




Partner Program Solution Guide

Igniting the future of AI, Industrial IoT and
connected intelligence with our ISV ecosystem

Lenovo
OEM Solutions

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Lenovo



Our solution guide empowers Lenovo's ISV ecosystem partners by providing comprehensive hardware and software bundles for a complete turnkey solution for our OEM customers

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Program Overview

Lenovo has strategically developed an ecosystem of ISV partners that have jointly introduced innovative solutions across targeted verticals. Through the Crosswave Partner Program, Lenovo is able to deliver software and solutions for customers around the globe. Whether customers are looking to gain insights that can help improve their business operations or increase safety and security, Crosswave solutions are addressing key challenges by providing end to end solutions for our customers.

This Solution Guide highlights ready-made and repeatable use cases and is the output of our comprehensive vetting and aggregation of complete solutions. All projects start at the concept level where we define a pain point and solution with specific partner technology. The solution goes through a reference architecture, rigorous testing, and specific functional requirements to create a purpose driven solution that solves the customer pain point... Only when a solution has been fully vetted can it be included in Crosswave Partner Program.

Crosswave accelerates the ability to not only provide hardware to our customers, but to offer turnkey solution that can be simply implemented to address a business challenge helping customers move quickly adding ROI.



Crosswave Verticals



Manufacturing



Retail



Smart Cities



Healthcare

The IoT Edge in Manufacturing

Smarter manufacturing is coming online

Edge and IoT solutions are crucial in manufacturing and the smart factory of today.

Vertical solutions

- Machine condition
- Monitoring / AI / ML for predictive maintenance on machines
- Logistics and tracking
- Security / safety / quality
- Inspection
- Optimization and Autonomy



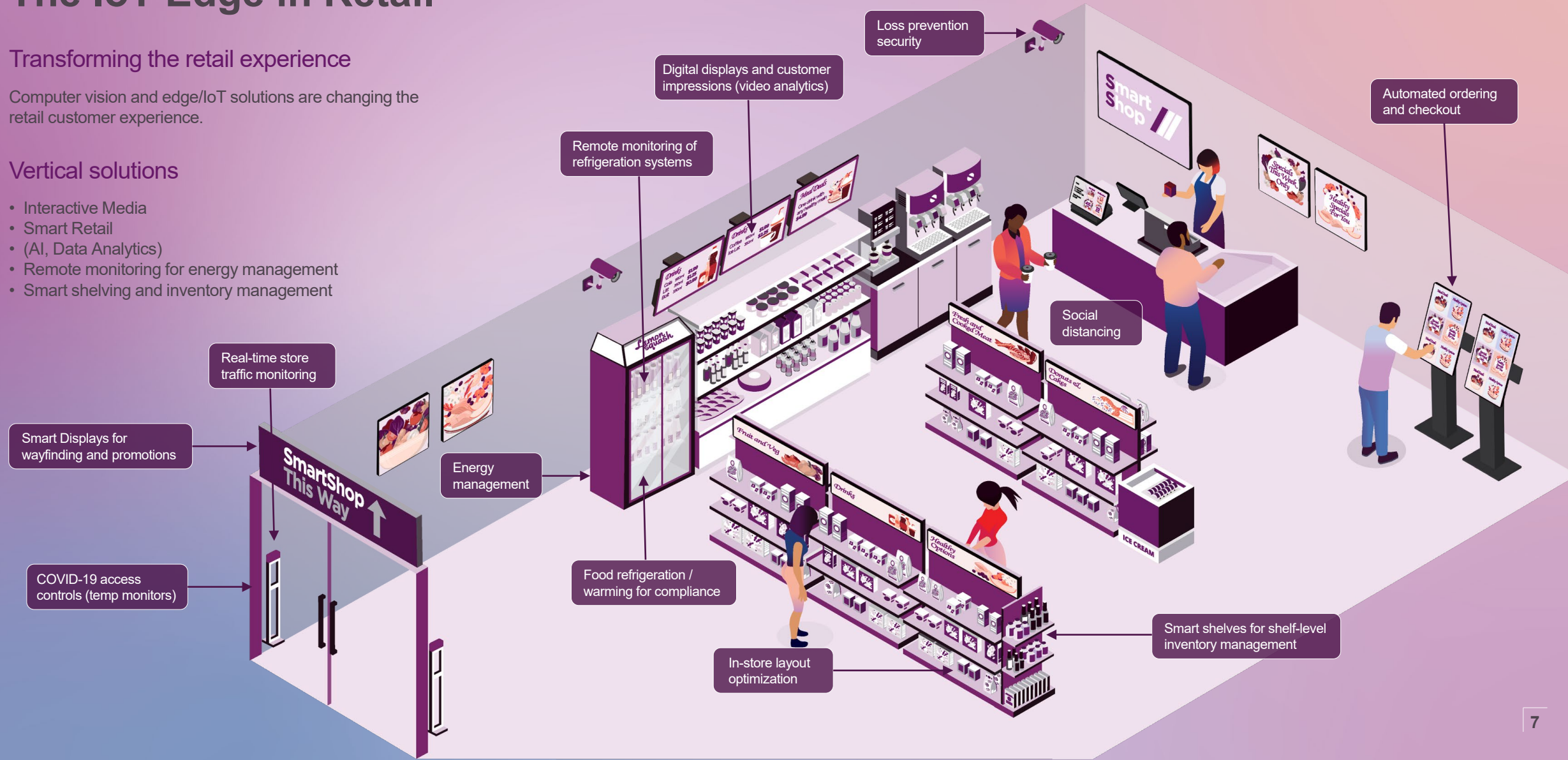
The IoT Edge in Retail

Transforming the retail experience

Computer vision and edge/IoT solutions are changing the retail customer experience.

Vertical solutions

- Interactive Media
- Smart Retail
- (AI, Data Analytics)
- Remote monitoring for energy management
- Smart shelving and inventory management



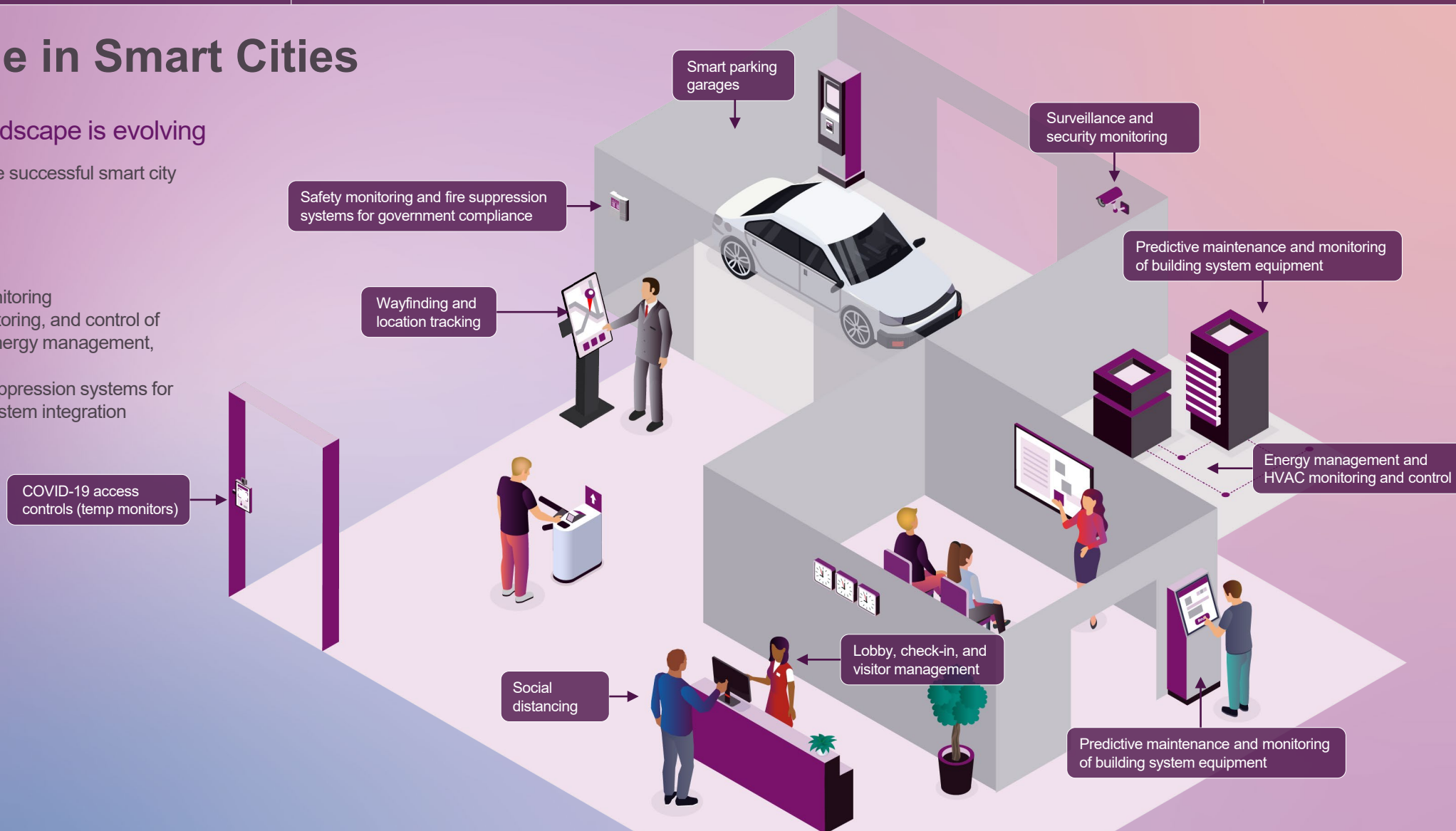
The IoT Edge in Smart Cities

The interconnected landscape is evolving

Edge computing is integral to the successful smart city environment.

Vertical solutions

- Security and Surveillance monitoring
- Predictive maintenance, monitoring, and control of building system equipment, energy management, and HVAC
- Monitoring of life safety/fire suppression systems for government compliance — system integration



The IoT Edge in Healthcare

Smarter healthcare is changing lives

Connected devices are essential for the fast-moving demands of modern healthcare.

Vertical solutions

- Virtual chronic care management solutions
- Remote patient monitoring measuring vitals
- Secure frictionless health access of patient data
- Hospital safety solutions for staff and patients





About Admira

Digital Signage IoT solutions for smart retail.

Admira is a digital signage software company with a deployed network of over 50.000 stores. Its leading SaaS platform provides digital signage, internet of things and audience analytics solutions. The platform encapsulates machine learning and big data functionalities that increases cross-selling and brand impact Admira is one of the worldwide leading platform present in airports, supermarkets, high end beauty stores, and many more sectors.

Discover best practices:
www.admira.com/en/projects

Better and Smarter Together

Enhancing Digital Engagement with Admira and Lenovo's Integrated Solutions

Admira solutions can connect any Lenovo's device or equipment to Admira Platform, increasing its digital possibilities for immersive and interactive experiences. Screens, monitors, panels, workstations, VR glasses, domotics. can become a data collector for business intelligence.

Popular Solution Applications

Admira's Comprehensive Suite: From Digital Signage to Virtual Assistants

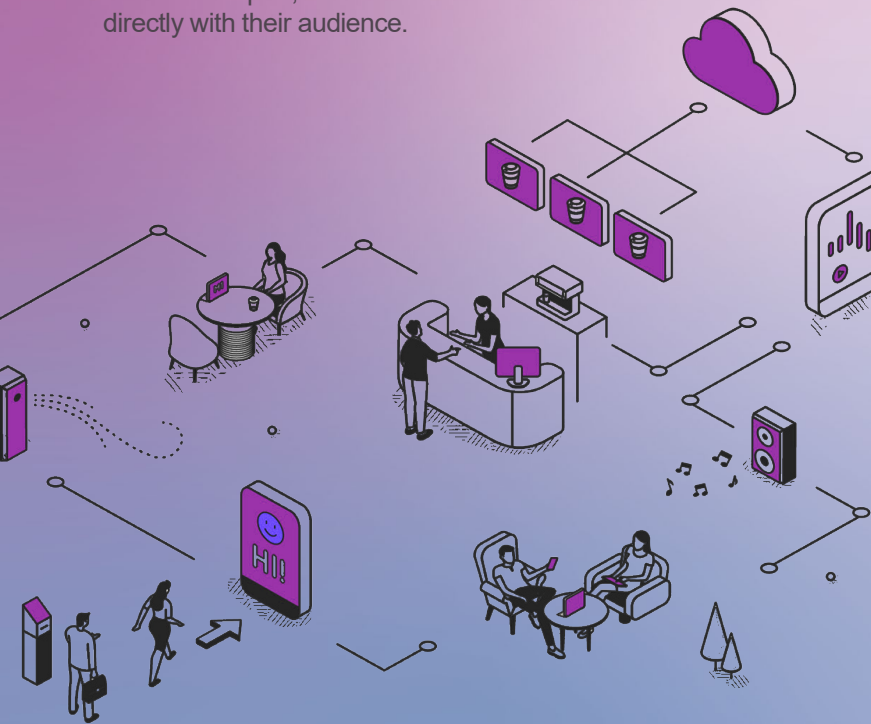
- Admira Digital Signage Platform
- Admira Analytics Suite
- Admira Dashboard
- Admira Music (In-Store Sound Manager)
- Admira Spaces (Room & Queue Manager)
- Admira Avatars (Virtual Assistants)

Case Study: Combining digital signage with real-time updated product information

Industry:  **Retail**

Challenges

Retail sector is facing new challenges today. During the lockdown, many of its former customers have switched to ecommerce, and now demand many of its features to return to stores. Retailers need to be able to offer a smarter, more personalized omnichannel experience to re-engage shoppers. And for their part, brands need new channels to connect more directly with their audience.



