ASRock Industrial

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Case Study

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Case Study

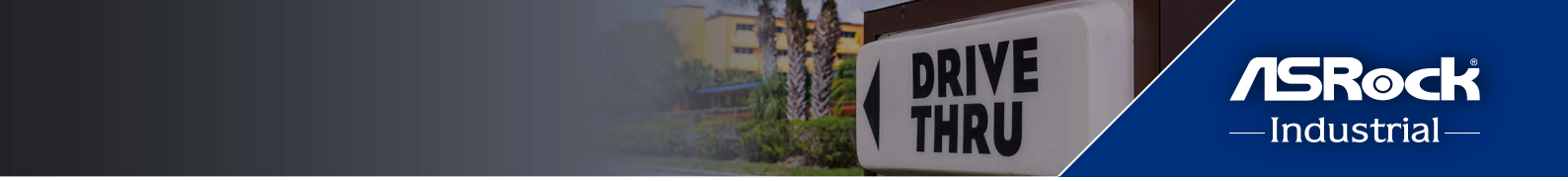
The Essential Touch-Free Voice Ordering Drive Thru During COVID-19 for Minimized Contact and Enhanced Service Efficiency

intel IoT Solutions Alliance

A world-leading fast food restaurant creates the touch-free voice ordering Drive Thru, powered by ASRock Industrial SBC-350 motherboard to avoid crowds and contact during coronavirus as well as upgrade service speed and increase the total number of customers.

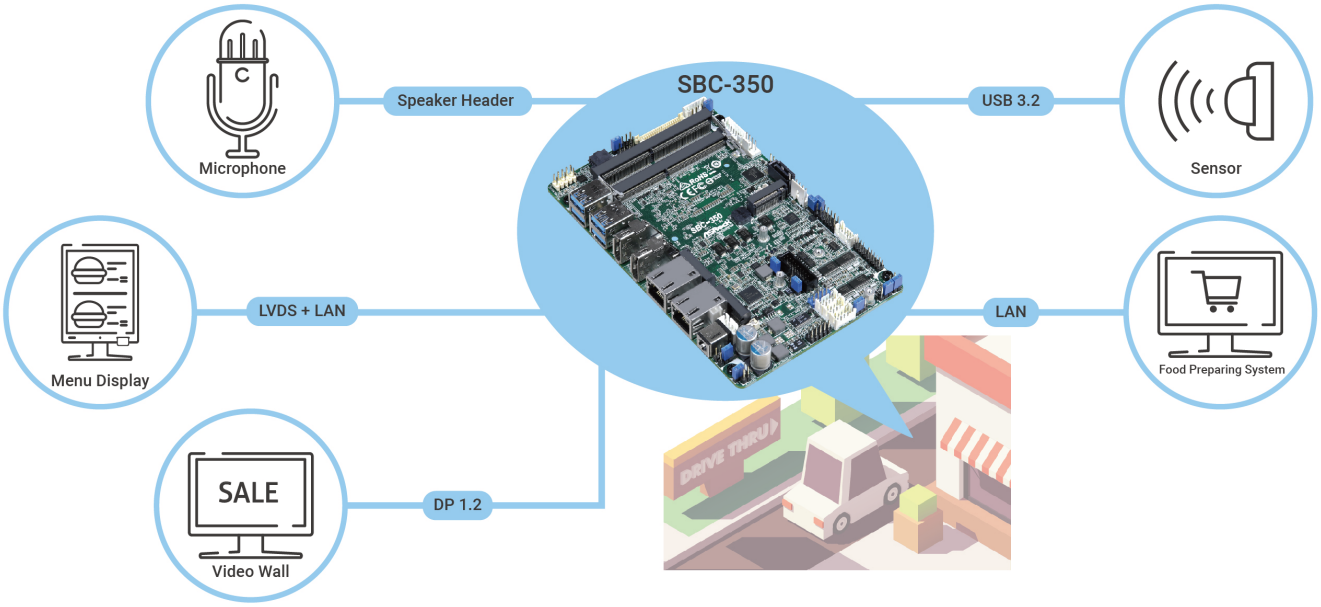
CHALLENGES

Under the global pandemic and social distancing measures, normal life has stopped for more than a billion people. Governments worldwide are encouraging contactless food delivery, restaurant Drive Thru systems to minimize eating out. Drive Thru implementation requires the right software and hardware with feature-rich IO to power the system. When it comes to the motherboard powering the system, it requires support for multi-display to light up menu choices on the KIOSK as well as high definition video wall for promotion and advertising. Designed with support for speaker header for server and customer communication; USB sensor to detect when cars enter and leave the Drive Thru; LAN for transmitting the selected order into the food preparation system to carry out the food order. With more competition during pandemic times, restaurants race to the Drive Thru with higher expectations than before.



