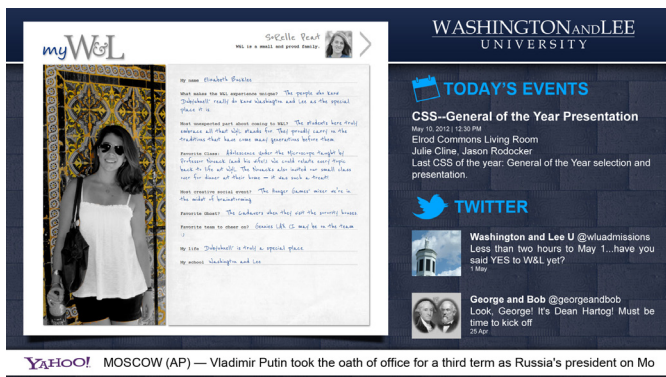

Figure 1. Campus Communication Display

BUSINESS CHALLENGES

- **Reduce infrastructure complexity:** Eliminate the frequent compatibility and interoperability issues between media players and displays.
- **Increase competitiveness:** Strike the right balance between price and performance for a wide spectrum of end users.

TECHNOLOGY SOLUTIONS

- **OPS standard:** This specification defines the physical and electrical interfaces between media players and displays to enable Plug and Play connectivity.
- **Scalable media players:** Axiomtek* media players are configurable (e.g., processors, memory, WiFi option), allowing value-added retailers to satisfy different performance needs.

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Ryan Cahoy
Managing Director
Rise Display, Inc..*

Digital signage can be bewildering for end users trying to develop and deploy the infrastructure on their own. It's a complex undertaking that requires expertise in a variety of areas, such as IT, audiovisual, software, mechanical and display technologies. Alternatively, they can take advantage of complete solutions offered by value-added retailers (VARs), who incorporate products from partner hardware and software vendors. This ecosystem is embracing the Intel-developed Open Pluggable Specification (OPS), which eases installation, simplifies upgrades and reduces maintenance.

One such vendor, Rise Display*, helps its clients create unique content and select the displays that best fit the target environment. Rise Display provides complete and customized digital signage solutions consisting of displays, web-based content management and supporting services, among other offerings. Today, the company focuses specifically on LED tickers, university finance labs, campus communications and 'Giving Recognition' displays. Rise Display delivers a comprehensive solution combining their software applications pre-integrated on media players from partners Axiomtek and Sherlock Systems*, along with other essentials such as wall mounts and network connectivity. About 90 percent of their systems are OPS-compliant and based on media players equipped with Intel® processors.

Business Challenges

Digital signage is evolving rapidly as end users seek to create a more engaging experience through improved display quality and advanced interactive features. Demand for large high-definition displays is driving the transition away from long-established LVDS and VGA interfaces to modern digital display interfaces, such as DisplayPort*. Another trend in signage is increased audience interactivity through touchscreens, cameras, near-field communication (NFC), Internet connectivity and personalized content.

These capabilities require media players and displays to communicate over a variety of interfaces, like UARTs, USB, audio and digital display interfaces; but until now, there has been a lack of standards to ensure interoperability between these two device types. In other words, developing more advanced solutions using today's commercially available displays and media players has been a major challenge because of either interface incompatibility or unsightly wire clutter. Moreover, many hardware vendors offer a one-size-fits-all media player; thus, they don't support multiple price-performance options needed to satisfy the cost and performance requirements of a diverse set of end users.

Technology Solutions

Improved interoperability and compatibility

Intel developed the Open Pluggable Specification (OPS) to simplify the device installation, usage, maintenance and upgrade of digital signage infrastructure. This open standard comprises electrical, mechanical and thermal specifications for media player boards and display boards connected together via a 80-pin JAE connector that supports commonly used interfaces such as DisplayPort and USB, among others, as shown in Figure 1. The overall objective is to enable digital signage manufacturers to deploy interchangeable systems faster and in higher volumes, while lowering the costs for deployment and implementation.