Solutions

Lenovo ultrastretch panels are ideal for digitizing and connecting shelves in stores and supermarkets. By connecting them with Admira solutions, it allows you to combine advertising campaigns with Dynamic Pricing tools. All the control is managed in a cloud-based back-end platform by general or store managers. All in all, the consumer receives a unique shopping experience, with high-impact audiovisual contents and real-time updated product information.

Solution Benefits

- Attract customers, focus attention and drive sales
- Ensure prices consistency and avoid errors
- Open API
- Multi-language / Multi-currency
- Cloud based platform
- Centralized control
- Task automation



Powered by up to Intel® Celeron® processors

Create unique and unforgettable moments for the client, by creating emotional synergies with your brand.

To achieve this, Admira develops experiences for maximum innovation, combining the advanced technologies brought together with Lenovo ThinkEdge and ThinkStation, with its SaaS platform and Instorescreen offering.



AI EDGE LABS

About AI EdgeLabs

Securing the Edge
from Cyber Threats

AI EdgeLabs is a leading innovator in the cybersecurity industry, specializing in AI-driven solutions to protect organizations at the edge. Their state-of-the-art software-based solution leverages the power of artificial intelligence and machine learning for real-time threat detection, anomaly analysis, and response. AI EdgeLabs has received numerous awards, including The Embedded Computing Design's prestigious in AI & Machine Learning category of Best in Show Award at Embedded World 2023

Better and Smarter Together

Uniting AI Innovation and Edge Expertise
for Enhanced Security

Lenovo and AI EdgeLabs have formed a strategic partnership to tackle edge security challenges effectively. Leveraging AI EdgeLabs' cutting-edge cybersecurity solutions and Lenovo's expertise in edge computing technology, the collaboration aims to deliver robust security measures at the edge. Together, they are committed to safeguarding organizations from emerging cyber threats, ensuring a secure and resilient digital environment for businesses.

Popular Solution Applications

Securing Industries from Energy
to Telecommunications

AI EdgeLabs' AI-driven cybersecurity solutions play a crucial role in diverse sectors. In Distributed Energy, they secure smart grids and renewable infrastructures. The Oil and Gas sector benefits from real-time threat detection, maintaining operational continuity. For Manufacturing, their technology protects industrial control systems against cyber threats. In Retail, they safeguard customer data and business operations. Smart Cities are made more resilient against cyber threats to their infrastructures and IoT devices. Lastly, in Telecommunications, they ensure secure and reliable communication services through AI and edge computing.

Case Study: A large Wind & Solar distributed energy company

Industry: Green Energy

Challenges

A large distributed energy company faced significant challenges while deploying cybersecurity to thousands of edge servers. Managing diverse and geographically dispersed servers necessitates a robust and scalable solution. Coordinating regular updates and patches across thousands of edge servers is complex and requires careful planning. Ensuring seamless integration of cybersecurity measures while minimizing disruptions to energy operations demands meticulous execution. Maintaining continuous monitoring and response capabilities across such a vast and dynamic network also poses technical and logistical difficulties, including avoiding truck roll costs due to cyber attacks or deploying additional hardware was paramount. As a result, the provider realized that a software-based approach specific to edge devices was necessary that could be distributed by easily via docker or edge orchestration platform.

Solutions

This large distributed energy company partnered with AI EdgeLabs to deploy its software-based edge cybersecurity solution for safeguarding wind and solar production facilities. Our EDR and NDR functions ensured real-time monitoring and detection of anomalous activities, protecting against unauthorized access and other cyber threats such as DDoS, Ransomware & Malware. The solution offered proactive threat identification and rapid response with AI and ML capabilities, bolstering system integrity and operational continuity. This comprehensive security approach instilled confidence in the provider's critical energy assets, enabling reliable and resilient energy production while mitigating cybersecurity risks across their distributed infrastructure. With our easy deployment options, it was apparent to the operator that AI EdgeLabs was the perfect choice to partner with for edge security.

Solution Benefits

- **Enhanced Security:** The AI-driven edge security solution provides robust protection against cyber threats, safeguarding critical infrastructure.
- **Real-time Threat Detection & Response:** Respond to security incidents in real-time, mitigating the impact of breaches.
- **Scalability:** Can scale across thousands of edge servers, making it suitable for large dispersed energy infrastructures.
- **Operational Resilience:** By maintaining system integrity and continuity, the solution helps ensure uninterrupted energy production and minimizes the risk of disruptions.
- **Cost Savings:** Our solution offered cost savings by eliminating the need for expensive physical or virtual hardware, reducing maintenance and upgrade costs, and enabling more flexible and scalable deployments with zero truck rolls.
- **Compliance and Regulations:** The solution aids in meeting regulatory requirements and industry standards, ensuring compliance with cybersecurity guidelines.

The provider benefitted significantly from the seamless integration of ThinkEdge SE350 V2 Edge Server and AI EdgeLabs' cybersecurity solution. It bolstered security, ensured robust protection against cyber threats, enabled real-time threat detection, and facilitated scalable expansion across thousands of edge servers. The implementation enhanced operational resilience, optimized energy production, and instilled confidence in stakeholders, reinforcing trust in their distributed energy systems.



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About AMA

Digital remote collaboration for frontline workers

AMA, a publisher and integrator of secure productivity applications, is helping medical institutions and industrial organizations of all sizes accelerate their digital transformation. AMA's market leading XpertEye suite of applications has been deployed in more than 100 countries, addressing a wide range of use cases like remote diagnostics, inspection, planning, and workflow management. These unequaled remote interactive collaboration solutions empower customers to improve productivity, speed up resolution time, and maximize uptime while reducing their carbon footprint. With offices in Europe, APAC, and the USA AMA works in every time zone and can reach its customers wherever they are.

Better and Smarter Together

Unleashing Frontline Efficiency with XpertEye on Lenovo Devices

Benefit of XpertEye collaboration application on Lenovo devices. Equip frontline workers with professional devices embedding powerful remote assistance application, allowing instant audio/video support with your company's experts and suppliers, connect advanced cameras to your smartphone to better visualize, diagnose, solve issues.

Popular Solution Applications

Transforming Operations with Pervasive Remote Expertise

- Remote assistance, maintenance
- Remote inspection, audit, acceptance tests, quality assurance
- After-sales service, contact centers, emergency call centers, hotlines
- Remote training, tele-mentoring
- Tele-health for emergency care, medical expertise

Case Study: Remote expertise

Industry: e-health

Challenges

With the shortage and uneven distribution of healthcare professionals and the increasing demand for healthcare services, delivering the right care, at the right time, with the right specialist is a real challenge for medical organization.

Solutions

XpertEye Assisted Reality offers a versatile e-health collaboration platform, suitable for a range of applications from remote medical consultations to live, complex surgeries. The combination of Lenovo ThinkPhone and XE aR+ forms an effective tool for seamless collaboration, enabling medical professionals and patients to connect from any location. With the advanced capabilities of the ThinkPhone, XE aR+ delivers a comprehensive remote expertise solution. This includes support for multiple high-quality video sources, hands-free operation, and robust collaborative features, enhancing the efficiency and effectiveness of medical communications.

Solution Benefits

- Save time and limit transportation cost and risks by providing remote care with the right specialist
- Get a 360 degrees view of the operating room and perform efficient remote assisted live surgery
- Improve skills and knowledge transfer between practitioners with remote proctoring






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Case Study: Remote Assistance

Industry:  Manufacturing  Automotive  Audit  Pharma  Defense

Challenges

Expertise is getting scarce and often geographically dispersed. Accessing and deploying experts when and where they are needed, especially for complex problem-solving or maintenance tasks, is a real challenge for today's companies.

Solutions

With XpertEye assisted Reality, AMA offers a secured software application to remotely collaborate with your experts directly from your smartphone. XE aR+ provides a powerful audio-video call solution along with enhanced collaborative features such as a live pointer, a collaborative board, remote camera controls. Moreover, the XE aR+ application lets you use external cameras: need to work hands-free, use smart glasses; need to see the invisible: connect a thermal camera, an endoscope or microscope. XpertEye assisted Reality provides remote experts the most comprehensive view and data so they can deliver quick and efficient resolution.

Solution Benefits

- Improve productivity by reducing downtime and resolution time from experts or support teams
- Reduce travel cost by avoiding unnecessary expert travels
- Lower your carbon footprint
- Overcome the skill gap by providing high-skilled support with remote experts
- Certify and improve accuracy, get an intervention proof

XE aR+ the powerful remote collaboration application designed for frontline workers

Lenovo ThinkPhone, paired with XE aR+, offers frontline workers a robust platform for remote collaboration. This combination of a durable, high-performance smartphone and a dedicated application tailored for on-the-go use enhances efficiency and facilitates rapid resolution of challenges in various settings.



Lenovo ThinkPhone



About Auk.Industries

Auk Industries: Pioneering Industrial IoT with Global Expertise

Singapore based Company with Global presence and recognised as # 1 Industrial IoT Startup in Singapore Auk IoT-powered Ops-analytics system is rigorously evaluated and pre-approved by Enterprise Singapore and IMDA under the Productivity Solution Grant (PSG) scheme Founding partner in Smart Industry Readiness Index (SSIRI) network

Better and Smarter Together

Streamlining I4.0 Adoption with Auk Industries and Lenovo ThinkEdge

Auk Industries solution powered by Lenovo ThinkEdge SE50, based on Intel Platform, aims to eliminate the complexity and cost associated with I4.0/IIoT adoption by developing a scalable, 'plug-and-play' and agile system with deep ops analytics capabilities. Of the Opportunities, which Auk Industries + Lenovo ThinkEdge are able to secure a pitch and the client is ready for digitalization, Auk Industries emerge as the winning platform for half (53%) of them. All of the competitors, combined, only capture a quarter (22%). This makes Auk Industries de facto market leader for their target market segment-
MANUFACTURING

Popular Solution Applications

Global Impact and Efficiency: Auk's IIoT in Action Across Industries

- Auk's end-to-end system is deployed across 9 countries globally
- >3,500 machines connected and on track to hit >5,000 in year 2022
- Horizontal technology applicable across sectors
- System is used in >100 manufacturing sites
- 5-10x more cost effective and >5x shorter project cycle so clients can roll-out successful deployments bigger, better, faster

Case Study: Overall Equipment Effectiveness/Fit-bit for Machines

Industry:  Manufacturing

Challenges

Huge value remains uncaptured in Industrial operations. One of the most critical KPI of an industrial ops is Overall Equipment Effectiveness (OEE) which measures the actual output vs. theoretical capacity. As a benchmark, 40% is low but not uncommon, 60% is typical, while 85% is world-class.

To it put in perspective, OEE gain can have huge impact
OEE 60% > 85%: 10 factories can now produce
14 factories equivalent
OEE 40% > 85%: 10 factories can now produce
21 factories equivalent

Solutions

What is the solution you are providing? Auk Industries have created a powerful suite of 'Lego blocks' which can be assembled into basic solutions for small applications, or constructed into sophisticated systems which can autonomously model and analyze large scale operations.

Solution Benefits

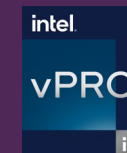
- Auk Industries solution eliminates the complexity and cost associated with I4.0/IIoT adoption by developing a scalable, 'plug-and-play' and agile system with deep ops analytics capabilities. The solution is 5-10x more cost effective and >5x shorter project cycle so clients can roll-out successful deployments bigger, better, faster.

One or two sentence summary of how the solution can tackle the problem.

Auk Industries's solution leverages Lenovo's ThinkEdge SE50 for edge acceleration and inferencing resulting in lesser lead times for deployment and facilitating economies of Scale



Lenovo ThinkEdge SE50



Powered by Intel® Core™ i7 processors on the Intel vPro® platform



Bigmate

About Bigmate

The smartest way
to monitor safety.

The solution will include the ability to utilize existing IP cameras, or work with new cameras focused on a particular point of interest. Cameras must have an available specification of 720p resolution, connected to the Lenovo appliance running WarnyZero. This appliance is then connected to a wide area network where it will report data to the Insights Platform over the internet.

Better and Smarter Together

Maximizing Safety with WarnyZero:
Proven Impact and Results

After deploying WarnyZero, companies typically see a 30% reduction in incidents in the first three months. After 12 months Bigmate has seen some companies bring their incident count to single digits as a result of a portfolio wide implementation of WarnyZero, brought on by greater awareness of safety in the workplace.

Popular Solution Applications

Innovative Object Classification for
Enhanced Workplace Safety

- Using object classification we are able to detect unsafe actions/behavior. Once detected, we can perform a multitude of responses: Alert via lights/siren, SMS and Emails including reporting to a dashboard for accountability and training.