SOLUTION

ASRock Industrial partners with the world-leading fast food restaurant to create the touch-free voice ordering Drive Thru, powered by the SBC-350 motherboard running on Intel® 8th Gen Core™ Processors (Whiskey lake-U) with the exact specs to conquer the challenges above. As the car enters the Drive Thru lane, the USB 3.2 Gen 2 sensor accurately detects the car and signals customer service to notify the server immediately. The customer then rolls down the window to face the speaker header for microphone voice ordering. One LVDS is present to display the digital kiosk menu along with two DP1.2 to show current promotion on the video wall. One LAN port is installed to update the menu information on the display while the other LAN port sends the order for food preparation and completion of the order. When the car leaves, the sensor also sends signals, thus turning off the receiver.



▲ SBC-350 powers the voice ordering Drive Thru

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IMPACT

Contactless voice ordering setup drastically reduces infection possibilities avoiding crowds and contact: With the pandemic's virtual demand, Drive Thru can reduce the risk of exposure to an absolute minimum.

Quick and efficient service means more customers: For drivers/customers, they save the time needed to park and walk inside the restaurant to receive service.

Automated process reduces the need for labor power: needing to cut down labor force is a major challenge during the pandemic, with automated process implemented; restaurants can save labor cost and ensure the safety of workers.

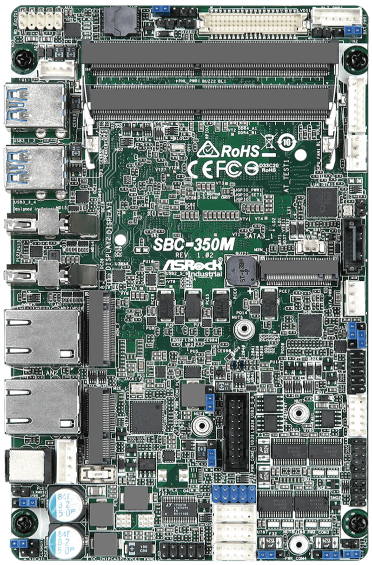
Contactless voice ordering setup drastically reduces infection possibilities avoiding crowds and contact	Quick and efficient service means more customers	Automated process reduces the need for labor power

RELATED PRODUCT

SBC-350 SBC 3.5

- Intel®8th Gen (Whiskey lake-U) Core™ Processors
- 2 x 260-pin SO-DIMM up to 32GB DDR4 2400 MHZ (16GB per DIMM)
- 4 x USB 3.2 Gen2, 2 x USB 3.2 Gen1, 2 x USB 2.0, 2 x M.2 Key M, 1 x M.2 Key E, 1 x SATA3
- 2 x Intel 1 Gigabit LAN
- Supports Triple display, 2 x DP 1.2 ++, 1 x LVDS
- TPM 2.0 onboard IC (SBC-350P/SBC-350M)
- TPM 2.0 with Bios setting (SBC-350V/SBC-350E)
- 9-36V DC-In

Learn more about the SBC-350:
https://www.asrockind.com/en-gb/SBC-350



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Case Study

Machine Vision to Improve Automated Inspection and Yield Rate in Manufacturing

intel IoT Solutions Alliance

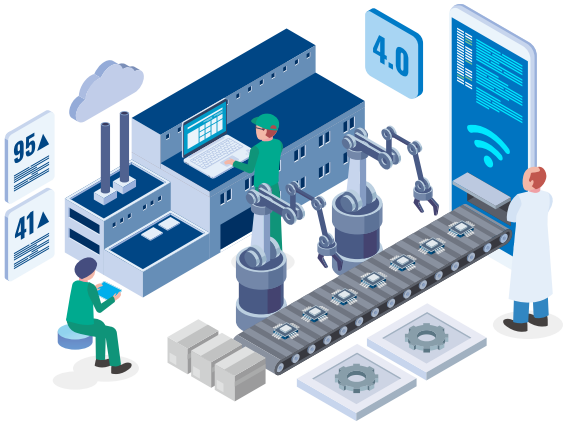
A world-leading Design and Manufacturing Service (DMS) Company to create smart manufacturing by using robotic arms and machine vision in production lines has resulted in higher efficiency and product quality outputs.

CHALLENGES

The DMS Company has been using people to check the defects on the mobile phone styluses and they wanted to raise the yield rate and productivity for greater precision and speed. To introduce auto-inspection machines, they need the right software and reliable industrial hardware with rich features, such as PoE ports for connection with a camera to collect image data.

Currently, they used 4U industrial rack mount, however it lacks PoE camera port to collect, analyze image data and will need additional PoE accessory. Besides, the traditional 4U industrial rack mount takes up much space in the production line with considerable cost.

To create manufacturing automation and increase the system utilization, the DMS Company plans to apply the system on auto-inspection, auto-labeling, and auto-screwing machines. Therefore system requires a powerful computing processer and feature-rich I/O to connection with robotic arms, PoE camera, and barcode scanner, etc. to fulfill versatile and flexible applications.

