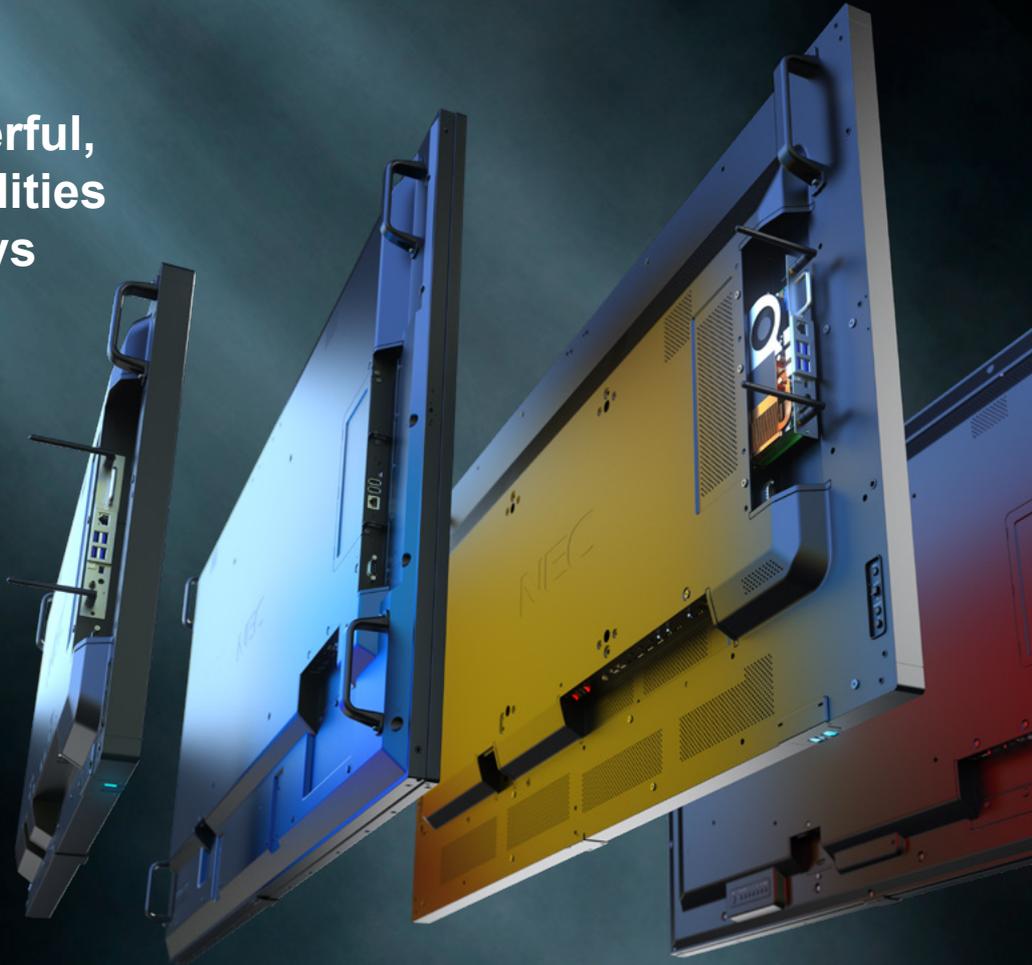


INTEL® SDM INSIDE

Bringing more powerful, future-proof possibilities to our digital displays

intel
smart display
module ready



Providing choice and flexibility to customers through an open and modular approach is a key design strategy at Sharp/NEC. A major element of this is the optimised computing platform which offers a streamlined, unrestricted, and high-performance standard for digital signage, interactive whiteboards, and mission-critical applications.

In 2010, a global strategic alliance between NEC, Intel, and Microsoft created the Open Pluggable Specification (OPS) which became integral to NEC's large format displays and integration projectors. Today, the Intel® Smart Display Module (Intel® SDM) architecture represents a natural evolution to the OPS. Integrated into the new line-up of large format displays, widening our ability to deliver even greater performance, standardisation, and ease of use.

INTEL® SMART DISPLAY MODULE THE SMARTER CHOICE



**Minimum space,
maximum flexibility**

Integrating seamlessly into the sleekest all-in-one designs, space and workload are optimised with robust compute capability to deliver enriching visual experiences that enhance user engagement.



**Forward
looking
capabilities**

Benefit from optimised processing capabilities, scalable to desired workload, and easy upgrade from entry to high end compute. Sustain new platforms and features, plus support for display resolutions up to 8K and beyond.