Case Study: Smart Monitoring for Workplace Safety

Industry:  Manufacturing

Challenges

Every year, the 10 most common workplace injuries cost US companies over \$59.9 billion. Slips, falling objects, vehicle crashes, unsafe manual handling – these accidents are so innocuous you can't prevent them using traditional methods like danger signs and high visibility workwear. The reality is, most safety events go unnoticed as staff are lucky enough to avoid them.

Solutions

WarnyZero provides real-time computer vision analytics by continuously monitoring, identifying, and the movement of people in and out of user-defined zones. These zones are designed to align with existing health and safety policies, which means there is no additional training required to implement Warny, it simply monitors against your current safety rules. WarnyZero features; Safety Zones / Exclusion Zones, Custom parameters for each zone setup in moments, real-time site statistics and alerts using existing IP cameras. IP cameras will need to have a fixed lens, no PTZ or fish eye lens. The ThinkStation P3 Ultra will need to be connected to a network with access to the IP camera and AWS cloud.

Solution Benefits

Results – everyone gets to go home safe. Companies can now understand whether OH&S policies are being followed and help avoid potentially harmful situations causing injuries costing \$25b to employers in 2013 alone in the US. Sites become safer due to a significant reduction in safety incidents. WarnyZero also provides an audit trail of events that have occurred over time providing a clear snapshot of what has occurred to help identify trends. WarnyZero supports Zero Harm and allows customers to use existing infrastructure. Companies can now monitor safety 24x7 and get notifications when serious safety events have occurred. Companies can monitor an environment for unexpected or unwanted movements and ensure people are staying inside or outside of certain zones.

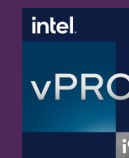
The smartest way to monitor safety. A real-time and historical log of breaches of your company's safety rules.

No one wants an injury in the workplace. Using WarnyZero, now available on Lenovo's ThinkEdge, your company can leverage existing CCTV infrastructure to make critical safety enhancements. Small changes, big impact.

AWS Marketplace: <https://aws.amazon.com/marketplace/pp/prodview-nple46a722ks2>



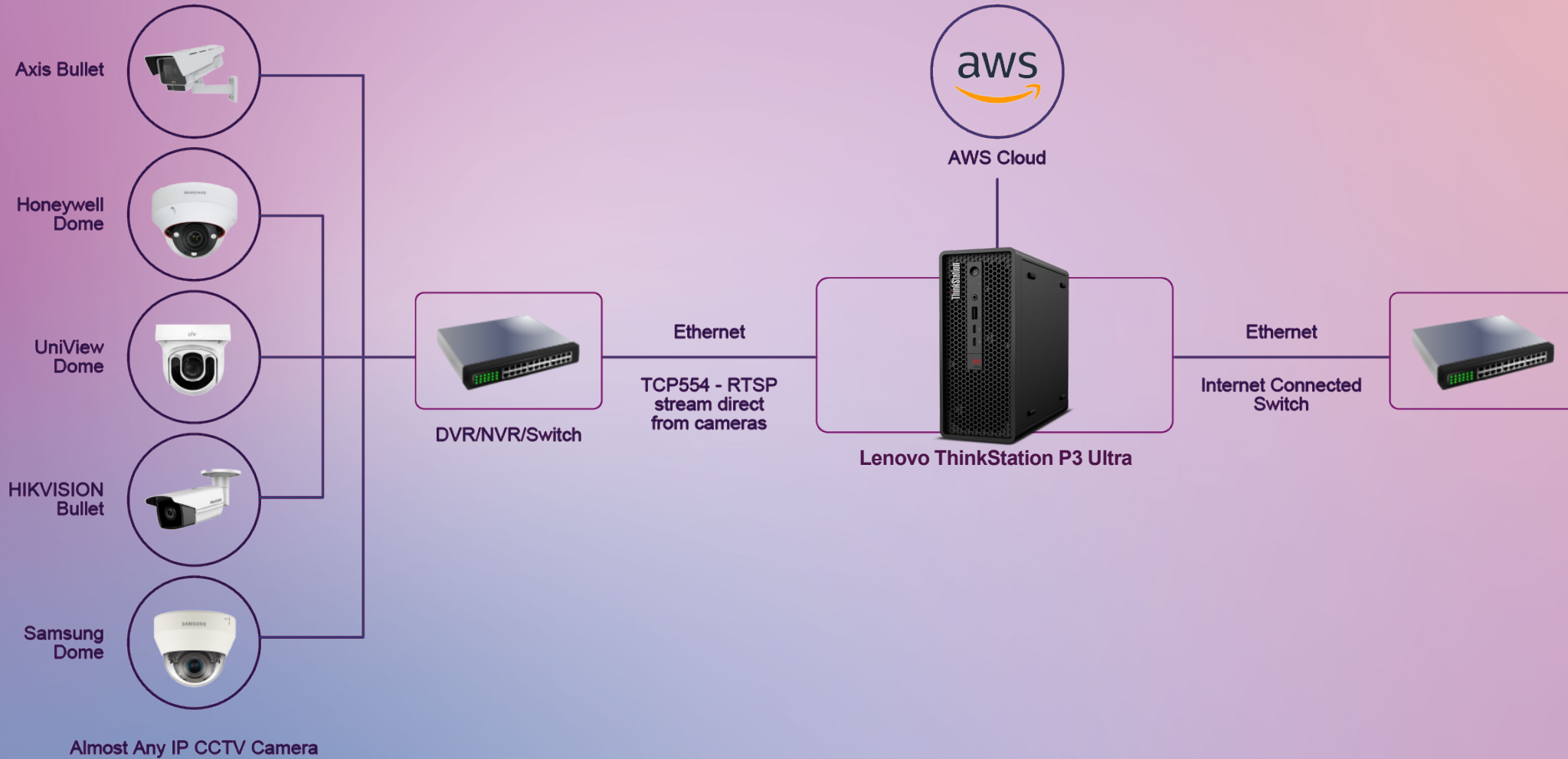
Lenovo ThinkStation P3 Ultra



Powered by up to Intel® Core™ i9 processors on the Intel vPro® platform

Case Study: Smart Monitoring for Workplace Safety

Industry:  Manufacturing



BlueSkies.AI

AI Vision as a Service

About BlueSkies.AI

Autonomous Machine
Vision as a Service

As demand for AI enabled quality assurance in manufacturing increases, businesses need partners that implement AI technology capable of driving immediate value. AInspect analyzes video at the edge to detect defects allowing manufacturers to automate the visual inspection process at much higher accuracies with an immediate ROI as the solution is sold as a service. This enables scarce workers to be re-assigned to value-added jobs.

Better and Smarter Together

Accelerating AI Machine Vision in
Manufacturing with BlueSkies.AI and Lenovo

BlueSkies.AI is partnering with Lenovo to deliver AI Machine Vision solutions at speed and scale. Together, they are analyzing real-time video data to perform product inspection, make workplaces safer, and automate compliance.

Popular Solution Applications

Diverse Industry Impact: From
Pharmaceuticals to Consumer Products

- Pharmaceutical
- Life sciences
- Electronics
- Food & Beverage
- Industrial
- Automotive
- Shipping & logistics
- Consumer products

Case Study: AI to replace manual inspection

Industry: Manufacturing Healthcare

Challenges

In the precision-driven world of manufacturing, especially within sectors that demand the utmost accuracy such as pharmaceuticals, traditional human-led inspection processes are often inadequate. Minor defects, as small as 0.1mm in blister packaging, can be nearly impossible to detect consistently by the human eye, leading to significant quality assurance challenges. The variance in human inspection can lead to a high degree of inconsistency, potentially impacting consumer safety and resulting in costly recalls for manufacturers.

Solutions

To address these inspection challenges, BlueSkies.AI presents AInspect – an innovative autonomous machine vision appliance. AInspect harnesses advanced AI algorithms to surpass the limitations of manual inspections, achieving greater than 99.9% accuracy in defect detection. By integrating with Lenovo's edge computing solutions, AInspect conducts real-time, high-precision video analysis to identify even the smallest imperfections. This not only streamlines the quality control process but does so at a fraction of the conventional costs associated with manual inspection methods. AInspect is designed to be intuitively user-friendly, eliminating the need for in-depth programming knowledge or data science expertise, thus simplifying implementation in manufacturing settings.

Solution Benefits

- AInspect is autonomous. Show it the gold standard used to train manual inspectors and the system teaches itself to recognize good products from bad products. With a major pharmaceutical client, we detect defects as small as 0.15mm with an accuracy > 99.9%. The solution is sold as a service, so the ROI is immediate. The best part is clients get to reassign trained industrial workers from manual inspection to a value-added jobs. There is no programming or data science required. AInspect can be installed and qualified with local plant resources.

AInspect is runs on the Lenovo's ThinkEdge SE30 with I/O box which is perfect for machine vision workloads, and the use of standard hardware results in lesser lead times and familiarity with our clients.



Lenovo ThinkEdge SE50



Powered by Intel® Core™ i5 processors on the Intel vPro® platform



A Xerox Company

About CareAR

The leader in Service Experience Management

CareAR delivers immersive augmented reality Service Experience Management platform applications that sustainably drive game-changing operational efficiencies, improved customer outcomes, and unmatched experiences for service teams and field workers. CareAR has been recognized as a leader and top innovator in enterprise augmented reality in 2022 by ABI Research.

Better and Smarter Together

Elevating Service Management with Advanced Augmented Reality Solutions

CareAR Service Experience Management platform and Lenovo's ThinkReality cross platform hardware (smart glasses, workstations, laptops, and mobile devices) deliver enterprise-class augmented reality solutions for businesses across mission-critical verticals, enabling them to reduce costs, improve CSAT and NPS metrics, enhance employee experience, improve first-time fix rate, reduce customer downtime, and increase workplace safety.

Popular Solution Applications

From Field Service Optimization to Enhanced Safety: The Power of AR

- Service desk – Customer Service
- Optimize field service and support
- AR-ready devices self-solve
- Training and upskill
- Deflect Costly Dispatches
- Reduce Time-Sensitive Resolutions
- Enhance Safety

Case Study: **Xerox**Industry:  **Manufacturing**  **Energy**  **Automotive**

Challenges

- Lack of "see-what-I-see" remote solve solution to rapidly and accurately diagnose issues, overcoming communication challenges with the customers
- Unnecessary site visits for issues that can be solved remotely
- Repeat site visits due to missing part or knowledge of part required

Solutions

- Utilize CareAR to reduce time to resolve and deflect truck rolls
- Reduce downtime of the client's equipment and enhances customer satisfaction
- Utilize CareAR to prepare onsite technician with correct parts and provide onsite escalated visual support to prevent repeat visits

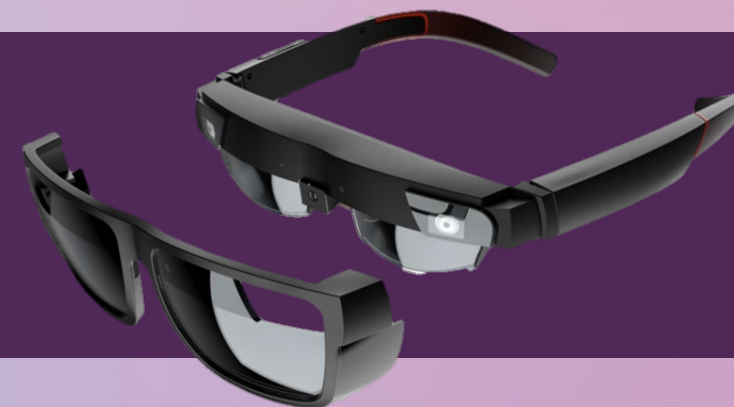
Solution Benefits

- 50% faster time to diagnosis with CareAR
- 68% improvement over calls without CareAR for production products
- 21,000 deflected dispatches since 2021
- 269,000 Kg GHG emissions avoided
- 1-day faster resolution time for on-site Technical Service Representatives
- 95% customers gave 4-5 star service experience rating

CareAR is optimized to run on the Lenovo ThinkReality A3 Augmented Reality glasses and operate seamlessly across other Lenovo devices



CareAR Service Experience Management Platform and Lenovo's ThinkReality Platform allow remote fulfillers to visually assist on-site employees to "see what they see" and virtually guide them via a digital suite of AR tools, as if they were physically there on-site. Using desktop, mobile, or smart glasses, both parties can annotate collaboratively over live HD video on 3D objects that pin in place and persist through-out the session.





About Clovity

AI Safety Solutions that Power
Organizational Sustainability

Clovity is an IoT platform and solution provider with robust experience enabling fully integrated connected device-to-cloud-to-enterprise integration solutions. Clovity's signature IoT platform, CSensorNet, makes it simpler for companies to build IoT, data, cloud, and digital platforms for their operations across a variety of industries.

Better and Smarter Together

Powering Industry Evolution
with IoT Bundles

Clovity and Lenovo have created a number of 'bundled solutions' focused on strategic use cases and industries powered by the IoT-as-a-Service business model, including solutions for asset tracking, industrial manufacturing, and smart cities.

