Accelerating IoT Deployments at a Smart Business Park in Nanjing, China

WPG Holdings, an Intel® IoT Solution Aggregator, is orchestrating and accelerating development of a smart business park with the help of Intel® technologies for IoT

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The Chinese government supports the development of smart business parks that are designed to serve as regional economic engines, attracting multinational companies, a highly educated workforce, and foreign investments. Located in provinces across China, these industrial parks are collaborative test beds for the latest technologies, including the Internet of Things (IoT), edge computing, artificial intelligence (AI), automation, and 5G networking.

WPG Holdings (WPG), an Intel® IoT Solution Aggregator, is helping to develop a smart business park called the Future Technology Smart Center. Located in Nanjing, China, the Future Technology Smart Center was named an outstanding smart business park by International Data Corporation (IDC) in its China Smart City 2022 awards.

WPG leverages the Intel IoT partner ecosystem to provide aggregated, end-to-end, ready-to-deploy IoT solutions tailored to business needs. Working with Intel IoT Solution Aggregators like WPG gives businesses access to select Intel® IoT Market Ready Solutions and Intel® IoT RFP Ready Kits, which provide for quicker deployments that are easy to market and have the backing of Intel's expertise and IoT industry leadership.

Solving strategic challenges for smart parks

In recent decades, hundreds of industrial parks have been developed across China. The parks bring together global, regional, and local businesses to stimulate technological development, promote scientific innovation, and attract new capital and investment. They also enable efficiencies of scale and are seen as a way to stimulate economic activity, attract top talent, and grow the country's gross domestic product (GDP).

The Future Technology Smart Center in Nanjing, the capital of Jiangsu Province, is a new industrial park that covers an area of approximately 20,000 square kilometers, with 15,000 square kilometers of construction space. The development is expected to attract a growing number of businesses, including electric vehicle (EV) and other manufacturers, retailers, healthcare companies, and office buildings.

More than 80 domestic and foreign partners have participated in the Future Technology Smart Center, and over 40 smart solutions have been deployed. Thousands of people have visited the park, which has accumulated CNY 700 million (USD 110.8 million) in output value and generated tax revenue of CNY 80 million (USD 12.7 million).[1] In 2019, the Nanjing Economic and Technological Development Zone was ranked among the top 10 business environments in all of China.

For the park to be successful, prospective businesses must overcome several common challenges. One challenge is the overwhelming number of IoT solutions available in the market. Businesses must sort through a dizzying array of options to identify, develop, and deploy the best solutions to meet their needs. They also must locate compatible support services and technologies that will help to ensure continuing success as business needs grow and market demands shift.

Exacerbating those challenges is the large, fragmented ecosystem of potential technology partners that sell a variety of solutions that may or may not work well together. Businesses can quickly become overwhelmed by the need to create integrated solutions by working separately with multiple businesses across the entire value chain, including original device manufacturers (ODMs), original equipment manufacturers (OEMs), cloud service providers (CSPs), communications service providers (CoSPs), and independent software vendors (ISVs).

How solution aggregation works

As an Intel IoT Solution Aggregator, WPG is helping businesses at the Future Technology Smart Center overcome the challenges of selecting and deploying the right IoT solutions. Intel IoT Solution Aggregators provide a one-stop shop for hardware, software, and value-added services, so businesses can implement the customized IoT solutions they need in less time and with lower risks and costs.

To speed and simplify IoT deployments, solution aggregators leverage the Intel IoT partner ecosystem to provide end-to-end, ready-to-deploy IoT solutions. The solutions are tailored to business needs and include fully tested and proven multivendor bundles such as Intel IoT Market Ready Solutions and Intel IoT RFP Ready Kits.

Intel IoT Market Ready Solutions

Intel IoT Market Ready Solutions are scalable, repeatable, end-to-end solutions that are commercially available and optimized for data-intensive workloads across industries. The solutions include sensors, edge hardware, software, and other technologies from across the IoT ecosystem that are adaptable, vetted, and ready for immediate implementation.

Intel IoT RFP Ready Kits

Intel IoT RFP Ready Kits are integrated, use case–focused, commercial-grade technology bundles that serve a range of industries, including transportation and smart cities. Designed to accelerate time to market and reduce complexity, the kits include hardware from sensor to cloud, domain-specific application software, and a distribution and support model.

WPG and other Intel IoT Solution Aggregators bring extensive connections with ISVs, CSPs, CoSPs, and resellers, and Intel brings connections to IT distributors and C-suites. These relationships across the IoT ecosystem help businesses accelerate their deployments and ensure that they receive the continuing support they need.

Benefits of Intel® IoT Solution Aggregators

The benefits of working with Intel IoT Solution Aggregators such as WPG include the following:

- **Shorten time to market.** Businesses can rapidly deploy vetted solutions like Intel® IoT RFP Ready Kits and Intel® IoT Market Ready Solutions that include hardware, software, and value-added services tailor made for different regions and verticals.