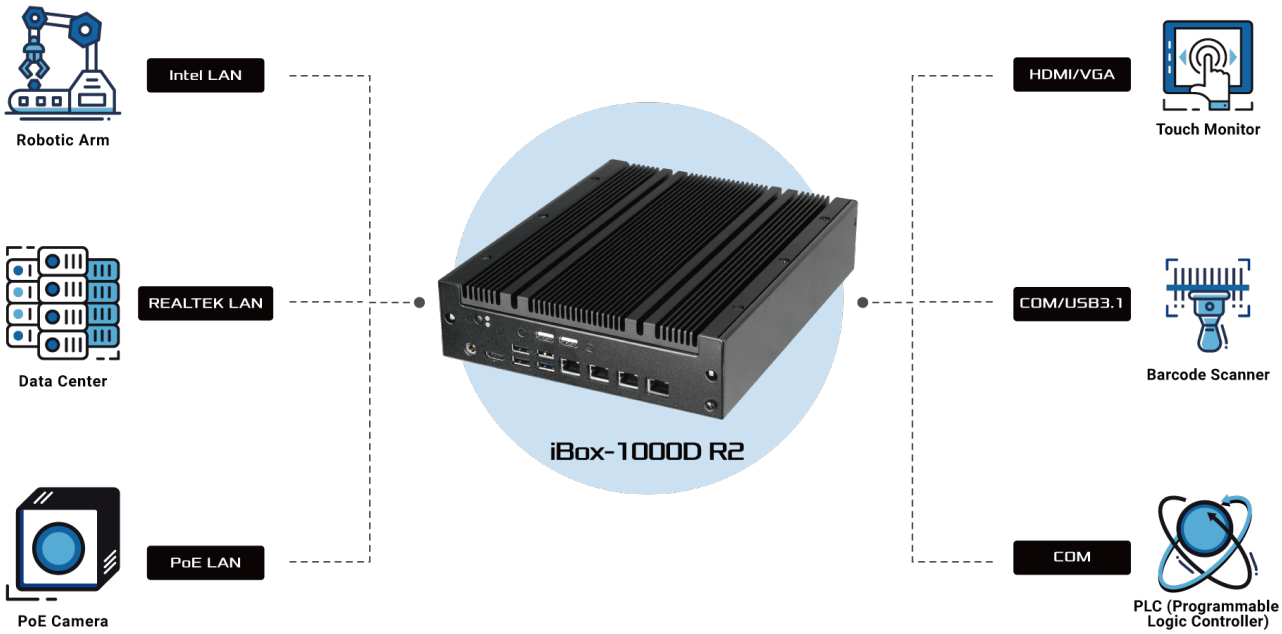


SOLUTION

ASRock Industrial partners with the DMS Company to introduce the iBOX-1000D R2, an Intel® Celeron J1900-based computer, for long-term and reliable computing. Fanless design with PoE support and 4 LAN ports for connection with camera to collect image data for an initial inspection and transfer the data to Data Center for analysis and show the inspection result on the monitor.

The Intel LAN can also empower the robotic arm to inspect the styluses automatically, working together with the PLC (Programmable Logic Controller) via the COM I/O to increase the inspection precision. With the VGA and HDMI header support, it enables the inspection result show on the touch monitor to inspect the yield rate immediately.

Design with compact size and feature-rich I/O, the iBOX-1000D R2 can apply not only to the auto-inspection machine but also to auto-labeling and auto-screwing machines. Thanks to the PoE support and 4 LAN ports, the machine vision and robotic ram can be used in manufacturing automation. USB 3.1/COM connecting with Barcode scanner, it enables the auto-labeling machine line to scan and access the label barcode.



▲ iBox-1000D R2 empowers the Automatic Inspection Machine and Machine Vision

IMPACT

PoE ports for Machine Vision: the iBOX-1000D R2 enables machine vision to give manufacturing equipment the ability to see and identify objects just like the human eye, with far greater speed and precision, the DMS Company raise product quality and yield to 99% using the system.

Versatile system to enable automation: designed with feature-rich I/O, the all-in-one solution iBOX-1000D R2 supports robotic arms, PoE camera, displays and applies to auto-inspection, auto-labeling and auto-screwing machines to realize manufacturing automation.

Compact size and cost-effective: the compact size iBOX-1000D R2, built-in mini-ITX motherboard, applies to production lines, featuring space-saving and cost-effective compared with traditional 4U rackmount.