Popular Solution Applications

Crafting the Future with
Smart Infrastructure

- Smart Cities
- Smart Buildings
- Smart Manufacturing

Case Study: Lightning™ Workplace Safety

Industry:  Manufacturing

Challenges

Industrial manufacturing still deals with the legacy of machines and machinery that are not connected and therefore, Operationally, can become a 'black box' of untapped data. Integration of these disparate machines can create problems with adaptability and protocols requiring custom development around existing system architecture or worse, require Operators to build a new system all together. To operate without such visibility puts any manufacturer at a disadvantage to the competition and puts more faith into day-to-day human intervention which is prone to mistakes.

Solutions

A robust manufacturing solution utilizing the power of IoT to integrate and collect data from legacy machines and turn it into real-time monitoring, CSensorNet transforms legacy machines into smart manufacturing assets. The solution empowers legacy machinery with various modern protocols including Wi-Fi, BLE, and cellular/LTE, opening the power of edge data collection, Cloud for analysis, visualization, and Machine Learning. The solution 'future-proofs' machines and streamlines maintenance on legacy machines.

With Clovity, create IoT solutions out of legacy non-connected machines exposing new data.

Solution Benefits

- Automated data collection and advanced production analytics allow for more informed decision making
- Launch and complete projects with fewer workers and frees workers to focus on core responsibilities
- Predict and resolve maintenance issues before they lead to downtime or product-quality issues
- Improve throughput with seamless visibility into bottlenecks, machine performance, and other operational inefficiencies
- Significant cost reductions by identifying waste and increasing forecast accuracy
- Can easily be white labeled

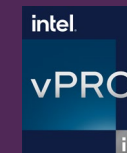
CSensorNet is a hardware, software, and cloud bundle that easily attaches to legacy machinery and provides security, integration, and seamless data transfer to the cloud on day one.

Clovity's CSensorNet leverages Lenovo's gateway ThinkEdge devices to manage all IoT data exchanges.

Lenovo ThinkEdge SE50



Lenovo ThinkEdge SE30



Powered by Intel® Core™ i5 processors on the Intel vPro® platform

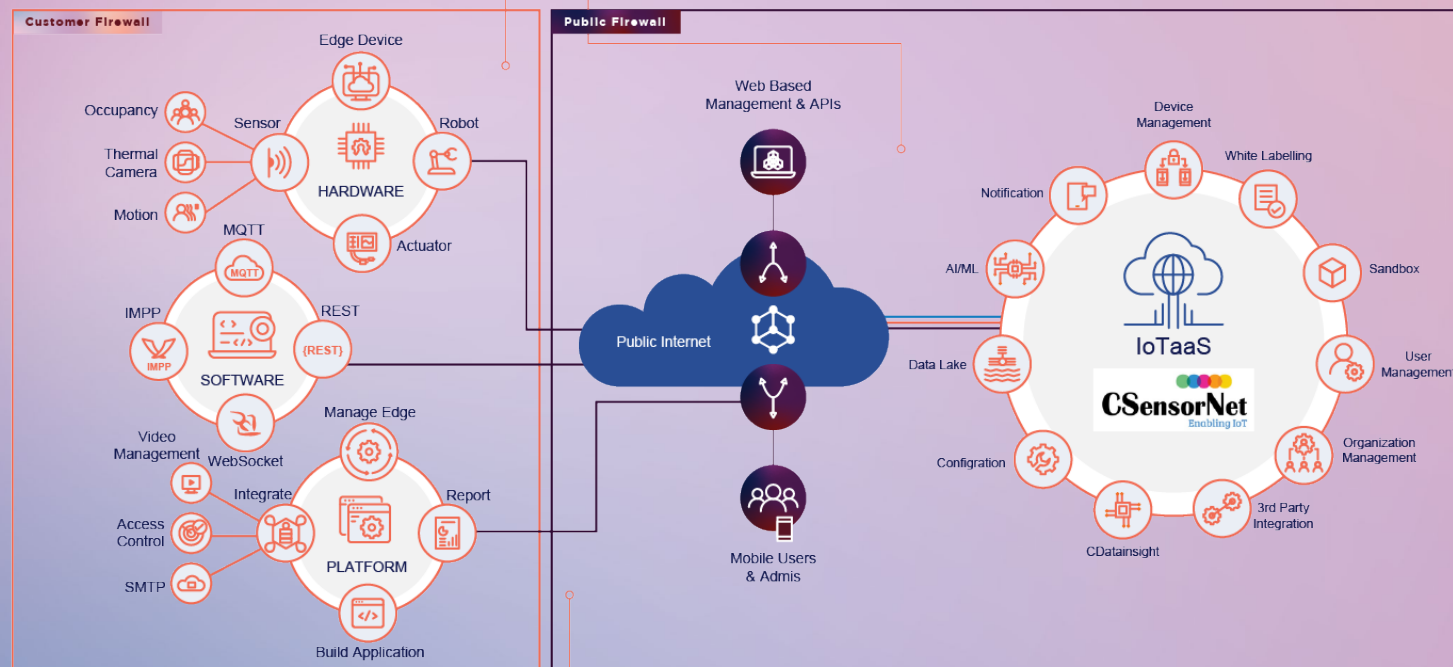
Case Study: **Lightning™ Workplace Safety**

Industry:  **Manufacturing**

Integrated IoT Ecosystem: From Sensor to Insight

Behind the firewall sit sensors, actuators, edge devices, and robots that communicate through single and bi-directional protocols to each other and to the cloud (mentioned as MQTT).

Users are able to create Data Lakes, Sandboxes, create notifications or triggers, configure every aspect of the system, integrate to 3rd parties, manage users and the organizations/sub-organizations, manage devices, and set up deep analysis on collected parameters.



The platform is able to do analysis in real-time through AI/ML or create automations, manage the edge actions, create instant reports, and integrate with downstream systems (mentioned as the 'PLATFORM').

Once the data leaves the customer firewall, it is then transferred to the public cloud where the CSensorNet application resides. Here, deeper and more long term/historical analysis can be performed with AI/ML and Business Intelligence tools within our CDataInsights module.

Case Study: Smart Air Monitoring Solution

Industry:  Smart Cities

Challenges

Cities must find new ways to incorporate technology into budgets that are stretched across several initiatives. Many solutions in the market have high up-front cap ex dollars associated with getting started, securing contracts, lengthy RFP processes, evaluation of at least several vendors and requires new staff to manage the operations. And, not all cities have the same challenges and thus the scope of smart city initiatives can range from waste management to traffic signal timing, snow blow monitoring to clean air availability. The key challenge is understanding which critical use cases provide the best return in investment for the city, the citizens, and the daily commuters of the city.

Solutions

The Clovity and Lenovo platform enables numerous and stackable solutions working on the same platform with very little set up time. This means cities can start on one use case or two and easily begin to add different elements that matter most to them. Traffic, weather, pollution, or many others can now be watched from a micro level and decisions be made from this aggregated data on a macro level. The solution will take any sensor data and apply AI/ML techniques to give insights that have never been able to be provided in the past.

Citizens will discover that understanding air quality is as easy as looking at your smart watch or smart phone.

Solution Benefits

- Ability for at-risk adults and children to be suggested to change outdoor behaviors based on daily/hourly AQ readings
- Increased health and reduction in respiratory problems
- Better understanding of primary pollutants, giving the city the ability to suggest or demand mitigation techniques
- Greater understanding of pollutant travel patterns and effects of weather on dispersion of pollution
- Understanding of how AQ affects low-income vs. high-income areas within a city

Clovity and Lenovo bundled solutions help Smart Cities connect the environment and spaces around a city to its citizens and daily commuters.

Clovity AI tools are combined with Lenovo's ThinkEdgeSE30 to provide a robust solution for real-time air quality oversight and management.



Lenovo ThinkEdge SE30



Powered by Intel® Core™ i5 processors on the Intel vPro® platform

Case Study: Asset Tracking Solution

Industry:  Smart Cities

Challenges

- Lack of end-to-end visibility on inventory
- Mismatch between inventory data in ERP versus actual inventory / assets in the warehouse
- Daily asset tracking is virtually impossible
- Wasted warehouse space due to lack of oversight into space allocation
- Inefficient allocation of resources and equipment due to non-standardized processes

Solutions

Given the high price of enterprise and industrial assets, especially fleet equipment, the need for monitoring and tracking these assets is paramount. Furthermore, in a bid to determine the total cost of ownership, managers across industries are finding the need for a centralized system that provides critical information, such as location, maintenance history, and contract (if any) for all assets in real-time. Clovity and Lenovo collaboratively worked to deliver a leading, edge Asset Tracking bundled solution for the warehouse and industrial verticals.

It's a single provider that can give operators the buying power they need to afford a holistic solution.

Solution Benefits

- Higher productivity
- Preventing theft and reclamation
- Real-time Tracking
- Real-time data on product locations, asset conditions, the integrity of assets, and so on.
- Predictive maintenance system detects the early signs of equipment malfunctions, allowing warehouse managers to prepare back-ups, replication and avoid unplanned downtime.

Clovity and Lenovo bring high accuracy asset tracking for numerous verticals covering vehicles, trailers, containers, micro-transit, or any other movable asset.

Clovity's bundled solution takes advantage of Lenovo's ThinkEdge SE30 to deliver high-accuracy asset tracking for warehouses and industrial purposes.



Lenovo ThinkEdge SE30



Powered by Intel® Core™ i5 processors on the Intel vPro® platform



DeepSight AI Labs

About DeepSight AI Labs

Low Code AI-based Computer Vision Platform

DeepSight AI Labs has developed a Low Code AI Computer vision platform that is scalable & affordable to all segments of the business across Edge, Server, Cloud and 5G. DeepSight has been recognized and awarded across the globe from Alibaba China in 2018, World LPG Forum Netherlands in 2019, and Intel Winner Circle Gold Partner in 2020 and 2021. Performed complex projects in Hong Kong, India, Spain, South Africa and the UK.

Better and Smarter Together

Revolutionizing Industries with Lenovo and DeepSight's AI Vision Solutions

Together with Lenovo, we are building an AI solution that can be deployed across various regions that can be used for Customer experience, Security & Safety, Energy & Utilities, Industrial Manufacturing, Smart Cities, EV Charging Stations, Banking & Public Sectors to provide advanced Computer vision-based business solutions to automate the process in assisting humans to perform with higher productivity.

Popular Solution Applications

DeepSight's Versatile AI Use Cases: From QA Inspection to Crowd Analysis

DeepSight has always developed critical and scalable features and solutions where the platform host 40+ Ready deploy AI Use cases, a few of them listed below.

- Face Recognition
- QA Inspection
- Person Tracking
- Behavior Analytics
- Fire Safety
- Aisle Analytics
- EV Charging Stations Security
- Crowd Analysis

Case Study: Customer Experience & Crowd Analysis

Industry:  Financial Services (Retail Banking, Gold Bank)

Challenges

The customer innovation team wanted to analyze the offline customer experience inside the branch performance to increase the productivity of the employee and the branches.

- Performance of the branches
- Analyses footfall
- Customer waiting time
- Total Customer Acquisition time

Solutions

Deepsight deployed a No-Code AI platform to analyze the faces of the customer through existing CCTV cameras, also same cameras were used to detect the entry and exit times. Provided an interface for Bank officials to upload the images of the account holders. At the end of the day, all data of customers' faces were analyzed, and it provided insights on branch performance and footfall conversion.

DeepSight Low code AI platform was very easy to use and without any technical expertise and provided live insights

Solution Benefits

- Detailed analytics on the customer movement and waiting time inside the branch
- Bank was able to analyze the reason for waiting time while opening new bank accounts
- Developed performance-based bench marketing for the faster customer response in the branch for Gold loan accounting opening
- Marketing teams were able to analyze the footfall and plan their marketing plan around the branches

With the DeepSight AI, Vision platform customers can now plan their marketing and performance benchmarking branches with more accuracy

The solution leverages Lenovo's ThinkEdge SE30 for edge acceleration, resulting in lesser lead times for deployment



Lenovo ThinkEdge SE30



Powered by Intel® Core™ i5 processors on the Intel vPro® platform



About Esper

Powerful cloud tools for Android device deployment and application management

Esper is the industry's first Android DevOps Platform, bringing an agile approach to the entire product life cycle. Esper's deep expertise in Android spans from chip to cloud, ensuring success whether starting from solution design or transforming an existing fleet.

Better and Smarter Together

Effortless Deployment with Zero-Touch Enrollment and Lenovo Integration

Esper provides Google's Zero-Touch Enrollment (ZTE) program via Lenovo tablets which allows you the ability to ship devices right to the customer's distribution centers with zero configuration needed onsite.

Popular Solution Applications

Versatile Android Solutions Across Diverse Industries

- Esper Solutions for:
- Hospitality
- Healthcare
- Restaurant
- Retail
- Industry Agnostic

Case Study: Lenovo and Esper win with reliable, long-term

Industry: Hospitality

Challenges

With over 50,000 custom devices in the field running on Android 7, The hospitality company needed more durable, reliable tablets to negate connectivity and end-of-life issues and better support future expansion. The homegrown MDM lacked DevOps features like being able to access functionality via API or remotely launch applications. The company engaged Lenovo, but needed more details about how to successfully upgrade their fleet of tablets and future-proof their software.