Configurable media player

Capable of addressing different performance needs, the OPS870 media player from Axiomtek is highly configurable. Customers can meet their performance objectives by choosing between 3rd Generation Intel® Core™ i7, Intel® Core™ i5 or Intel® Core™ i3 processors, different memory configurations and optional WiFi. The processors also have enhanced integrated graphics, such that the OPS870-HM has 20 to 50 percent more GPU performance than its predecessor, plays full HD content and supports dual displays.
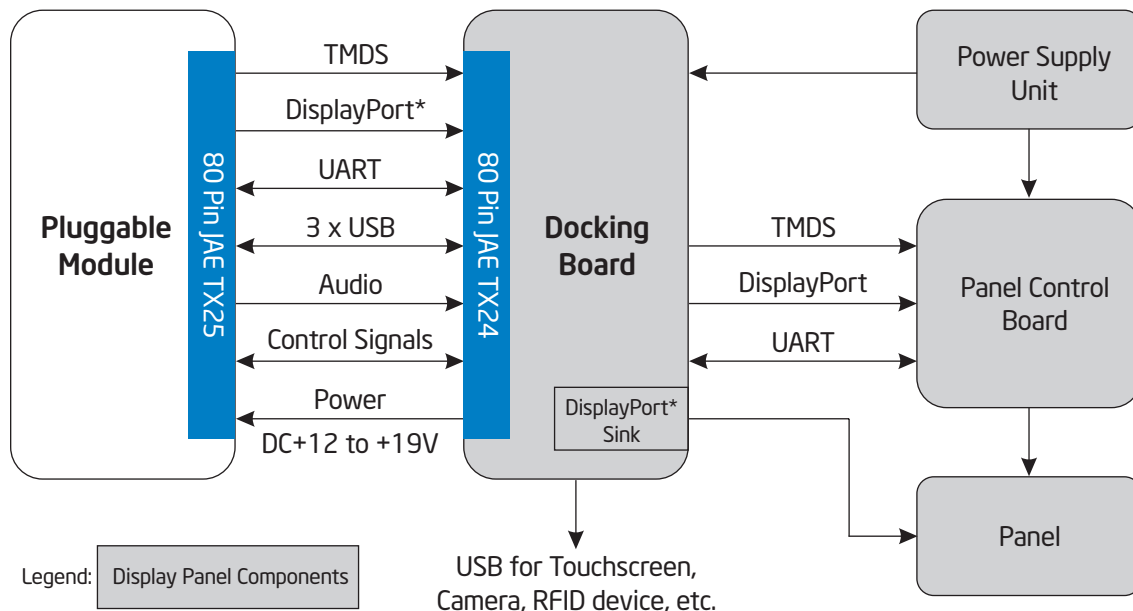

Figure 2. OPS Standard Components: Pluggable Module and Docking Board

Figure 3. Display in Manufacturing Plant

The OPS870-HM, pictured in Figure 3, is a space saving player designed to be plugged into any OPS-compliant display, thereby lowering deployment and field maintenance costs and enabling digital signage manufacturers to deploy systems faster. The OPS870-HM signage module also has 10/100/1000 Mbps Ethernet and USB 3.0 ports to enable fast and efficient data computation and communication. One PCI Express* Mini Card slot is available for a wireless LAN card (802.11 b/g/n or 3G/GPRS) or a tuner/AV capture card.

The OPS870 supports Intel® Active Management Technology (Intel® AMT),[1] allowing IT departments to manage, monitor and upgrade systems remotely – anywhere, anytime - for maximum efficiency, while reducing operating cost. For example, it's possible to repair corrupted drivers, application software or the operating system for a non-responsive signage system that won't run or boot. Intel AMT can also be used to automatically power systems on/off during off hours, resulting in sizeable utility savings.

Innovative Digital Signage Solutions

Still maturing and very broad, digital signage is used in many different ways by organizations in a wide range of industries. Striving to provide its customers best-in-class solutions, Rise Display made a decision to focus on particular applications. The company specializes in the following areas:

- **Rise Ticker** – Displays combine custom messages with financial quotes, news and sports scores in full color with the ease of plug-and-play functionality that requires no dedicated PC.
- **Giving Recognition** – Organizations giving recognition to individuals, such as star athletes, prestigious donors or outstanding employees, can replace their walls of plaques with digital signage, which is more space-efficient and attractive. It's fast and easy to add new donors because there are no bronze plates to order, and the interactive screen allows visitors to access thousands of names, and see a picture along with a story.
- **University Finance Lab** - Many schools are enhancing their curriculum by using the latest state-of-the-art technology to build specialized financial labs (Figure 4) that rival Wall Street.
- **Campus Communications** - Students and faculty have access to social media, news, announcements, building directories, directions and more. Prospective students, parents and visitors will be impressed by the high tech atmosphere that draws attention.