PoE ports for Machine Vision raise product yield to 99%	Versatile system to enable automation	Compact size and cost-effective

RELATED PRODUCT

iBOX-1000D R2 Embedded Box PC

- Intel® Celeron® Processor J1900
- 2 x 204-pin SO-DIMM up to 16GB DDR3L 1333 MHz (8GB per DIMM)
- 1 x USB 3.1 Gen 1, 5 x USB 2.0, 2 x M.2 Key M, 4 x COM, 1 x SATA2, 8 x GPI, 8 x GPO
- 2 x Intel 1 Gigabit LAN, 2 x Realtek 1 Gigabit LAN
- Supports dual display, 1 x HDMI 1.4a, 1 x VGA
- 1 x 12V/60W AC-DC power brick adapter
- 200 x 244 x 55.1mm, Fanless Barebone

Learn more about the iBOX-1000D R2:
https://www.asrockind.com/en-gb/iBOX-1000D%20R2

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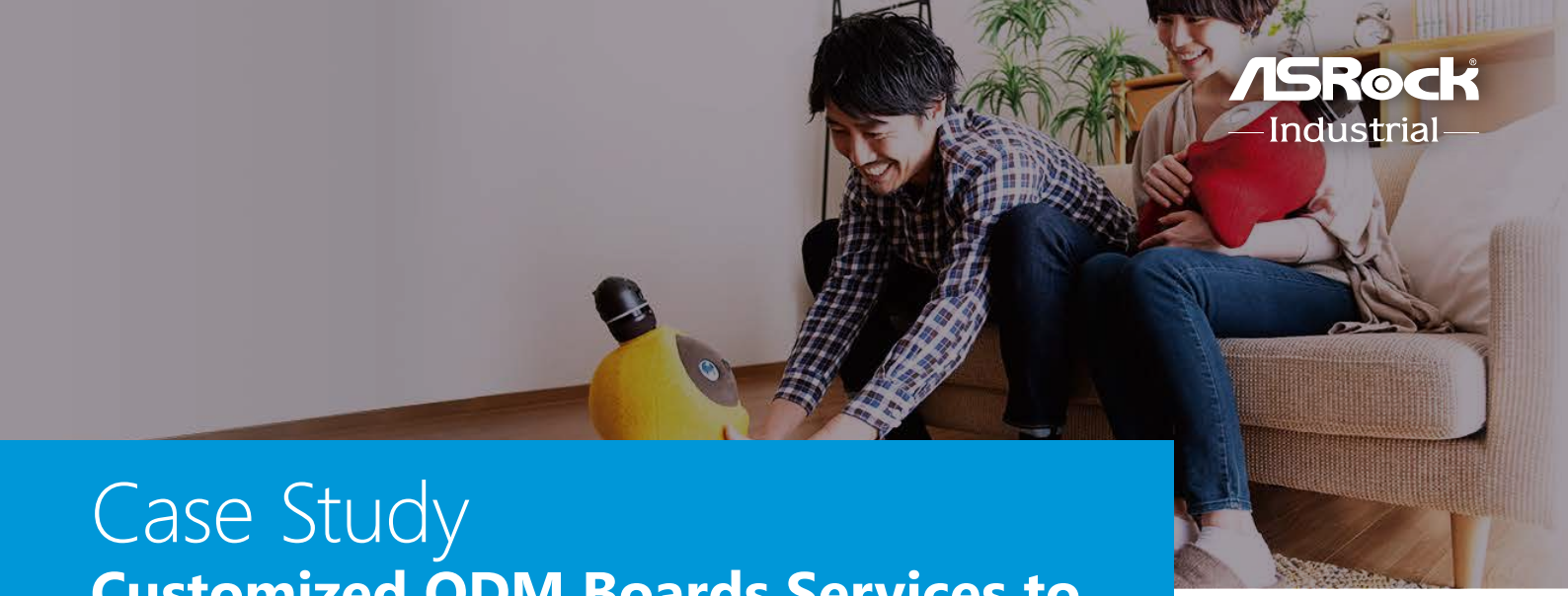

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Case Study

Customized ODM Boards Services to Power the Family-Type Robot like Human Being

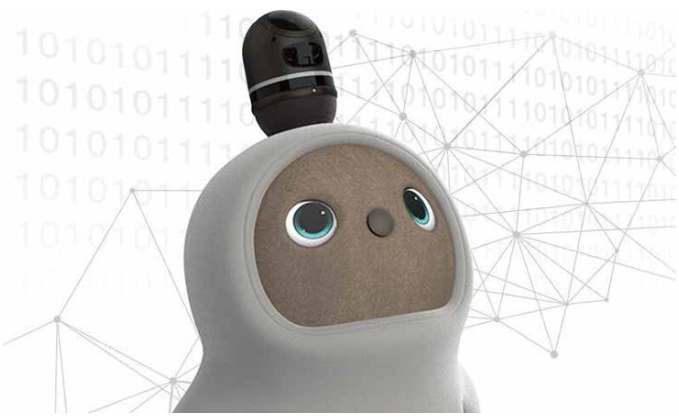
A star-up company- Groove X created the family-type Robot LOVOT powered by ASRock Industrial ODM boards to provide comfort and companionship to humans. It enhances your human sentiments of love and happiness, opening doors for an all-new relationship between Robots and humans.

Services are crucial to meet customers' needs. It includes mainboard design, joint-validation, and high quality controlled production services. The ODM boards require the R&D capability of both x86 and ARM architectures hardware and software integration. Moreover, the boards are designed with feature-rich IOs to connect the camera and more than 50 sensors to enable the Robot to act like a real pet.