**Ease of
integration**

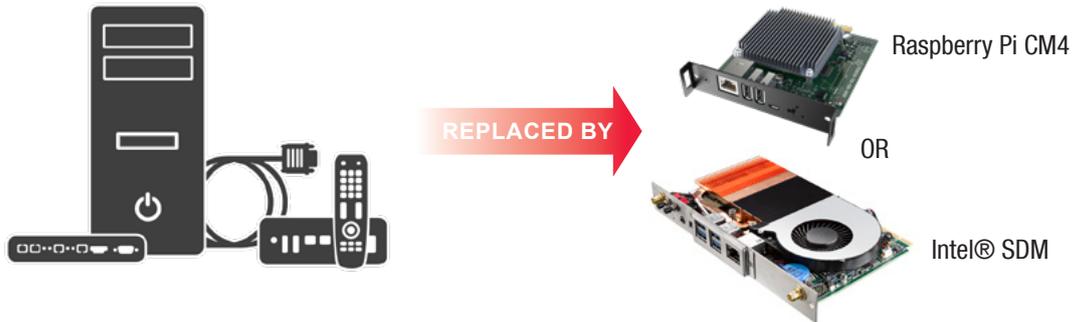
Greater flexibility in processors and operating systems reduce the complexity of digital signage systems supporting commercial and embedded use cases. The slim form factor eases operation and integration into displays.

SHARP/NEC OPEN MODULAR INTELLIGENCE

Upgradable and customisable, without limitation

Sharp/NEC's Open Modular Intelligence (OMi) platform enables scalable computing power to be seamlessly embedded into NEC displays and installation projectors to create a fully integrated and customisable solution. It simplifies device installation, usage and maintenance whilst making it easier to pre-configure or upgrade digital signage equipment.

Unlike System on Chip (SoC), favoured by our competitors, which is a closed system with compatibility limitations, Sharp/NEC's OMi is an open platform allowing computing performance to be fully used without limitation which greatly appeals to software providers. Upgradable with customisable performance levels, in contrast to competitive offerings, NEC's embedded solution is future-proof and highly versatile supporting a broad range of operating systems.



A CUSTOM-MADE SOLUTION FOR PERFECT-FIT PERFORMANCE

The new MESSAGE line-up and P Series large format displays are designed to allow computing modules or other slot-in devices to be neatly embedded within the housing of the display. Depending on the demands of your usage scenario, the slot allows integration of a Raspberry Pi Compute Module 4 (RPI CM4) and/ or Intel®SDM Small, or the Intel®SDM Large. The seamless embedded design means external power sources, cabling and additional mounting systems are obsolete resulting in a neat and efficient all-in-one solution with powerful and compelling possibilities.

Open modular slot-in options offer an interchangeable selection of solutions including computing technology, media playback and signal distribution (e.g. AVoverIP) for unlimited versatility. The embedded solution enables the displays to be enhanced to a custom-made solution which matches the specific performance demands of any application. Should future demands change, the integrated module can be upgraded or re-configured accordingly without having to replace the display. For large projects, the compute module can be pre-configured prior to deployment to ensure a smooth and efficient installation process.





Choose your performance level

A comprehensive line-up of computing performance devices ensures the perfect match to all usage scenarios and requirements. Choose between different options to suit your needs:

- > **Essential - RaspberryPi Compute Module 4**
For signage displays in retail environments, passenger information and quick service menu boards.
- > **Standard - Intel® SDM slot-in PC Celeron**
For digital signage in retail or corporate applications, passenger information and menu boards.
- > **Midrange - Intel® SDM slot-in PC Core i3**
For flight and passenger information, retail and corporate signage as well as interactive and kiosk applications.
- > **Advanced - Intel® SDM slot-in PC Core i5**
For interactive signage applications, video walls and more complex intelligent signage installations where sensor and other data is processed and displayed in real time.
- > **Enterprise - Intel® SDM slot-in PC Core i5**
For demanding corporate meeting room applications such as video conferencing, interactive whiteboards and collaborative use cases.

OPS TO SDM MIGRATION

The NEC P and V Series large format displays which launched in 2017 were the first to include the Raspberry Pi modular expansion feature. Prior to this, the OPS expansion slot for OPS compatible PCs and Media Players was already giving companies the flexibility to upgrade the performance of their

displays at any time by seamlessly integrating into NEC's large format displays and installation projectors. Since this time, we have sold close to 100,000 OPS units, and gained 7 years of experience and leadership in offering our customers customisable computing technology.

Today, the new MESSAGE and P Series large format display line-up incorporates the latest technology developments and all the additional advantages of the Intel®SDM.