"Our customers are not asking for a parts list; they ask us for a recommendation for a solution that has particular functionality. We begin by understanding our customers' needs, and then we spec out a complete package: OPS-based media players, displays, application and management software, mounts, and so on," said Ryan Cahoy, managing director at Rise Display.

Figure 4. University Finance Lab

Value Chain

Since the deployment of digital signage involves various technologies, skillsets, application software and integration into existing networking infrastructure, the supply chain tends to be horizontally integrated. For instance, the solutions previously mentioned are supported by several vendors, shown in Figure 5. The OPS-compliant media player is manufactured by Axiomtek using Intel® Core™ processors. The media players are configured to order by Sherlock Systems, who adds components, configures the BIOS, preloads the operating system and performs other services, as needed. Rise Display delivers a complete solution to the end customer, which may entail developing specialty application software, integrating the media player and display, and adding the other essentials parts, such as wall mounts.
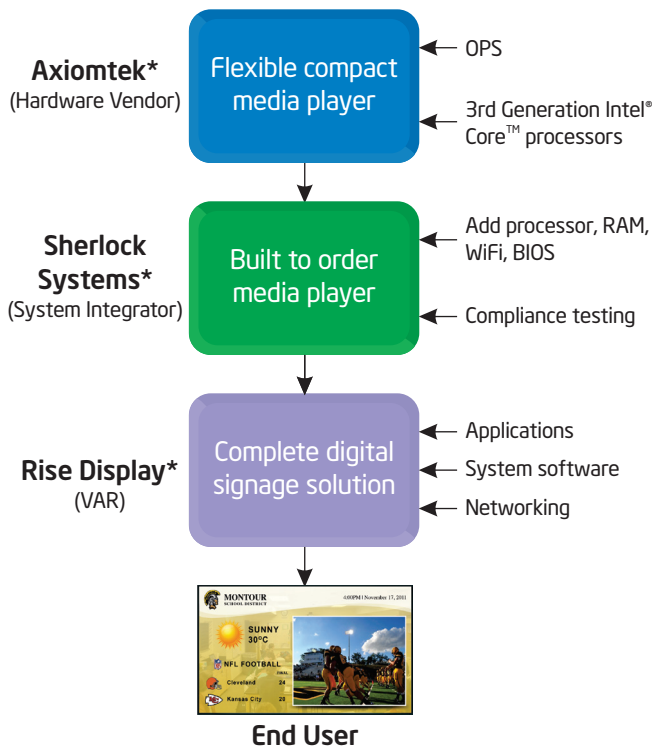
Benefits of Modularity

OPS-compliant systems are modular in nature, which provides significant operational benefits. For example, a media player with a hardware fault can be repaired quickly by simply replacing the entire pluggable module. This is a significant advantage over built-in solutions, which require the replacement of the entire display unit in case of a PC failure.

Modularity also provides more lifecycle management flexibility compared to built-in solutions because upgrades can be performed at a subsystem level. As a result, it is possible to exchange out short lifecycle components, like the control unit, to incorporate the latest technology, while leaving in long lifecycle components, such as the display panel, user interface and sensors. Likewise, OPS-defined pluggable modules can be easily upgraded when newer technology is available, thus keeping a digital signal system up-to-date in a cost-effective manner

Simplifying Digital Signage Development and Deployment

Rapid growth in the digital signage market has resulted in a highly fragmented industry, which has negatively impacted compatibility and interoperability between current and evolving components. OPS is helping to overcome these challenges by enabling digital signage manufacturers to deploy interchangeable systems faster and in higher volumes, while lowering costs for development and implementation. It is expected that standardization though OPS will further accelerate growth and innovation in digital signage and at the same time, reduce overall cost, creating new opportunities for the various vendors serving this exciting market segment.

Axiomtek*
(Hardware Vendor)

Flexible compact media player

← OPS

← 3rd Generation Intel® Core™ processors

Sherlock Systems*
(System Integrator)

Built to order media player

← Add processor, RAM, WiFi, BIOS

← Compliance testing

Rise Display*
(VAR)

Complete digital signage solution

← Applications

← System software

← Networking

End User

Figure 5. Supply Chained Based on OPS-Compliant Digital Signage Solution

To learn more about digital signage solutions featured in this case study, visit:

Axiomtek: **www.axiomtek.com**
Sherlock Systems: **www.sherlocksystems.com**
Rise Display: **www.risedisplay.com**
Intel: **www.intel.com/retail**