Solutions

As the Android experts, Esper confirmed BLE and Wi-Fi connectivity issues were caused by an unstable OS image from the ODM, positioning Lenovo as a reliable long-term device partner. To support this transition, Esper delivered the following:

- Ability to support a mixed fleet — The company can roll out Lenovo tablets over time.
- POC that Esper can provide the hospitality company with touchless provisioning, eliminating the need to provide field IT support or ship old devices.
- DevOps functionality.

Solution Benefits

- Repurpose modern Lenovo tablets to address hospitality use cases. Support a mixed fleet of custom AOSP devices and Lenovo tablets — making it easier for businesses with existing fleets to transition to Lenovo devices. Integrate Lenovo-specific features into the Esper Cloud and Console (e.g. turning off system updates on demand). Provide custom firmware modifications and applications of the CSDK (LED indicator behavior, quick action buttons, removing Alexa) in order for Lenovo tablets to address unique customer asks. Integrate Esper into device images for a seamless experience from the factory. With Esper and Lenovo, A hospitality company was able to deliver consistency — delighting guests and expanding as the hotel industry regains traction.



Android in-room tablets are elevating the customer hotel experience, and Lenovo and Esper's joint product is the ideal solution for ushering hotels into the digital arena — providing guests with unprecedented safety and control.

Together, we can support any business that is deploying a fleet of single-use Android devices — including upgrading an existing fleet — looking for a management solution

Powered by up to Intel® Core™ i5 processors on the Intel vPro® platform



EAGLE EYE NETWORKS



About Eagle Eye Networks

AI for Surveillance and Smart Cities

Eagle Eye Networks mission is to bring in technological solutions to cities to make sure its residents are safe and secure. To do so, Eagle Eye Networks has developed a highly optimized AI-based Vehicle Detection, Tracking, Counting and Classification platform that is designed to run on embedded system on the Edge and provide real-time analytics.

Better and Smarter Together

Innovation for Smarter, Safer Cities

Together with Lenovo edge devices, Eagle Eye Networks and Lenovo are creating solutions to build smart cities that have improved safety, less accidents, and better data driven decision making by cities, police, and other agencies.

Popular Solution Applications

AI-Powered Systems for Smart Cities

- Parking Automation
- Gate Security
- Toll Management Systems
- Intelligent Traffic Monitoring and Management Systems

Case Study: AI Traffic Monitoring

Industry: Smart Cities

Challenges

Traffic projects across the US have been affected by the COVID-19 pandemic. Many cities must re-calibrate their traffic data and are specifically addressing a few key challenges during this time, including:

- Ease of deployment
- High network costs
- Poor accuracy of counting and classification

Solutions

By leveraging existing surveillance camera installations, Eagle Eye Networks can provide real-time traffic analytics for cities throughout the year. The video management system, along with a real-time dashboard, provides traffic analytics data that can be used by multiple agencies such as police, Traffic Monitoring Centers, and city planning.

With Eagle Eye Networks, get AI monitoring on the edge that provides real-time 24/7 traffic monitoring.

Solution Benefits

The solution is able to provide data on traffic volume, vehicle classification, average speed and distribution, pedestrian and cyclist detection, red light violations, and average speed violations. The results:

- Improved surveillance
- Enables data driven decision making for improved infrastructure planning
- Reduced accidents
- Guaranteed vehicle count and classification accuracy
- Optimized signal times reduce traffic congestion and improves overall road safety

At the cost of a “Spot Survey” that runs for 2 weeks, the solution provides real-time data for Signal Optimization, insights into improving safety and city planning for a year.

The solution leverages Lenovo’s ThinkEdge SE30 for edge acceleration, resulting in lesser lead times for deployment.



Lenovo ThinkVision P32pz-30



Lenovo ThinkEdge SE30



Powered by Intel® Core™ i5 processors on the Intel vPro® platform

ELECTRONO®

About Electrono

Industry 4.0 solutions for Discrete Manufacturing

Electrono is one of the largest implementers of Industry 4.0 for discrete manufacturing in India and is now ranked among CIO Review magazine's "10 Most Promising Manufacturing Technology Solutions" for 2022. Our flexible and lean working approach has aided some of the largest Discrete Manufacturing firms in maximizing earnings and enhancing productivity.

Better and Smarter Together

Empowering Real-Time Decision Making in Manufacturing

Manufacturers can now make decisions in real time thanks to a comprehensive Industry 4.0 solution developed in partnership by Electrono and Lenovo.

Popular Solution Applications

Advancing Industry 4.0: From IIoT to Energy Management Solutions

- IIoT
- Big Data Analytics
- Digital Twin
- Cloud Computing
- Energy Management Solutions

Case Study: Revolutionizing Manufacturing: Electrono's Journey to Industry 4.0 Excellence

Industry: **Manufacturing**

Challenges

- Failure in recognizing root causes for constant breakdowns and errors led to increased downtime.
- Failure to accurately predict the tool life of machines resulted in significant losses.
- Inaccurate safety audits as a result of workers failing to check machinery at the appointed time.

Solutions

Electrono connected over 200 machines with ThinkEdge SE30 & ThinkEdge SE350 with near zero downtime. Data was collected at a rate of approximately 2 samples per second, allowing for real-time detection of even the smallest variations, and the recorded history of any unplanned outages enabled more accurate failure root cause analysis.

Solution Benefits

- \$1 Million in saving from downtime reduction
- Quality improvement with better tool life monitoring
- Reduction of average tool change time
- Elimination of human error in machine safety audits and ease of storage and retrieval of historical records.

Electrono's EFORCAST software along with rugged and reliable Lenovo ThinkEdge devices are making the Digital Twin a reality in Discrete Manufacturing

By combining at-scale cloud storage and compute with strong local processing Electrono is able to build sophisticated Industry 4.0 applications using Lenovo edge computing devices like the ThinkEdge SE30 or SE50 with EFORCAST.



Lenovo ThinkEdge SE50

Lenovo ThinkEdge SE30



Powered by Intel® Core™ i5 processors on the Intel vPro® platform

ethica

Strong. Partnerships.

About Ethica

Make Your Network
Your Advantage

Ethica is at the forefront of delivering a pioneering networking software solution that propels modern workflows into the future. With cost-effective enterprise next generation networking software solution enabling modern workflows through cost effective enterprise internet access, Ethica is crafting a new paradigm for networked efficiency. The platform stands as a beacon of advancement, facilitating seamless, robust internet connectivity across the commercial spectrum.

Better and Smarter Together

Connectivity for
Modern Commerce

In the realm of commerce, the constancy and intelligence of internet access are non-negotiable. Ethica rises to the occasion, offering an unwavering connection that powers businesses and their operations. This commitment to providing smart, resilient internet access is not just about staying connected; it's about ensuring Lenovo customers have the means to thrive in a dynamic commercial landscape, regardless of location or demand. The joint solution delivers resilient, intelligent internet access wherever Lenovo customers do commerce.

Popular Solution Applications

Enhanced Network Management
and Reliability with Ethica

- Resilient internet enablement on the SE10/SE30 Edge devices through wireline/Cell WAN connections
- Intelligent Cloud Application prioritization – optimizing custom business service experiences
- Performance Management – Realtime Site Dashboard and SpeedTest utility
- Proactive health alerts – no outage or service disruption goes unnoticed
- Automatic Failover to Cellular – ensuring locations stay online

Case Study: **Managed Last Mile Internet Access**

Industry:  **Retail**

Challenges

An ISP and their customer had a problem. They were using a Satellite Internet service to connect their remote branches. They had no visibility or management capability to optimize the internet experience, get updated on service interruptions, or provide critical resilience to ensure maximum internet uptime.

Solutions

Ethica's CloudAccess software CA Intelligent Last Mile (ILM) was deployed to provide both the ISP and retail customer visibility and control over the satellite internet circuit through a custom dashboard. They also have automatic failover services to ensure uptime even when the main internet link degrades or fails.

Solution Benefits

With the internet becoming the most critical business tool for most businesses, this retail chain can confidently operate without a single point of failover with their network. Accessibly priced, large retail or public sector services can seamlessly adopt ILM to keep all offices and branches online with the added benefit of remote control over 3rd party internet connections.

The solution leverages Lenovo's ThinkEdge SE30 or SE10 for network resiliency and critical management, resulting an always-on and intelligent internet experience.



Powered by up to Intel® Core™ i5 processors on the Intel vPro® platform

**FACETAGR**

About FaceTgr

Trusted Face Recognition

FaceTgr's proprietary Facial Recognition Algorithm sets the standard in accuracy and reliability, as proven by its outstanding performance in tests conducted by the US Govt. National Institute of Standards and Technologies (NIST) with remarkable scores: Paperless Travel: 99.91%, 1N Check: 99.68%, and Mugshot >12 years: 99.39%. Acknowledged by the Tamil Nadu Government for Best Practices in Policing 2019 and featured in Channel News Asia's AI Social Impact documentary, FaceTgr continues to receive widespread media recognition. With an unwavering commitment to excellence, we aspire to be the industry's most trusted Facial Recognition Solution, offering unmatched precision, security, and compliance across various sectors.

Better and Smarter Together

Enhancing Security and Efficiency with Integrated Facial Recognition Solutions

Our recommended solution includes Lenovo hardware (Tablets/phones/GPUs). Our aim is to have FaceTgr's Facial Recognition software preinstalled in Lenovo devices offering seamless deployment for Attendance and other device-based applications, this integrated solution ensures top-notch performance across all verticals.

Popular Solution Applications

Versatile Applications: From Access Control to Criminal Identification

- Attendance
- Access Control
- Exam candidate verification
- Electorate verification
- Criminal Identification

Case Study: Precision in Practice: The FaceTagr Success Story in Facial Recognition and Integrated Security Solutions

Industry:  **Airports (Ground Force)**

Challenges

- Providing real-time reporting and Ensuring accuracy for diverse shifts
- Integrating with shift schedules effectively
- Complying with data security and privacy regulations
- Proxy/buddy punching by the employees
- Scaling the system for a large number of staff
- Balancing costs and benefits of advanced solutions like biometrics and mobile apps.

Solutions

FaceTyck proposed Tablet based attendance system with Facial Recognition for AISATS across their multiple locations.

FaceTyck will provide:

- Android Mobile application for employee identification
- Web based application for centralized registration
- Web API for data integration with AISATS

Solution Benefits

- Rapid implementation for accurate attendance tracking.
- Efficient check-in, real-time monitoring, and remote access.
- Enhanced security and fraud reduction through biometric authentication and mail alerts to management.
- Seamless integration with shift scheduling.
- User-friendly for staff, scalable for Air India's workforce.
- Addressing privacy and security concerns is crucial.

The solution leverages Lenovo's k10 & M10 tablets which have a good camera and processing hardware are quite easily available in the market and serviceable in the market due to Lenovo's extensive dealer network



Lenovo Tab K10



About FogSphere

HSE revolution
with AIoT

FogSphere provides an AIoT platform able to translate visual analytics into reactive safety, 100% at the edge. It's actively monitoring Health and Safety compliance. The research team has won several awards in international competitions. The product has a proven traction on the market by winning multi-million multi-years deals with large organization worldwide. FogSphere is gaining presence in EMEA and APAC by the day through an indirect sales model with a growing partners base globally.

Better and Smarter Together

Empowering Critical Industries with Edge AI through Lenovo and FogSphere

Edge AI is a make-or-break factor for industrial application in critical industries. With Lenovo's Computing offering (including the ThinkEdge series), clients are covered both from the hardware and software side, counting on best in the market integrated AI solution at the edge.

Popular Solution Applications

Enhancing Industrial Safety: From PPE Compliance to Behavioral Monitoring

- Area Controls
- Personal Protective Equipment
- Vehicle Monitoring
- Behavioral Safety
- Industrial Housekeeping

Case Study: Health and Safety Risks Monitoring Reduction

Industry: Architecture, Engineering & Construction Energy

Challenges

Monitoring HSE best practices: such as the correct use of Personal Protective Equipment (PPEs) or monitoring risky behaviors of workers, both real time and ex post, is a challenge for Health and Safety managers. Customers today have a human-based, non accurate collection of HSE data on their sites, implying a high risk since manual collection is a flawed process and no immediate report and reaction is possible.

Solutions

Fogsphere provides a 24/7 automated system through its AIoT platform capable of running 100% at the edge. Capturing the video stream from any CCTV camera, S-O-T-A computer vision algorithms are run at the edge into the Lenovo ThinkEdge SE30/50. These events, resulting from the inference, are sent to a central “management platform” (the Fogsphere Manager®), this being deployed either in the cloud or on-premises.

Solution Benefits

Fogsphere is able to deliver data and analytics on the workplace: both real time and ex post, allowing HSE Manager to gain a new range of insight into daily operations and risk monitoring.

Automated Health and Safety Monitoring enabled by Edge Computing

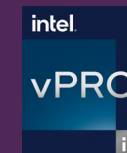
The solution leverages Lenovo’s ThinkEdge with Nvidia GPU for edge computing, resulting in inference and data transmission cost reduction, enabling off the grid application and secure closed end application.