CHALLENGES

The challenges to creating a family-type Robot like a living being behavior require the combination of cutting-edge technologies, such as high-performance computing, artificial intelligence, face recognition, and sensor integration.

When it comes to the motherboards to power the family-type Robot, professional ODM



SOLUTION

ASRock Industrial specializes in the design and manufacturing of industrial motherboards. Our partner Groove X specializes in the design and integration of software and hardware of the Robot. The joint development efforts of both companies have finally achieved a remarkable result and successfully launched the Robot (LOVOT) in Japan in December of 2019.

ASRock Industrial provides professional design services of a high-performance Quad-core CPU based x86 mainboard for the Robot main-unit, an x86 power board for the Robot power dock, and an ARM-based beacon for voice controlling the Robot. We have well-trained R&D, experienced project management, manufacturing, and technical support teams to provide excellent ODM services to meet customers' high expectations and demands.

IMPACT

Launch the world first family-type robot successfully: the joint development efforts of ASRock Industrial and Groove X have finally achieved a remarkable result and launched the first family-type Robot (LOVOT) successfully in Japan in December of 2019.

Create a Robot to make customers happy: the partnership of both companies to achieve the goal of Groove X, creating a Robot to make customers happy and power to love. It is an all-new relationship between Robots and humans.

Customized ODM Services to meet customers' high expectations with great satisfaction: ASRock Industrial provides excellent and fully customized ODM services to meet customers' high expectations and demands with great pleasure.

▲ Robot LOVOT powered by ASRock Industrial ODM boards

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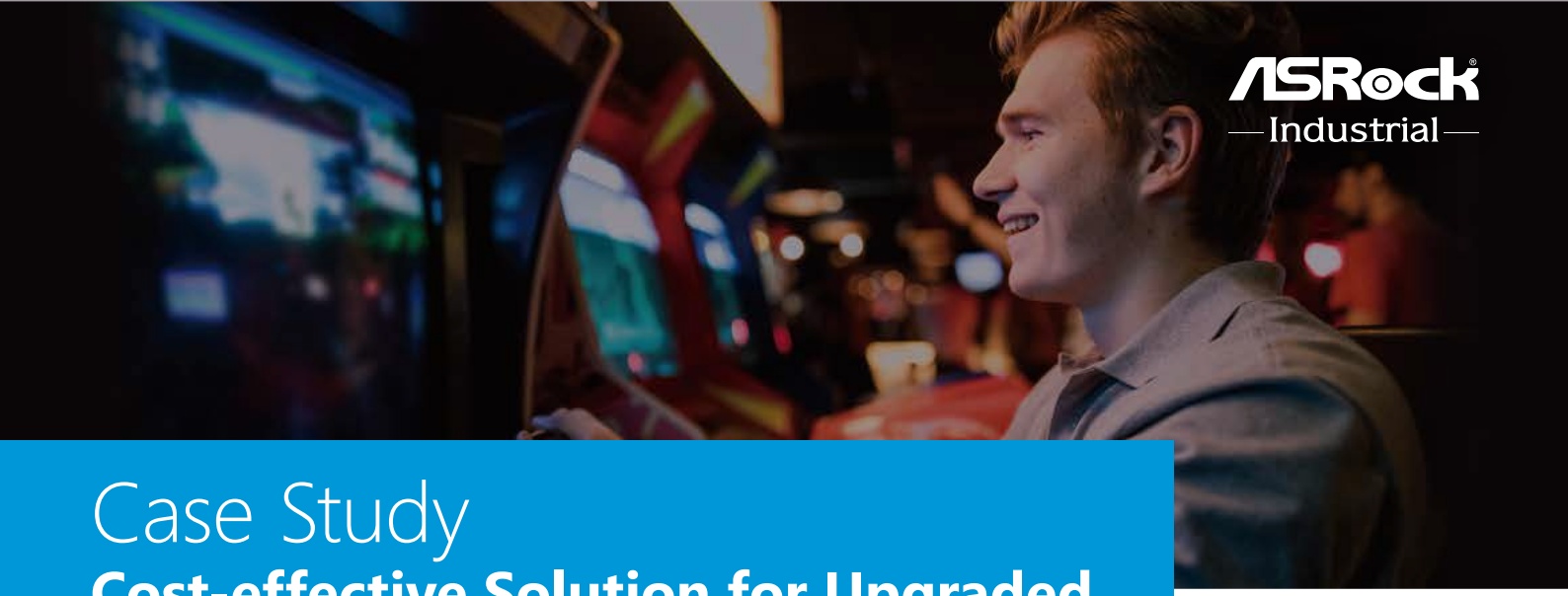

ASRock Industrial

Case Study

Cost-effective Solution for Upgraded Arcade Gaming Experience with Increased Accessibility of Popular Game Choices

A famous Arcade machine builder created the new Arcade machine powered by ASRock Industrial high performance and cost-effective IMB-V1000 motherboard. To make many fun and renowned games more accessible, the Arcade delivers a wide selection of games with enhanced gaming experiences for players in the game center.