- **Reduce total cost of ownership.** Deploying finely tuned, full-stack offerings from Intel IoT Solution Aggregators can help businesses lower the cost of developing, deploying, servicing, and scaling their solutions.

- **Realize faster time to value.** With trusted, Intel-powered solutions and connections, businesses can rapidly set up proofs of concept (POCs) and solve domain-specific issues, enabling them to get to market faster and realize a faster time to value.

- **Scale efficiently.** The industry knowledge, broad market reach, and professional services provided by Intel IoT Solution Aggregators enable businesses to scale their IoT deployments quickly and efficiently.

Illustrative use cases at the Future Technology Smart Center

At a showroom at the Future Technology Smart Center in Nanjing, WPG demonstrates numerous Intel-powered IoT use cases for the park's prospective businesses. The use cases were also highlighted at the business park's grand opening event, which was attended by more than 160 people and watched via livestream by more than half a million people.

The innovative IoT use cases, powered by an array of the latest Intel® processors and technologies, include those described below.

Smart cities and intelligent transportation use case

Intel powers a range of smart city solutions that use embedded technologies, open data platforms, and AI to create healthier and more-livable urban environments. The intelligent transportation use case highlighted at the Future Technology Smart Center provides an example of how smart city solutions can help improve public safety and smart mobility.

Industrial worker safety

To help improve driver safety and reduce operating costs in an industrial or warehouse setting, cameras are installed on forklifts and other vehicles to sense and explore the surrounding environment. The system detects, identifies, and tracks both static and dynamic objects, so drivers can be made aware of possible dangers and avoid collisions. From ports to warehouses, businesses can use the solution to help reduce the number of accidents and identify their causes.

Figure 1: Smart warehouse vision safety.

The solution, developed by Aidong Super AI and powered by Intel® Core™ i3 processors, can be deployed quickly and customized as needed, including integration with edge computing solutions for accelerated target recognition.

5G multi-access edge computing (MEC) networking use cases

The Intel® Smart Edge software portfolio enables businesses in a range of industries to quickly and efficiently deploy edge-centric networks, compute capabilities, and workload convergence. The software supports 5G MEC capabilities with zero-trust architecture and is designed for simple integration, deployment, and management. Businesses can easily deploy a complete private wireless system with an integrated 5G radio access network (RAN), 5G core, and enterprise applications.

5G hyperconverged infrastructure (HCI) application

The 5G HCI application from SageRAN Network Technology provides a high-bandwidth, ultralow-latency solution for a range of industries. When combined with edge cloud computing and other technologies, the solution can support intelligent operation of factories, hospitals, and other businesses. The 5G HCI application, powered by Intel® Xeon® processors, is open, scalable, and flexible enough to support a range of indoor and outdoor deployments.

5G small cell solution

This compact, portable 5G small cell set combines ADLINK's edge server series with SageRAN's baseband unit (BBU) protocol stack to deliver complete 5G network functions. The demo kit includes the core network, application server, and BBU integrated into one 19-inch suitcase with a link to the remote radio unit (RRU). It also provides devices, including 5G customer premises equipment (CPE), and a 5G internet protocol (IP) camera, to demonstrate the various applications' high performance.

The 5G small cell solution is easy to install, manage, and maintain, so system integrators can quickly set up proofs of concept. Intel Xeon processors power the 5G BBU, 5G core network, and application server.

Figure 2: Overview of the services possible with 5G deployment.

Smart manufacturing use cases

Manufacturing is being transformed by the convergence of information technology (IT) and operational technology (OT) systems onto shared, intelligent, industrial-optimized compute platforms. The resulting interconnected systems provide access to deeper insights, powered by intelligent edge compute. With more intelligence at the edge, smart manufacturers can capture more data from edge devices and analyze it to make adjustments to operational systems in near-real time.

Worker dress detection solution

The worker dress detection solution from Aidong Super AI uses deep learning, machine vision, and 5G to help businesses quickly determine whether workers are wearing the appropriate clothing to help prevent accidents, safety violations, and other potentially costly violations. The solution, powered by Intel® Core™ i7 processors, provides a high degree of accuracy, with results delivered rapidly via 5G.

Big data analysis and display system for industrial vehicles

This integrated system, powered by Intel Xeon processors, is designed to provide businesses with the easy-to-understand visual information they need to operate and maintain vehicle services. The solution was developed by Aidong Super AI and is designed to collect data such as the number of operations, as well as safety indicators such as failure codes and battery abnormalities.

Users can view near-real-time statistics with a city distribution map. The screen also displays driving trends over time, operational efficiency statistics, and hotspot data by city.