Lenovo ThinkEdge SE30



Lenovo ThinkEdge SE50



Powered by Intel® Core™ i5 processors on the Intel vPro® platform



About Gravio

Connecting Data and Applications
Seamlessly in a No-Code World

Gravio is a Node Computing Platform that enables businesses and solutions to be more interconnected by aggregating data from various sources and connecting them to various applications in a no code environment that can be deployed at the Edge or in the Cloud.

Better and Smarter Together

Integrating Cutting-Edge Solutions: A Synergy of Gravio Software and Lenovo Hardware

Gravio software with Lenovo's Edge Hardware will provide a comprehensive package of industrial solutions that create a seamless out of the box experience for solution providers.

Popular Solution Applications

Diverse Applications: From Smart Office Monitoring to Hospitality Transformation

- Business Process Logging for Analysis
- Data aggregation with business process management
- Edge Computer Vision solutions with TensorFlow
- Smart Office Occupancy Monitoring
- Digital Transformation in Hospitality for Customer Experience

Case Study: Taiyo Foods Corporation: Using Gravio and Lenovo ThinkCentre Nano to Improve Efficiency

Industry:  **Manufacturing**

Challenges

Taiyo Foods Nori Division’s plant needs to provide higher quality products, which are usually determined by the levels of humidity in the air and environment. Hence, it is necessary to look at humidity levels in real-time within the area in order to review the entire operation, starting with air conditioning.

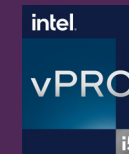
Solutions

An IoT solution using Lenovo’s IoT gateway “ThinkCentre M90n-1 Nano IoT” and middleware “Gravio” was being used and implemented, enabling the real-time collection of temperature and humidity changes at various factory locations to ensure proper operations.

Solution Benefits

The new system not only automates temperature and humidity inspections that were previously performed manually but also allows for real-time detection of irregularities and other problems. It has become easier to respond to humidity on data-driven basis and new correlations can be created from the analysis made between humidity and quality of nori products.

The solution leverages on Lenovo ThinkCentre Nano IoT with Gravio platform connected to sensors and various software to log data and improve business processes.



Powered by up to Intel® Core™ i5 processors on the Intel vPro® platform

Case Study: Lenovo Conference Room Management System

Industry:  Smart Cities (Building / Office)

Challenges

- Managing 11 conference rooms was becoming too much work for one person to handle.
- Staff were also unable to accurately check the occupancy status of each room and work pods.
- There was no statistics on usage and utilization

Solutions

- Install Gravio motion sensors, temperature / humidity sensors, reception call buttons in all conference rooms and pods
- All sensor data is collected and processed with one on-site Lenovo Edge PC running Gravio software and then displayed on a dashboard for the reception team to monitor.

Solution Benefits

- Occupancy status can be viewed in a glance through the dashboard
- Reception team no longer need to conduct manual checks for occupancy status
- Gathering metrics and analytics about the usage of their space

The solution leverages Lenovo ThinkCentre Nano IoT with Gravio platform to determine occupancy status of meeting rooms by connecting to sensors and lights.



Lenovo Edge SE30

Lenovo Edge SE10



Powered by up to Intel® Core™ i5 processors on the Intel vPro® platform



About holo|one

The Enterprise of Mixed Reality

holo|one's mixed reality platform Sphere allows businesses to unlock meaningful collaboration across borders and boost productivity all along the supply chain. After several years of deploying Sphere in productive environments, holo|one is ready to spearhead the push into the enterprise metaverse.

Better and Smarter Together

Integrating Advanced Technologies for Unparalleled Mixed Reality Experiences

By combining holo|one's flexible and disruptive product Sphere with Lenovo's underlying ThinkReality platform and professional services, they are able to provide the most advanced and comprehensive enterprise mixed reality solutions on the market.

Popular Solution Applications

Revolutionizing Operations with Innovative Mixed Reality Tools

- Workflow Guidance: Streamline maintenance and ensure accuracy
- Remote Assistance: Quickly resolve the most complex manufacturing challenges
- Metaverse Collaboration: Seamlessly connect with mixed reality meetings
- Life-Size Overlay: Visualize construction projects

Case Study: Leveraging AR to Improve Collaboration Across Industries

Industry:  AEC  Automotive  Manufacturing

Challenges

International organizations depend on real-time collaboration across teams, locations and geographies. Current tools are inadequate to facilitate remote collaboration especially for the complex, specialized tasks that are found in industries such as semiconductors, automotive or manufacturing. Mixed reality technology can help solve this challenge, but many existing tools cannot cover a wide range of use cases and have high costs, long lead times and integration difficulties.

Solutions

With Sphere, mixed reality can be integrated into existing business process in a simple and scalable way. A range of standardized, out-of-the-box solutions improve any meeting, manufacturing process or construction project by blending digital holograms with the user's real-life surroundings. Colleagues can seamlessly collaborate on holographic documents, 3D models, standard operating procedures and other digital content; in industrial settings, extensive remote assistance functionalities enable experts to help resolve on-site issues competently; and workflow guidance capabilities assist workers in completing processes quickly and accurately. Enable a range of collaboration solutions on a single mixed reality platform.

Solution Benefits

- Existing CAD models can be made mixed reality-compatible within minutes
- with holojone's automated Asset Pipeline
- Sphere runs on nearly all mobile devices, computers and mixed reality headsets, including cross-compatibility
- Popular ERP and CRM software integrate with sphere out of the box – existing content can be used immediately and seamlessly

holojone's Sphere platform allows businesses across industries to quickly and comprehensively integrate mixed reality into their existing processes to cover a wide range of use cases: Remote Assistance, Digital Collaboration, Workflow Guidance, and Life-Size Overlays.

Sphere is optimized to run on the Lenovo ThinkReality A3 for a streamlined and effortless mixed reality experience.





Headwaters



About Headwaters

Leading the Way in Cloud
and Edge AI Innovations

- Cloud Native & Edge AI Development /Consulting Company
- Microsoft Cloud Solution Partner (Data & AI / App Innovation)
- NVIDIA Metropolis Partner / Omniverse Partner
- NICE Alliance Partner
- SONY AITRIOS Partner

Better and Smarter Together

Advancing EdgeAI: Creating
Tomorrow's Solutions Today

EdgeAI Application Development in Lenovo Edge Device.
Lenovo Product(Edge/Tablet/PC) Reseller.
Microsoft Azure PaaS System Development from Lenovo Azure
CSP.

Popular Solution Applications

Redefining Smart Environments:
From Cities to Warehouses

- Smart City Solution (City OS, IoT Platform, Citizen ID Platform, Citizen Portal Applications)
- Smart Store Solution (Edge AI Video Analysis, Internet of behavior, Voice Analysis, Facial Payment,)
- Smart Building (Building OS, Video Analysis, Internet of behavior, Sensing Digital Twin)
- Smart Factory (Smart Supply Chain, Digital Twin, Demand Forecast, Mathematical Optimization)
- Smart Warehouse (Video Analysis on Mobility, Drone, Smart Glass, Voice Picking)

Case Study: Industrial Digital Data & AI Leading Transformation

Industry: Manufacturing Retail Smart Cities

Challenges

In the rapidly evolving landscape of industrial data and artificial intelligence, Headwaters is at the forefront of tackling the complexity that arises from digitizing physical space information. The key challenges lie in efficiently integrating a multi-AI platform service across diverse ecosystems and deriving actionable insights from vast data sets. Additionally, there is the ongoing task of ensuring the optimization of these digital spaces to enhance user experiences and operational efficiency, while also striving to minimize costs and project timelines.

Solutions

Headwaters addresses these challenges with a robust digitization strategy that captures physical space information and harmonizes it with advanced analytics. By leveraging a multi-AI platform service, the company analyzes critical data points to facilitate smarter decision-making processes. This integration of digital and physical realms is further enhanced by optimizing the data through Headwaters' sophisticated analysis techniques. The solutions offered by Headwaters not only streamline system development but also contribute significantly to cost reduction and acceleration of construction periods, enabling a swift and economical path to digital transformation.

Solution Benefits

- Improved system development efficiency. Cost reduction and construction period shortening
- Cost benefits of applying multi-platform deployment
- Increase sales or increase profits through data & AI analysis
- Improving labor productivity through the shift from workers to digital

Industrial IoT/Edge & Intelligent Cloud

Multi AI Platform SyncLect is effective for large-scale IoT, edge, digital twin and data utilization and AI in Hybrid Cloud. The solution leverages Lenovo's ThinkEdge SE30 for edge acceleration, resulting in lesser lead times for deployment.



Lenovo ThinkEdge SE30



Powered by Intel® Core™ i5 processors on the Intel vPro® platform

HU EX

About HUEX

Unlocking the Power of Voice AI

HUEX Labs is a top 100 startup in Canada as recognized by FoundersBeta, focused on unlocking the power of Voice AI for Fast-Food restaurants through our patent-pending analytics and conversational AI platform for drive-thrus. The solution has been built by restaurant operators, Fortune 500 tech leaders and research scientists from the inside-out with operators in mind.

Better and Smarter Together

Enhancing Fast-Food Efficiency: HUEX's Edge AI Analytics in Action



Provide real-time operations analytics to measure restaurant performance, manage inventory better and evaluate training opportunity to better engagement with customers. The ThinkEdge SE30 at the Restaurant locations runs ASR, NLP, NLU, NLG, Dialog management all at the edge to capture all the metrics needed to derive insights, and enable end 2 end conversational AI

Popular Solution Applications

Revolutionizing Drive-Thrus: From Conversational AI to Operational Insights

- Capture metrics to improve operations – cross sell, customer engagement
- End-2-end conversational AI for automating the food order taking function
- Design training opportunities
- Improve accuracy

Case Study: Real time customer analytics and end-2-end conversational AI solution

Industry:  Retail  Hospitality But has broader applicability across small and medium businesses

Challenges

Labor shortage limits growth for the hospitality industry. There is no real-time metrics of opportunity to improve inventory or training opportunity or customer engagement for QSR drive-through channel.

Solutions

Edge based Voice Conversational AI solution that can automate the order taking function, engage with the customer with cross-sell opportunities and continuously provide passive analytics to help the franchisee manage their inventory better.

Solution Benefits

- Improve Employee satisfaction score as they are focusing on high touch work and not boring repetitive tasks
- Achieve higher 1st time order accuracy
- Consistently achieve better customer satisfaction
- Increase ticket size with cross sell

Edge solution addresses the speed of service aspect of restaurant operations.

The solution leverages Lenovo's ThinkEdge SE30 for edge which co-exists with the existing microphonics systems at the restaurant locations. The rugged design and the robust hardware are well suited for the challenging work environment for deployment



Lenovo ThinkEdge SE30



Powered by Intel® Core™ i5 processors on the Intel vPro® platform



About Iceotope

Chassis-level Precision Immersion Cooling

Iceotope's chassis-level precision immersion technology offers a simple, unified platform that cools protects and monitors the whole IT stack in any location from the extreme edge to the hyperscale cloud. Offering up to 40% power reduction and up to 96% water reduction per kW of ITE, Iceotope's precision immersion cooling solutions are game-changing in the design, build and operation of data centers.

Better and Smarter Together

Innovating Data Center Operations Immersion Cooling Solutions

Born out of a collaboration with Lenovo, Iceotope's precision immersion cooled data center solutions are designed to accommodate variable-scale HPC and AI workloads in any location. Encapsulating Lenovo ThinkSystem SR670 server each liquid-cooled chassis is fully sealed to isolate and protect the critical IT from the surrounding atmosphere. The sealed chassis creates a controlled environment that is impervious to particulate contaminants, gases, and humidity. This enables each solution to operate in near silence. Highly scalable – from one server to many – Iceotope's data center solutions also provide zero-touch operation with advanced Out Of Band Management offering complete control of the entire system, remotely.

Popular Solution Applications

Diverse Applications from Genomic Sequencing to Smart Platform Analytics

- AI-powered imaging
- Advanced data analytics for upstream operations & performance
- Genomic sequencing
- Hyper-personalization of customer engagement
- High-frequency algorithmic trading
- Advanced data analytics for real-time cyber security
- Smart Oil & Gas platforms
- Precision medicine

Case Study: AI-powered imaging

Industry: Healthcare

Challenges

Artificial intelligence holds significant promise for radiology and is starting to revolutionize healthcare. From bridging the gap between the demands of ever-increasing, extremely complex data to improving the diagnostic process by simplifying data interpretation through sophisticated AI algorithms. AI is a valuable tool that, when combined with the human expertise of radiologists and clinicians, offers vast potential for the healthcare industry. Our customer, a digital imaging specialist, needed the ability to run power hungry AI algorithms at the data source to enable real-time decision making. This required deploying a single GPU-rich server near people in a radiology department. The air-cooled servers were too loud and breached the recommended 45 dB sound pressure levels due to the server fans.

Solutions

A single Iceotope liquid cooled chassis encapsulating a Lenovo ThinkSystem SR670 server placed on shelf under a desk with the heat rejected to an external dry cooler.

Solution Benefits

- Near-silent operation
- Single server enabled
- Extreme cooling performance
- Sealed chassis for added physical security
- Ultra-efficient with additional 10% saving at server level
- 30% less hardware failure rate (no fans)
- Low-touch maintenance

The solution leverages Lenovo's ThinkSystem SR670 which has been converted from air-cooled to liquid-cooled to enable near-silent operation in an environment with noise restrictions. Advanced AI diagnostic tools are now available for real-time healthcare decision making in a clinical setting.



