

SOLUTION BRIEF

AI for Edge Computing
Smart Retail



IOTech and Intel Unlock Differentiating Services for Retail

Open, edge AI technologies for retail cut integration costs and time to market for in-store IoT solutions



“As a contributor to Intel’s Open Retail Initiative, we are helping to drive the acceleration and adoption of new technologies in retail. IOTech’s Open Edge IoT Platform simplifies how partners integrate their technology and data to deliver high-value solutions in retail and other markets. And the Intel® Edge Software Hub will help promote even more innovation in edge applications.”

—Keith Steele, CEO, IOTech

The Internet of Things (IoT) continues to revolutionize the retail industry and introduce a growing range of benefits for customers and retailers alike. IoT technologies are powering enhanced in-store shopping experiences and helping brick-and-mortar stores deliver the level of instant, information-rich, and frictionless shopping that customers have come to expect from online shopping.

More and more, retailers are recognizing that opportunities for competitive advantage lie in leveraging their data at the edge. They realize that enabling edge computing IoT technologies that place data processing and analytics closer to retail devices and shoppers is the key to improving the speed and flexibility to meet ever-changing customer expectations. These solutions allow retailers to instantly gather valuable shopping information and reveal insights that unlock the ability to nimbly adapt to market conditions and provide personalized, differentiating services.

Challenge: Deploy disruptive innovations without disrupting services

The benefits of introducing edge technology solutions that use advanced retail analytics to provide real-time insights are game changing. A major challenge, however, is how to seamlessly and cost-effectively integrate new solutions with a retailer’s multiple legacy systems without disrupting existing operations. New innovations need to leverage and complement the investments the business has made in both their IT infrastructure and their portfolio of existing operational technology (OT) assets, such as scanners, video cameras, RFID sensors, and point-of-sale (POS) systems.

Solutions that bring greater intelligence to the edge must also be able to flexibly scale, adapt, and grow at the pace of change in today’s marketplace. Moreover, retailers cannot afford the time, expense, and risks that come with building and supporting custom solutions—nor do they want to get locked into vendor-specific proprietary products.

Solution: Open and flexible edge computing platform

Intel created the Intel® Edge Software Hub to give software developers and system integrators access to a growing list of containerized vertical-specific software packages and developer tools that help them overcome the complex requirements for edge use cases and accelerate the building of powerful new edge solutions.

IOTech’s Open IoT Edge Platform is an Intel® RFP Ready Kit (RRK) that leverages valuable components from the **Intel® Edge Insights for Retail** software package now available in the Intel Edge Software Hub. The Open IoT Edge Platform RRK is an open solution for retail, manufacturing, and industrial systems that combines



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an IoT platform with integrated computer vision and multiapplication provisioning. It removes the need to custom build edge solutions from the ground up and gives enterprise IT, independent software developers (ISVs), and system integrators (SIs) the means to take advantage of innovative edge technologies to deploy data-driven solutions faster.

Developed in collaboration with ecosystem partners IOtech Systems Limited and HP, the RRK uses IOtech's Edge Xpert platform, a commercial implementation of the Linux Foundation's EdgeX Foundry. This vendor-neutral, open source project provides a common open framework for IoT edge computing. It supports local analytics and decision-making as well as cloud-based application provisioning that simplifies application life-cycle management for retail applications and other use cases.

Benefits of IOtech's Edge Xpert include:

- Provides a flexible, open, vendor-neutral edge solution designed for interoperability with existing OT and IT retail systems
- Simplifies the connection and management of different data sources (e.g., video cameras, NVR systems, RFID scanners, barcode readers, digital signage, and POS) and applications in retail environments
- Enables device and sensor data to be ingested, normalized, aggregated, processed, and analyzed, and results acted upon in near-real time
- Significantly reduces integration costs and time to market for new IoT solutions and products
- Supports a range of retail-focused use cases
- Offers an extensible platform and multiapplication provisioning, allowing a system to easily evolve and scale to introduce additional capabilities

Use cases

Improving capabilities for capturing and leveraging data at the edge can deliver a vast range of benefits in retail and other industries. IOtech's Open IoT Edge Platform RRK simplifies and accelerates the process of developing innovative edge solutions such as:

- Customer experience
- Inventory optimization
- Loss prevention
- Staff effectiveness
- Asset tracking
- Smart supply chains

How it works

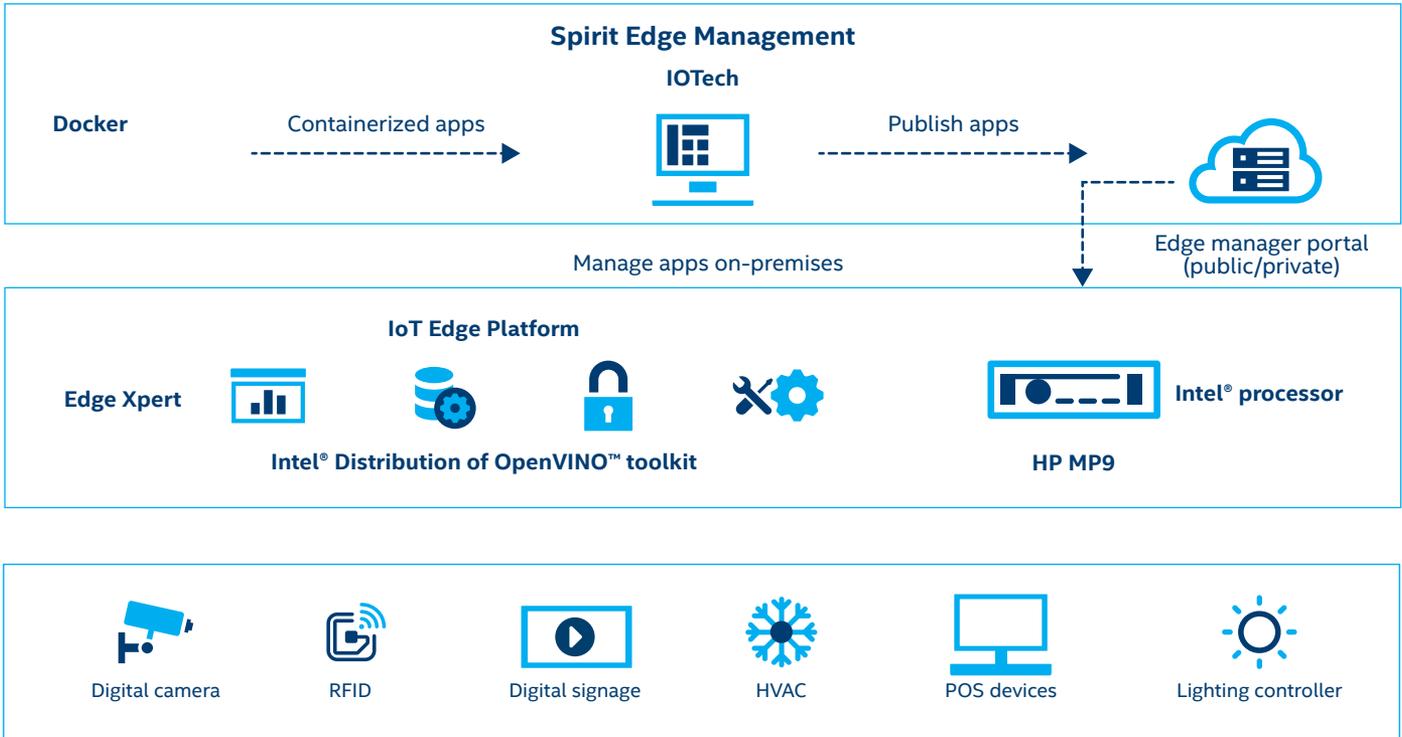
IOtech's Edge Xpert is a core component of the Open IoT Edge Platform RRK. Edge Xpert enables ISVs and SIs to rapidly develop functionally rich, open, commercially supported edge computing solutions that leverage and augment the capabilities of the multivendor retail systems and assets stores already have in place.