CHALLENGES

Arcade machines have been a form of popular entertainment that has brought much joy to friends and communities altogether. To not only carry on the tradition but combine it with the latest system, ASRock Industrial aims to help transform Arcades for the modern sphere. A famous Arcade machine builder as well as a renowned game developer would like to create a new Arcade machine with an enhanced gaming experience that is affordable within the budget. In order to create Arcade machines that are cost-effect and offer a rich sensory experience for each player, multiple key features need to be compiled into the motherboard. Motherboards with solid CPU/GPU performance and features rich IOs can power the new Arcade machine and bring out a next-level gaming experience in a cost-effective manner.

SOLUTION

ASRock Industrial partners with the Arcade machine builder to co-create Arcade machine powered by the Mini-ITX IMB-V1000 motherboard, running on AMD Ryzen™ Embedded V1000 SoC processors and AMD Radeon™ Vega 3 Graphics to deliver cost-effective and high-performance gaming computing.

A gamer holds the coins in the hand with much anticipation and excitement. The inserted coins enter the receptor triggering the COM port to recognize receipt of coins. That crisp sound of the coins trickling down, signaling the launch of the game. The Arcade machine then lights up the screen through DisplayPort 1.2a, extending to 2 displays for an extra stimulating visual experience. With USB ports for LED lighting, the gaming display flashes vibrant colors accompanied with lively sounds from high definition audio setting through Realtek ALC887 to enhance stimulation and magnify the sensory experience. The player then begins the interaction by navigating the joystick and button, initiating the installed COM that allows the player to communicate with the machine.

For inclusive gaming interactions, LAN 1 allows for up to 6 arcade machines to carry out competition and tournaments with other players, creating a close-knit gaming community. LAN 2 then connects the individual machines to the central gaming control center. To then accumulate the players' gaming achievement, the USB card reader saves up the points for the player to continue on the exciting journey of arcade gaming.

▲ IMB-V1000 powers the Arcade gaming machine

ASRock Industrial

IMPACT

A successful development of the new generation Arcade Machines: Featuring AMD Ryzen™ Embedded V1000 SoC processors and AMD Radeon™ Vega Graphics with DisplayPort 1.2a, the IMB-V1000 motherboard installed inside co-launch the new Arcade machines successfully and pushes gaming experience to the next level.

A cost-effective solution that brings upgrades to Arcade Machines: Knowing the price of upgrades, the IMB-V1000 motherboard provides the most cost-effective option, presenting to our buyers the optimal solution to increase engagement and users in their arcades.

Popular games are now more accessible for game lovers: Popular games are simultaneously released with the Arcade Machine to channel in players' favorite games for a bigger and wider gaming connection and community.

A successful development of the new generation Arcade Machines

A cost-effective solution that brings upgrades to Arcade Machines

Popular games are now more accessible for game lovers

RELATED PRODUCT

IMB-V1000 Mini-ITX Motherboard

- AMD Ryzen™ Embedded V1000 SoC processors
- 2 x 260-pin SO-DIMM up to 32GB DDR4 3200 MHz (16GB per DIMM)
- 1 x PCIe x8 (Gen3), 2 x USB 3.2 Gen2, 7 x USB 2.0, 1 x M.2 Key M, 1 x M.2 Key E, 1 x mini-PCIe, 6 x COM, 2 x SATA3
- 2 x Realtek Gigabit LAN
- Supports Quad display,4 x DisplayPort 1.2a
- TPM 2.0 onboard IC
- 12V/19~28V DC-In/ ATX PWR (4-pin)