Lenovo ThinkSystem SR670



Powered by Intel® Xeon® processors

Case Study: Hyper-personalization of customer engagement

Industry: Financial Services (Retail Banking)

Challenges

A well-known retail bank is using power hungry AI algorithms to trial hyper-personalization of customer engagement in one of its busiest high street branches, including real-time facial recognition for fraud detection and prevention. Analytics needs to be carried out real-time at the data source and therefore the processing needs to be done in branch. They required around 4kW of compute power in a confined space and the IT needs to live with people in a small office, so noise is a challenge. The solution also needed to scale quickly across multiple branches globally.

Solutions

Iceotope's Ku:l all-in-one liquid-cooled micro data center – in half rack form factor encapsulating two Lenovo ThinkSystem SR670 servers – answered the brief perfectly. The solution's small footprint, near-silent operation, and sealed chassis enabled it to occupy a tight space beneath the stairs in a back office next to people. Heat was rejected to ambient air via an in-rack liquid-to-air heat rejection unit. The all-in-one nature of the solution, and its plug-and-play ability, means it can be deployed and scaled quickly. Out Of Band Management allows full control and monitoring of the system remotely.

Solution Benefits

- Near-silent operation
- All-in-one micro data center
- Plug and play
- Extreme cooling performance
- Near-silent operation
- All-in-one micro data center
- Plug and play
- Extreme cooling performance



The solution leverages Lenovo's ThinkSystem SR670 which has been converted from air-cooled to liquid-cooled to enable near-silent operation in a busy workplace environment. Advanced real-time data analytics offers a more personalized customer experience while protecting the bank from customer fraud.

Lenovo ThinkSystem SR670



Powered by Intel® Xeon® processors

Case Study: Data analytics



Challenges

Oil facilities, both upstream and downstream, generate vast volumes of data creating enormous challenges when it comes to communications, storage, and analysis. Our client, a global energy company, wants to process data on-site as close to where the data is generated as possible. Privacy, bandwidth, latency, and reliability are the key driving factors. Privacy is achieved by not sending all raw data to be stored and processed on cloud servers. Not sending data to the cloud also reduces bandwidth and associated costs. By not relying on a cloud connection both latency and reliability are improved. Real-time data analytics and decision making is the objective with single GPU-rich server solutions preferred as they're easier to deploy in confined spaces. These are harsh environment with extreme temperature fluctuations. Solutions must operate in extreme conditions while protecting the critical IT and providing a stable operating environment. Remote monitoring and management is critical as is simple servicing and maintenance.

The solution leverages Lenovo's ThinkSystem SR670 which has been sealed in a highly ruggedized liquid-cooled chassis enabling it to perform in extreme environments. Enterprise-grade compute is available for real-time data analytics in remote locations.

Solutions

Iceotope's Ku:I Extreme is a highly ruggedized micro data center solution for distributing enterprise-grade compute to hostile, harsh and extreme edge locations. It can be deployed both indoors in existing sheds or outdoors in a secure and tamperproof cabinet. Single server enabled, this ultra-efficient and highly scalable solution brings zero-touch operation with advanced Out of Band Management offering complete control of the entire system remotely. Powered by Lenovo's ThinkSystem SR670 server, this solution offers 2kW+ of GPU-rich compute sealed in Iceotope's liquid-cooled chassis which can handle extreme temperature fluctuations.

Solution Benefits

- Single server enabled
- Ruggedized for extreme locations
- Sealed chassis for added physical security
- Outdoor operational temperature range of -40oC to 55oC+ (Mechanical trim cooling required above 40oC)
- Low-touch maintenance
- Out Of Band Management





About Iconics

Automation Software Solutions

As a ten times Microsoft Partner of the year, ICONICS is an award-winning global software provider offering whose Azure-based software solutions help manufacturing leaders visualize, analyze, and mobilize real-time information for any application on any connected device.

Better and Smarter Together

Integrating Expertise for Smarter Solutions

ICONICS and Lenovo have partnered to create innovative IoT gateway solutions for a variety of verticals, including manufacturing and smart cities.

Popular Solution Applications

Empowering Industries Through Smart Automation

- Building automation
- Manufacturing
- Industrial automation
- Shipping and logistics
- Energy management

Case Study: IoTWorX™ Edge Compute Solution

Industry: Manufacturing

Challenges

The ICONICS IoTWorX platform supports building management and industrial automation applications by securely bridging the gap between locally connected edge devices and remote platforms. These applications deliver real-time remote monitoring, advanced analytics, and performance dashboards, all essential to optimizing complex systems. This is all accomplished using industry-standard communication protocols that ensure maximum security, compatibility, and ease of deployment. KPIWorX, a related optional software tool from ICONICS, works alongside IoTWorX to deliver even more complex edge visualization and analysis capabilities.

Solution Benefits

- Improved plant efficiency, asset uptime, and quality
- Simple setup and configuration
- Reduced operational risks, overhead costs, and changeover times
- Offers several key IoT technologies, including rich connectivity to things, secure cloud communications, store and forward of collected data, and built-in real-time visualization and analytics

This full-fledged edge computing platform for IoT applications for the energy, smart buildings and industrial automation markets deliver ready to go communications infrastructure and reduced costs.

When installed on Lenovo edge compute devices like the ThinkEdge SE30 or SE50 IoTWorX enables technicians to create sophisticated IoT applications that capitalize on the benefits of both powerful local processing and at-scale cloud storage and compute.

Lenovo ThinkEdge SE50



Lenovo ThinkEdge SE30



Powered by Intel® Core™ i5 processors on the Intel vPro® platform

Case Study: Azure Digital Twins Smart Buildings

Industry:  Smart Cities

Challenges

The importance of IoT gateways is obvious when you consider the surge in connected “things”. With scores of protocols, connectivity models, energy profiles, high-end security requirements, and the highly dispersed nature of IoT systems, gateways are needed to aggregate, manage, and control these complex environments. Achieving these benefits requires the integration of low-cost IoT gateways into the IoT solution.

Solutions

No longer must engineers manually inspect and tune buildings to run more efficiently. ICONICS smart building software collects and analyzes Internet of Things (IoT) sensor data from building management systems, giving owners visibility into the health of their property, improved energy efficiency, and lower costs. ICONICS relies on Microsoft Azure Digital Twins to boost software scalability and rapidly deliver innovative capabilities to customers, such as occupancy and spatial analytics. ICONICS is making smart buildings even smarter with Azure Digital Twins.

Solution Benefits

- Companies realize 10-20% savings off their total energy costs by deploying ICONICS solutions
- Improve occupant satisfaction / employee productivity
- Improve occupancy rates
- Extend the life of building equipment / avoid capital equipment costs

The Azure Digital Twins solution provides unparalleled cloud scalability and security (at all system levels—from device, to the edge, to the cloud).

ICONICS, paired with Lenovo ThinkEdge devices, deliver building management energy savings and efficiencies.



Powered by up to Intel® Xeon® processors

 **IMS** EVOLVE

About IMS Evolve

Transformative IoT solutions
for smart retail

Built upon a clear vision to positively benefit the core purpose of a business and make more efficient use of its resources, IMS Evolve has developed a fundamentally new approach to turning machine data into actionable insight with low impact, on-premise processing technology, known as processing at the edge.

Better and Smarter Together

Transforming Data into Sustainability
and Long-term Value

IMS Evolve and Lenovo are collaborating to deliver edge IoT solutions at speed and scale. Together, they are leveraging real-time machine data to reduce energy consumption, manage waste, and transform the cost of asset ownership that businesses will attain long-term value from new and essential data.

Popular Solution Applications

Smart IoT Integration in
Food and Logistics

- Food and perishables producers
- Food and perishables distributors
- Retailers
- Restaurants
- Shipping and logistics

Case Study: Food Retail IoT Solution



Challenges

- Complex and legacy OT infrastructure
- Significant waste due to poor refrigeration control
- High energy costs from insufficient asset performance
- Inefficiencies in maintenance operations
- No integrated control and monitoring platform
- Poor visibility of assets and supply chain

Solutions

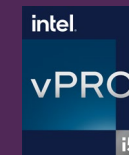
The IMS Evolve solution leverages industry-leading IoT for the cold chain, uniting visibility and control, and driving unrivalled enhancement of the store environment for customers and staff. The solution includes many key capabilities and features, such as the ability to connect legacy and future infrastructure, collect real-time operating data from any device, and automate / distribute the right information to the right place. Edge-based analytics enable the ability to scale and deploy rapidly, using flexible hardware that leverages the existing infrastructure—eliminating the need to rip and replace. With IMS Evolve, leverage industry-leading IoT for unmatched retail environments.

Solution Benefits

- Reduces energy costs and improves energy efficiency
- Reduces maintenance costs
- Reduces stock loss
- Increases fault-to-fix times
- Reduces operating costs and lower cost of asset ownership
- Improves asset health and life cycle
- Increased customer experience

Through intelligent automation, streamlined processes, granular monitoring, and change management, this solution helps retailers to achieve operational excellence.

The solution brings together the IMS Evolve IoT Platform and Lenovo's ThinkEdge SE30 to deliver immediate, digitally transformed value for food retailers.



Powered by Intel® Core™ i5 processors on the Intel vPro® platform

iOmniscient

Hi-iQ Analytics

About iOmniscient

The Enterprise of Mixed Reality

AI-based multi-sensory systems (video, sound, and smell). Oldest independent AI-based Analytics company – founded in 2001. Intel Alliance Partner of the Year (APJ). Projects in 70 countries. 70+ International Patents Industry Solutions Packs for 30 industries including Retail.

Better and Smarter Together

Adaptable and Robust Architecture for Diverse Operational Environments

Flexible, Scalable Architecture – centralized or distributed. Can work on Brown field sites.

Popular Solution Applications

Mixed Reality Applications for Enhanced Safety, Efficiency, and Customer Insight

- Dwell Time in each area
- Customer demographics
- Customer route through the store
- Detection of Spills
- Find Lost Children in a mall
- Evacuation Management
- Fever Detection in a Crowd
- Abandoned Object Detection in a Crowd

Case Study: Integrated Solution for the Retail Industries to enhance customer service and productivity.

Industry:  Retail

Challenges

There are many stakeholders in a retail environment - those concerned with customer service, logistics and distribution, health and safety and facilities management. Each one has its own challenges and requirements as described previously. For Senior Management the challenge is to provide each stakeholder with the best available information in real-time ensuring quick responses for mission-critical issues without duplicating infrastructure.

Solutions

1Q-Retail is a comprehensive capability for retail organizations that address the specific needs of each of the different stakeholders. Many of the technologies provided are patented including the ability to understand very crowded scenes. Moreover, a common infrastructure can be used to minimize the overall cost without compromising the confidentiality of the information held by each separate group. The entire solution is integrated so senior management can understand and manage the information of their various departments on a common platform.

Solution Benefits

- Best in Class solutions to address the challenges of every Stake holder from Marketing to Distribution; from Health and Safety to Facilities Management.
- Solutions that are integrated across the organization providing senior management with holistic information for running the organization.
- Minimized infrastructure costs as duplication across departments is minimized.

Improve Customer Service and Staff Productivity through a comprehensive, integrated suite of AI based multi-sensory Systems.

The software operates on a combination of Lenovo ThinkSystem Servers and pre-installed SE-50 Edge devices ensuring fast and effortless implementation.



Lenovo ThinkEdge SE50



Powered by Intel® Core™ i5 processors on the Intel vPro® platform

Case Study: Integrated Solution for Intelligent Traffic Management

Industry:  Smart Cities

Challenges

There are large numbers of incidents that can occur on a road. – operators at a control center can be overwhelmed and response times from responders can be slowed by congestion and other factors.

Solutions

The Automated Response Capability from iOmniscient can understand the situation automatically. It can then automatically locate the nearest appropriate responder (eg police, ambulance, fire brigade) and tell them where to go and what to do.

This relieves the Control Room of mundane operations and enables it to oversee operations and make complex decisions that only humans can make.

Solution Benefits

- iOmniscient's Internationally patented Automated Response capability can reduce Response Times dramatically – usually by around 80%. As such if it used to take 25 minutes to respond previously it could now take under 5 minutes.
- Faster Response Time means less congestion.
- Faster Response Times means accident victims can get to hospitals faster.

Improve Customer Service and Staff Productivity through a comprehensive, integrated suite of AI based multi-sensory Systems.