Decision-making system for smart manufacturing

The iAT2000 Cloud SCADA System from NexGOL, a system integrator, offers a complete digital solution for smart manufacturing. The Industry 4.0 solution is designed for cloud war centers, with an open architecture that integrates IT and OT systems seamlessly. Intel-based IoT gateways are a key part of the turnkey solution, which provides near-real-time information on production and facility operations so users can make fast, informed decisions to reduce costs and improve energy efficiency.

Five-in-one laser engraving machine for smart manufacturing

The five-in-one laser engraving system from NEXGOL is a fully automated, unstaffed production line that takes orders over the cloud. After a customer places an order, the cloud ordering system automatically assigns the work order to the robot production line, and the robots complete the laser engraving production process with the ballpoint pen. The six-axis vertical-articulated robots, SCARA robots, delta robots, and XYZ configuration machines used in the production line are controlled by the Robot Control System.

Powered by industry-leading technologies

The innovative Intel® hardware portfolio supports the IoT use cases at the Future Technology Smart Center in Nanjing's smart business park, with solutions for edge, network, and cloud. From low-power compute that can bring AI to new places to powerful edge servers for near-real-time analytics, Intel can help businesses deploy intelligent solutions that power new levels of productivity and uncover new opportunities to maximize revenue.

Intel® Distribution of OpenVINO™ toolkit

The Intel Distribution of OpenVINO toolkit is free software designed to accelerate AI model training and deep learning inference. Developers and data scientists can use the downloadable toolkit to fast-track development of high performance computer vision and deep learning into vision applications. The toolkit enables deep learning on hardware accelerators and streamlined heterogeneous execution across multiple types of Intel® platforms.

Intel® Movidius™ Vision Processing Units (VPUs)

Intel Movidius VPUs deliver accelerated inferencing using very little power. Capable of running as systems-on-chip (SoCs) in smart cameras or multi-VPU accelerators in edge servers, they are powerful inference engines for space-, heat-, and power-constrained devices.

Intel® Field Programmable Gate Arrays (Intel® FPGAs)

Intel FPGAs deliver near-dedicated ASIC-level performance that you can fine-tune to match the demands of specific machine learning frameworks and deep learning inference models. Intel's Edge-Centric FPGAs are built for low-power and cost-sensitive applications, providing engineers with the flexibility and longevity they need to deploy at the edge and beyond.

Intel Smart Edge

Intel Smart Edge is a portfolio of software offerings that delivers performant and optimized solutions for service innovation on-premises and at the network edge. The portfolio supports and optimizes critical workloads and capabilities in 5G, AI, media, and security that are necessary for networking and applications at the edge. Powerful optimizations on Intel® architecture are designed to deliver improved outcomes for customers and partners.

Intel-based IoT gateways

IoT gateways with Intel processors enable companies to seamlessly interconnect industrial infrastructure devices and secure data flow between devices and the cloud. The gateways also enable businesses to aggregate, share, and filter data for analysis. For manufacturers, this means they can analyze near-real-time and trended data from systems to optimize them for power efficiency, performance, and operational life.

Intel 5G solutions

Intel brings its heritage as a leader in cloud computing to transform 5G networks from the cloud to the edge. Intel processors and technologies—including Intel Xeon processors, accelerators, and software—are embedded throughout the 5G value chain. Intel also works with leaders across telecom, cloud, IoT, and enterprise to define 5G solutions, open source software, and standards-based technologies.

WPG helps to accelerate IoT deployments

The Future Technology Smart Center in Nanjing is expected to attract dozens of innovative companies from around the world. WPG is leveraging the Intel IoT partner ecosystem to help those businesses rapidly identify, customize, deploy, and manage their IoT solutions. As an Intel IoT Solution Aggregator, WPG provides access to Intel IoT Market Ready Solutions, Intel IoT RFP Ready Kits, and other solutions that are fully vetted and ready for immediate implementation, giving businesses a low-risk, low-cost opportunity to deploy and scale the latest IoT solutions.

About WPG Holdings

WPG Holdings, an Intel IoT Solution Aggregator, offers diversified Intel® IoT, AI, and 5G solutions to address business needs across multiple domains and applications. To serve the Artificial Intelligence of Things (AIoT) ecosystem, WPG provides solutions to OT and IT systems integrators in Asia and the Greater China regions, bridging end-to-end (edge-to-cloud) applications by integrating resources from its subgroup members, including WPIG, Sertek, and Genuine C&C. WPG integrates AIoT solutions and onboards multiple verticals of ODM, OEM, and ISV solutions on the shelf and helps systems integrators select suitable solutions and manage logistics. Moreover, WPG helps to establish and cultivate industry domain knowledge and use cases, promote various AIoT applications, and support business scalability by enabling ecosystem partners.

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