Learn more about the IMB-V1000:
https://www.asrockind.com/en-gb/IMB-V1000

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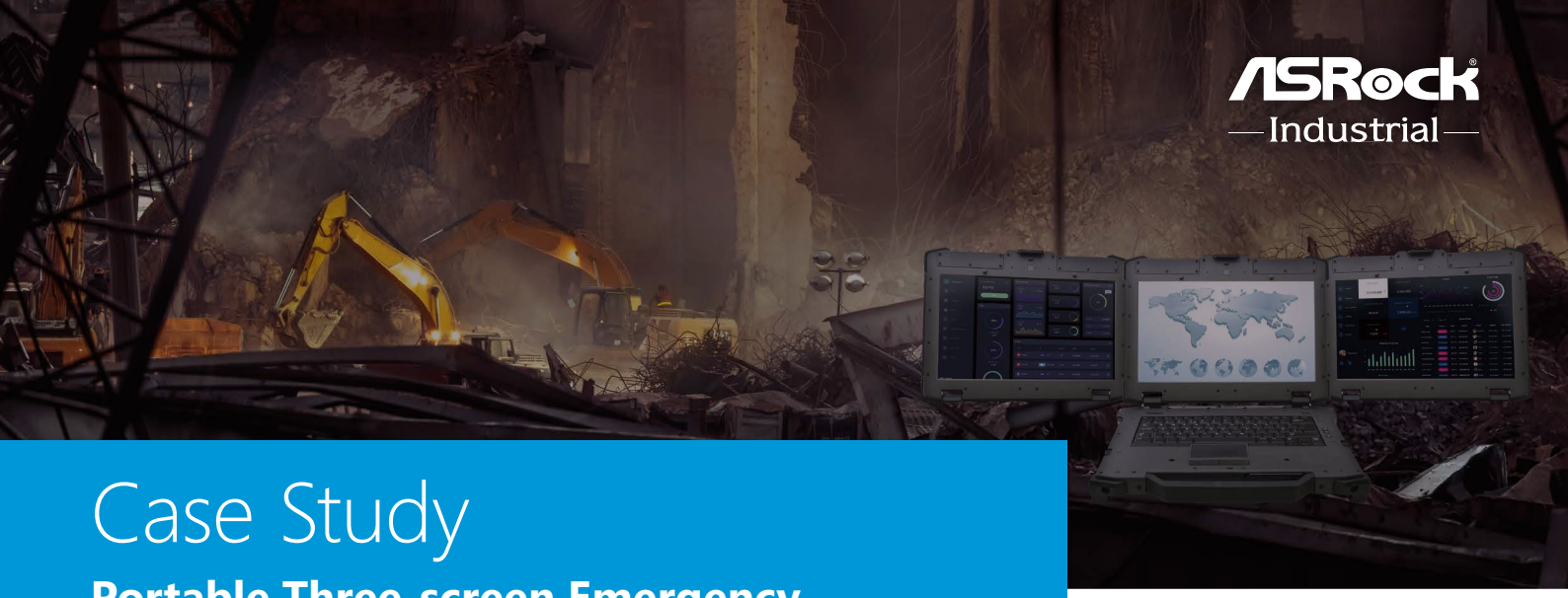

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Case Study

Portable Three-screen Emergency Workstation with Improved Timeliness and Precision for Critical On-site Decision Making and Response Coordination

intel IoT Solutions Alliance

A leading rugged portable industrial computer solution provider created the portable three-screen emergency workstation for command and dispatch powered by ASRock Industrial's MXM IPC-Q370 motherboard to increase the timeliness and precision of critical on-site tasks.

CHALLENGES

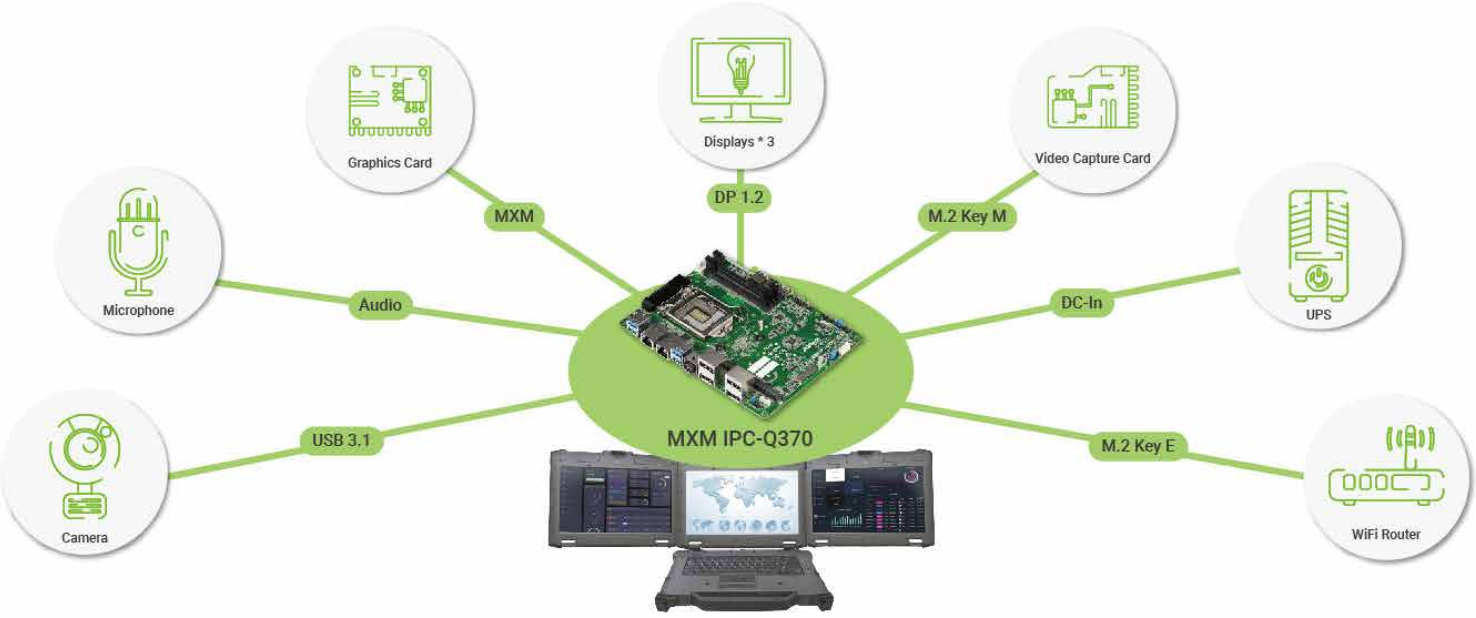
Traditional in-house dispatch center/emergency workstations were not designed to be movable, thus require large, heavy, and complicated machinery to process critical information. When on-site work became highly critical when facing emergencies, portable machines came on the market for mobile emergency workstations. Disaster sites are often chaotic and short of resources. Hence capable remote workstation allowed for real-time responses to be effectively navigated in a timely and precise way through being able to understand the situation, make necessary decisions on the spot with minimal delay.