The platform simplifies the integration of retail devices from different vendors and merges data at the edge into a single operational picture that can provide insights for multiple use cases. It supports local analytics and decision-making, enables a wide range of use cases, and offers cloud-based application provisioning that simplifies application life-cycle management for in-store edge deployment. In addition, the platform offers easy orchestration and management of applications deployed on edge nodes—allowing new or upgraded capabilities to be added to the solution at scale and across retail environments.

Built with the Intel® Distribution of OpenVINO™ toolkit, the Open IoT Edge Platform RRK also supports artificial intelligence, computer vision, and machine learning applications that use video data sources at the edge. The RRK provides integrated IP camera support through the ONVIF camera service and can feed streaming video into the OpenVINO toolkit, which performs inference and processes actions and decisions taken by the integrated applications.

Other Intel®-based technology that powers the Open IoT Edge Platform RRK includes edge hardware from Dell and HP, available in a range of configurations that take advantage of the latest Intel® processor technologies.





Proof of concept: Intelligent loss prevention

In collaboration with Flooid, Edgify, Shekel, and HP, Intel and IOtech developed a demonstration for NRF 2020 that showed how the Open IoT Edge Platform RRK and Edge Insights for Retail can be used for deploying smart self-checkout systems. The Intelligent Loss Prevention solution can be used in stores to help combat both accidental loss and theft at self-checkout kiosks.

The solution collects data from a range of retail devices, including POS hardware, RFID scanners, weight scales, and smart cameras and merges the available edge data into a single picture of activities. Camera integration with the Intel Distribution of OpenVINO toolkit enables point-of-sale monitoring enhanced with computer vision and AI capabilities. Analytics applications monitor collected data in real time to capture events and report anomalies at a self-checkout. Notifications of suspicious activity generated by the AI are automatically sent to an employee who can take appropriate action without interrupting the checkout process.

Solution Components

- Intel® Core™ i3, i5, and i7; Intel® Xeon® E; Intel® Pentium®; and Intel® Celeron® processors
- OS support: Ubuntu, SUSE
- CSP: Private/on-premises
- Software: Open IoT Edge Platform, Intel Distribution of OpenVINO toolkit, IOtech's Edge Xpert and Spirit Edge Management Solution
- Hardware: HP MP9 retail server

Conclusion

The retailers that tap into the potential of data and edge IoT solutions to transform their operations and experiences for customers are the ones that will continue to adapt and thrive in a fast-changing marketplace. The Open IoT Edge Platform RRK is helping retail IT, ISVs, and SIs streamline and accelerate the development of innovative new solutions at the edge.

Learn more

Discover how IOTech's Open IoT Edge Platform RRK can help accelerate the development and deployment of advanced IoT solutions. [Get started >](#)

Learn more about IOTech's participation in Intel's Open Retail Initiative. [Visit here >](#)

About IOTech Systems Limited

UK-based IOTech Systems Limited is establishing leadership in the global edge/fog IoT platform market with its open source business model, channel strategy, and collaboration with other global IoT players that are working to eliminate barriers to development, deployment, and time to market for new IoT products and services.

iotechsys.com

Intel® Edge Software Hub

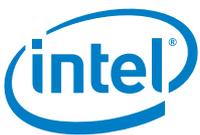
START YOUR INTELLIGENT EDGE SOLUTIONS HERE

The Intel Edge Software Hub is a one-stop resource to simplify edge solution development and accelerate deployment. With robust software tools and deployment-ready software packages, the Intel Edge Software Hub provides prevalidated, pretested, and interoperable solution ingredients.

Reduce setup time and bring your edge solution vision to life with software optimized for Intel's expansive portfolio of hardware solutions. Each Insights package includes components designed to meet the specific needs of edge use cases:

- **Edge Insights for Retail** helps accelerate the process of development and deployment of retail IoT applications and sets the stage for new innovative in-store experiences and improved operational results. This resource is free to developers and offers a containerized computer vision pipeline to help speed software customization. It also features EdgeX middleware integration with data and protocol standards to unify your ecosystem of IoT components.
- **Edge Insights for Industrial** enables advanced AI workloads at the edge for video and time series data ingestion, analytics, and automation for machine vision solutions.
- **Edge Insights for Vision** accelerates innovation in computer vision applications and edge-to-cloud integration.

[Explore the Intel Edge Software Hub >](#)



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