Intel® SDM delivers the same level of intelligence and interoperability as the Open Pluggable Specification, but in a smaller form factor and with no housing, allowing integration into modern slim profile displays. Intel® SDM comes in two form factor size options - the Intel® SDM Small (Intel® SDM-S) and Intel® SDM Large (Intel® SDM-L).

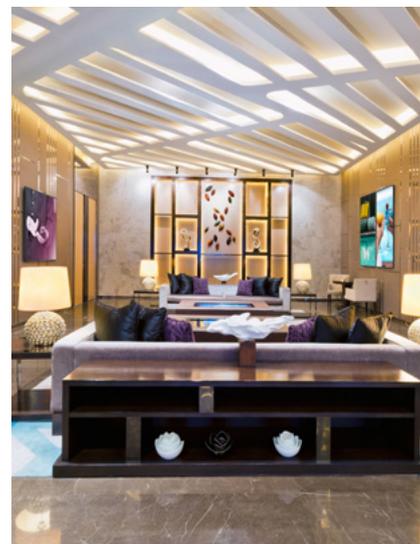
The future-proofed card edge connector accommodates higher bandwidth and picture quality requirements to support 8K resolution displays and video capture.

Using the latest Intel® hardware-based security Trusted Platform Module (TPM), with an integrated Intel®SDM our digital displays are not considered a point of vulnerability.

Reliability and longevity are the highest priority for Sharp/NEC. The Intel®SDM is validated for commercial and embedded use, reliable in 24/7 operating applications. Alongside this, Sharp/NEC only uses metal for its display chassis which supports excellent heat dissipation and is fire-retardant making them safe for use in public spaces.



<https://youtu.be/8L1pM8mOSiA>



| Verticals | Pain Points | Business Values |
|---|---|--|
| Corporate Engage employees and visitors | <ul style="list-style-type: none"> Ineffective communication Poor content management | <ul style="list-style-type: none"> Deliver corporate communications Inform & simplify daily tasks Link offices & support remote workers Streaming advertising revenue |
| Education Experiential learning for students and engaging with teachers | <ul style="list-style-type: none"> Insufficient IT infrastructures¹ Budget constraint Lack of real-time information | <ul style="list-style-type: none"> Transform traditional learning Encourage active role in learning Enhance learning & teaching experience Link campuses & support distance learning |
| Hospitality Quality customer service and loyalty to guests | <ul style="list-style-type: none"> Accelerated customer experience² Check-in Lack of real-time travel updates | <ul style="list-style-type: none"> Enhance guest reception Provide local attractions Conduct paid advertising |
| Restaurants Seamless ordering process and recognize repeating patrons | <ul style="list-style-type: none"> Low flexibility in menu updates³ Inaccuracy of orders Lack of kitchen display system | <ul style="list-style-type: none"> Enhance customer experience Attractive menu boards Reduce costs and delays of printing |
| Retail Memorable shopping experience | <ul style="list-style-type: none"> Printing & delivery cost⁴ Lack of in-store interaction Poor integration of systems⁵ | <ul style="list-style-type: none"> Dynamic merchandising Reduce burden on customer service staff Provide supplementary advertising revenue stream |
| Transportation Real-time travel info and enhanced travel plans | <ul style="list-style-type: none"> Crowded check-in⁶ Poor directory Inaccuracy of real-time data | <ul style="list-style-type: none"> Real-time passenger information and wayfinding Lower costs in ticketing and transactions Alleviate perceived wait times |

SDM USE CASES

1. <https://entuity.com/the-edtech-industry-6-pain-points-and-solutions/>
 2. <https://www.hospitalitynet.org/opinion/4101308.html>
 3. <https://restaurantengine.com/common-problems-restaurants-face/>
 4. <https://navori.com/two-reasons-retailers-switch-print-digital-signage/>
 5. <https://www.digitalsignagetoday.com/articles/4-challenges-for-retail-digital-signage/>
 6. <https://www.nanolumens.com/blog/how-led-digital-signage-lightens-your-time-inline-how-led-displays-lighten-your-time-in-line/>

Serviceability

Industrial and embedded components lower the demand on power usage resulting in significant energy savings and a longer product lifecycle compared to consumer products. Sharp/NEC's commitment to the highest quality standards and meticulous selection of industrial grade components ensures low failure rates and suitability for 24/7 applications. Should a failure occur, the embedded unit is easily swapped out without having to replace the entire display. Both the display and the embedded module is covered under 3 year warranty with additional exchange service within EMEA.

Sharp/NEC's innovative open modular design means the display solution you need for today will continue to meet your changing needs in the future.