There are challenges to overcome when choosing a motherboard for the machine to fit on-site demands. The size of the motherboard must be small and easily portable for on-site usages. It must support three-screens output simultaneously to manage three-dimensional restoration images of the scene as well as camera and audio equipment so it is fit to be the eyes and ears of the person in command. Last but not least, it must support a Wi-Fi connection for real-time data transmission and command.

SOLUTION

ASRock Industrial partners with the portable industrial computer solution provider to co-create an upgraded three-screen mobile workstation through the compact MXM IPC-Q370 Micro-STX motherboard to effectively address the disaster response challenges at hand. The MXM IPC-Q370 is powered by Intel® 9th/ 8th Gen Core™ Processors with Q370 chipset (Coffee Lake-S) for optimal speed and precision. The I/O allows for DP 1.2 to display three 15.6-inch high definition screens and supports MXM with PCIe x16 Lanes (Gen3) for the graphics card (Type A/Type B/Type B+) along with one M.2 Key M for a video capture card. The visual upgrade can display command and dispatch details, site maps, and real-time video surveillance simultaneously with one machine. Information presented in a three-dimensional manner greatly improves the timeliness and accuracy of decision-making.

The mobile workstation is also supported by USB 3.1 (Gen1) for the camera, and audio for microphones to bring reliable audio function. For the essential connection to be reliable, the machine has M.2 Key E for Wi-Fi router and DC-in to UPS (Uninterruptible Power System). These capabilities combined provides the most reliable tools to gather information from the field, track and report back to incident command to coordinate the response, and process available data to understand what is possible during the decision-making process.



▲ MXM IPC-Q370 empowers the Portable Three-screen Emergency Workstation

ASRock Industrial

IMPACT

Improved timeliness and precision of decision making: With upgraded capabilities to understand emergencies and have stable communication with in-house experts, critical decisions can be made in the most timely, accurate, and precise manner.

Portable and easy to carry, replaces the traditional inefficient large equipment: Emergency sites are oftentimes chaotic and short of available resources. With the light and portable workstation, one can navigate easily with the needed equipment on the go.

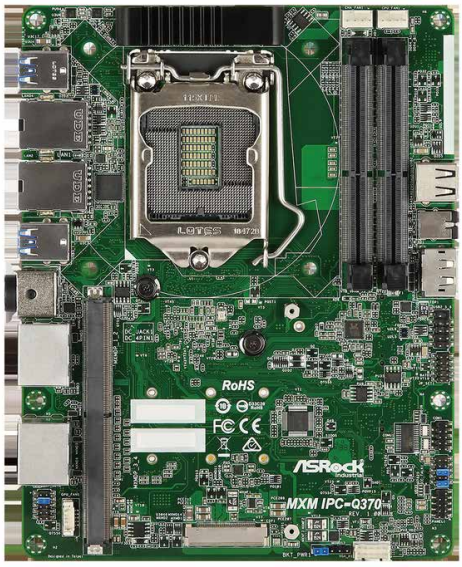
Upgraded three-screen design for comprehensive three-dimensional restoration of the scene: For critical problem solving, integration of multi-dimensional information needs to be done as quickly as possible. The three-screen design allows for effective receipt, process, and analysis of available data.

Improved timeliness and precision of decision making	Portable and easy to carry, replaces the traditional inefficient large equipment	Upgraded three-screen design for comprehensive three-dimensional restoration of the scene

RELATED PRODUCT

MXM IPC-Q370 Micro-STX Motherboard

- Intel® 9th / 8th Gen (Coffee Lake-S) Core™ Processors with Q370 chipset
- 2 x 260-pin SO-DIMM up to 64GB DDR4 2666 MHz (32GB per DIMM)
- 1 x MXM with PCIe x16 Lanes (Gen3), 4 x USB 3.1 Gen1, 3 x USB 2.0, 2 x M.2 Key M, 1 x M.2 Key E, 1 x COM, 2 x SATA3
- 2 x Intel Gigabit LAN
- Supports Hexa Display, 5 x DP 1.2, 1 x VGA, 1 x eDP
- TPM Header
- Supports Intel® vPro, AMT, RAID 0/1
- 19 DC-In



Learn more about the MXM IPC-Q370:
https://www.asrockind.com/en-gb/MXM%20IPC-Q370

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