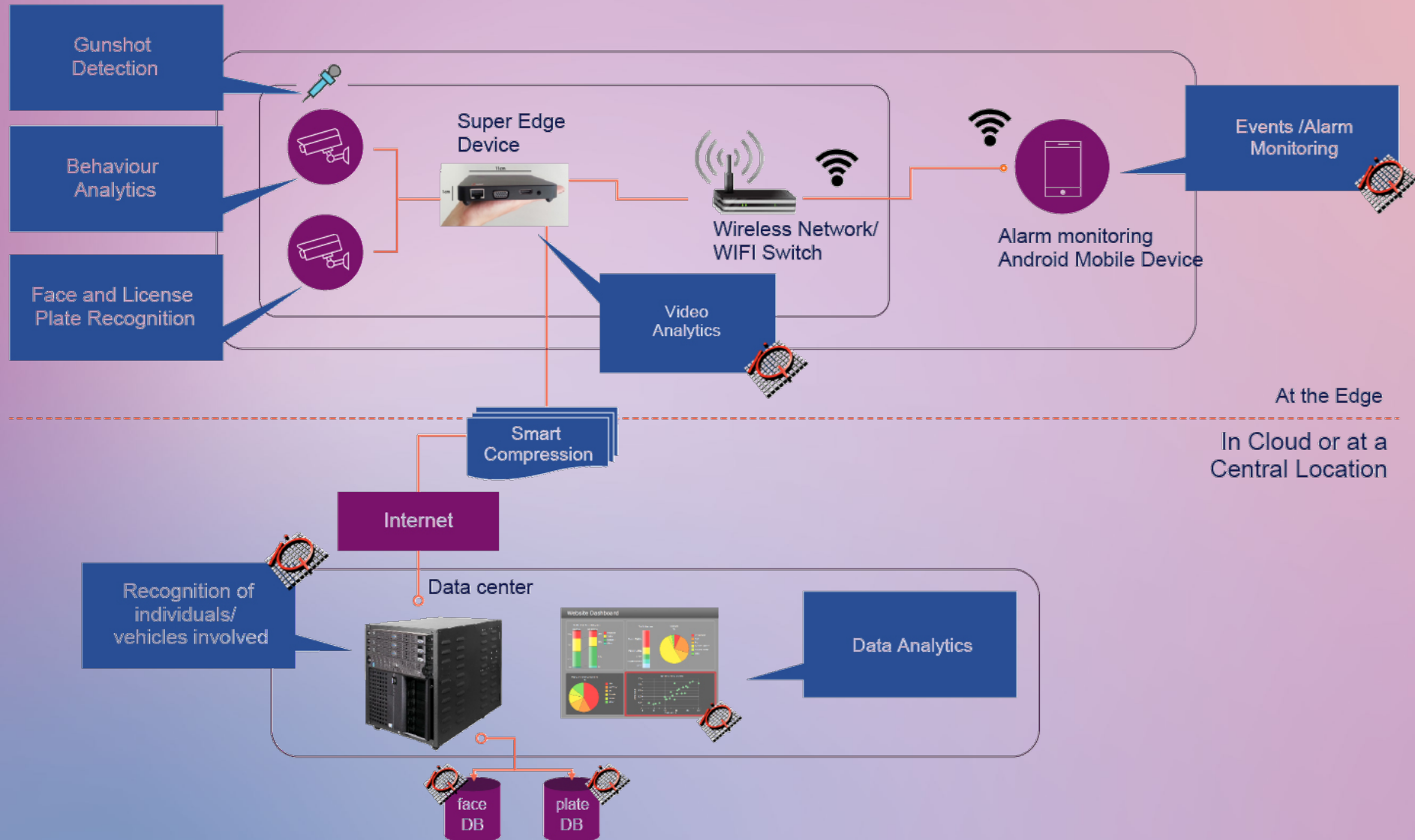
The software operates on a combination of Lenovo ThinkSystem Servers and pre-installed SE-50 Edge devices ensuring fast and effortless implementation.



Lenovo ThinkEdge SE50



Powered by Intel® Core™ i5 processors on the Intel vPro® platform



IOTech

About IOTech

Industrial IoT Edge Solutions - Operation Efficiency and Control

IOTech builds and deploys vendor-neutral software platforms and tools to support the rapid development, deployment and management of applications at the IoT edge helping drive IoT innovation, global market adoption, velocity and scale.

Better and Smarter Together

Optimizing IoT Data Processing and Analysis

Using IOTech IoT edge software and Lenovo's ThinkEdge hardware, together we provide a simplified environment for collecting, processing and integrating data from multiple different devices at the edge. Running on edge gateways or servers, the platforms can onboard and acquire data from the different sensors and edge devices. The data is normalized and aggregated, and made available for edge decision making, analytics and control.

Popular Solution Applications

Empowering Industries with Edge Computing Solutions

- Manufacturing
- Oil and Gas/Energy
- Smart City
- Building Automation
- Retail

Case Study: Enable Data Fusion and Control to increase productivity and reduce costs

Industry: Manufacturing

Challenges

Gathering, standardizing, and then exploiting the rich data held on the production floor and other equipment control systems allow customers to optimize production performance, diagnose faults, and make informed decisions around manufacturing processes and bidding for supply. Meanwhile, decision makers need to ensure and deliver qualitative products quickly and in a repeatable cost-effective way. They need to be able to choose and easily integrate a variety of equipment to adapt their product lines to meet customer and quality demands.

Solutions

IOtech provides data fusion and visualization from its Edge Xpert and Edge Builder products. Smart connectors allow field data to become quickly and efficiently available in a single format, in one place, and regardless of the heterogeneity of the suppliers' underlying data and communications protocols. Once the data is being securely accessed, translated, and ingested into this solution IOtech can then start to provide value-added activity with it at the edge, for example:

- Correlate and analyze data to ensure balanced, safe, and efficient operations
- Develop and execute control logic functions across the underlying equipment
- Provide local data trends and alerts to assist for example in fault diagnosis and maintenance
- Enable Data Fusion and Control to increase productivity and reduce costs
- Filter and stream data to endpoints: cloud applications, SCADA systems and back to local controllers where required
- Store the data or visualization via dashboards
- Control and update applications remotely

Solution Benefits

- Simply Collect Data from any Device, Camera or Sensor via supported key Industry Protocols.
- No Coding Needed
- Stream to the Cloud and Vice Versa
- Easy Control at the Edge via Analytics, Rules and Control All On-Premise

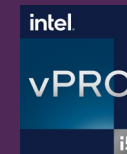
The solution combines a robust, IoT ready platform with the Lenovo ThinkEdge SE30 or SE50 pre-installed with IOtech's Edge and Orchestration Solution.



Lenovo ThinkEdge SE50



Lenovo ThinkEdge SE30



Powered by Intel® Core™ i5 processors on the Intel vPro® platform



About Linker Vision

Data-Centric Continuous Learning AI Platform for Worker's Safety, ADAS, and Smart City

Linker data-centric continuous learning AI platforms are end-to-end solutions accelerating computer vision development for customers across industries. Linker Auto-Labeling platform, capable of 2D/3D multi-shape and multi-layer object recognitions, is a time-to-value platform for precise labeling. Linker Dataverse platform provides matrixes for data management and is a data-centric retrain mechanism to improve recognition ability and learn new things continuously. Linker VisionAI platform, is an all-user-friendly web UI for easy monitoring across all sites, and it is the all-in-one centralized visual platform for all industries and applications.

Better and Smarter Together

Elevating Edge AI Capabilities with Linker and Lenovo Integration

Linker continuous learning AI platforms are integrated with Lenovo edge devices to provide optimized high-precision AI detection with low latency to prevent accident occurrences and accelerate AI autonomy.

Popular Solution Applications

Revolutionizing Safety and Autonomy from Workers to Smart Cities

Worker's Safety

- Fire & Smoke Detection
- High-Risk Human Behavior Monitoring
- SOS Call-out
- Multilayer PPE Monitoring

ADAS/AV

- 2D/3D Multi-Sensors Fusion Fisheyes to Bird's Eye View
- Driver's Status Monitoring Autonomous Yacht, Forklift

Smart City/ MaaS

- Aerial Traffic Monitoring
- On-Road Asset Management
- Traffic Enforcement

Case Study: Industrial Worker's Safety

Industry:  Manufacturing

Challenges

- Various hazardous scenarios with different business logics
- Low accuracy in detecting objects or overlapping objects such as smoke, fire, PPE, hazardous gas, etc.
- Hard to fine-tune AI model for rare scenarios

Solutions

Linker VisionAI platform is designed for front-line, non-technical personnel to easily adjust detection matrixes based on each scenario, duration, and business logic. Users can adjust detection sensitivity or re-combine detection AI models. Linker Dataverse platform allows new objects to be recognized, learned, and retrained quickly, efficiently, and systematically. Linker Auto-Labeling platform has ready-to-go AI models to significantly decrease time spent on identifying objects and labeling new objects with precision.

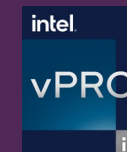
Solution Benefits

The solution provides highly precise read-to-use AI models with the ability to retrain and learning new objects. Each platform provides a real-time dashboard with actionable analytics for every captured event. It utilizes existing cameras and has an add-on portable plug-and-play turnkey solution for remote areas.

- **Predictive:** detect early signs of hazards and risky behaviors
- **Composable:** configure and customize multiple rules and model tasks
- **Actionable:** provide actionable insights in real-time, 24/7 full coverage

A data-centric continuous learning End-to-End solution with high precision ready-to-use unique AI models.

The solution leverages Lenovo's ThinkEdge for quicker response and better mobility, resulting quick deployment and coverage for remote sites.



Powered by Intel® Core™ i5 processors on the Intel vPro® platform



LITMUS

About Litmus

Industrial IIoT Platform

Navigate a fragmented data landscape, siloed plants and outdated legacy systems with a software platform built for industrial data. Data collection and standardization in minutes, real-time analytics, off the shelf templates to get going quick and integrations across the enterprise to make data actionable. Be more efficient, sustainable and competitive with Litmus.

Better and Smarter Together

Integrating Edge Intelligence for Industrial Agility

Future-proof your industrial data strategy and take advantage of unparalleled time-to-value out of the box to centralize your Industry 4.0 efforts.

Popular Solution Applications

Empowering the Edge with Scalable Industrial Connectivity

- Industrial connectivity with 275+ Prebuilt Industrial Drivers
- Prebuilt integrations with 300+ OT assets, cloud applications and business systems.
- Improve Throughput, Uptime, Yield, Time to Market + ROI
- Reduce Scrap, Defects, Manual OEE, Energy Consumption + Downtime
- Machine Learning Inference at the Edge

Case Study: Automotive Supplier Digitizes Manual Workflows



Challenges

Manufacturing landscapes are increasingly complex, often characterized by minimal automation and heavy reliance on manual processes. This results in a lack of optimal Overall Equipment Effectiveness (OEE) and a missing link in gleaning insights from the inconsistent performance of critical machinery. Manufacturers are facing the daunting task of modernizing their operations to keep pace with industry standards and maximize efficiency.

- Complex manufacturing set up with minimal automations and manual process control.
- Scope for improved OEE.
- Missing insights into inconsistent performance of critical machinery.

Solutions

Litmus Edge runs on VMs onsite. In response to these challenges, Litmus provides Litmus Edge, a versatile platform designed to run on virtual machines directly onsite. This solution bridges the gap between traditional manufacturing processes and Industry 4.0 by enabling real-time data collection and analytics. Litmus Edge serves as the nerve center of the shop floor, interfacing seamlessly with both proprietary and Computerized Maintenance Management (CMM) systems, thus unifying data streams that were previously siloed.

Solution Benefits

- Single tool for ubiquitous data collection in shop-floor from proprietary and CMM machines (text + database).
- Faster root cause analysis using condition-based monitoring.
- Improved process controls with traceability, automated quality checks, and data integration with ERP.
- Reduced MTTx metrics.

- Improve equipment availability using asset condition-based machine monitoring (CMM).
- Automate evaluation of parts quality using CMM data.
- Improve process control with better shop-floor traceability and centralized management



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Case Study: Litmus Edge's Integration for Legacy Systems

Industry: Automotive

Challenges

- Data trapped in legacy machines; 20+ legacy assets per line.
- Lack of visibility into the shop floor.
- Heterogeneous data (sensor, PLC data such as position, signals, machine status, and speed, utility meters, plant noise levels, DMC readers, quality status and rejections, etc.) and machine types (PLC, conveyors, CNC machines, etc.).

Solutions

To tackle the challenges of data silos and lack of visibility on the shop floor, Litmus has deployed the Litmus Edge platform on gateway devices strategically located throughout the facility. Litmus Edge is installed on the Gateway device. This setup is designed to penetrate deep into the framework of legacy assets, regardless of their age or technological limitations. By serving as a conduit for machine communication, Litmus Edge extracts, harmonizes, and transports diverse data sets — from PLCs to utility meters — into a fluent language of efficiency and productivity. This innovative approach not only improves data access, management and usability within the organization but also bridges the crucial gap between operational technology and modern analytical tools.

Solution Benefits

- Standardized tagging, polling, flows across plants provided quick ROI for data projects
- Automated alerts on KPIs (e.g., cycle time, cutting wheel speed and pressure, cooling time, etc.).
- Real-time actionable analytics and KPIs at the edge; integration with Historian, SCADA, and MES data.

Lenovo ThinkEdge SE30



Powered by Intel® Core™ i5 processors on the Intel vPro® platform

- Improve visibility into operations for plant managers and maintenance engineers.
- Improve asset monitoring and performance
- Use real-time analytics to improve production and quality improvements.
- Accelerate digital transformation.



Case Study: Food Manufacturer Achieves Unmatched Time-to-Value

Industry: **Food & Beverages**

Challenges

The rapid expansion through acquisition left the food manufacturer grappling with a patchwork of isolated systems and disparate tools, leading to operational inefficiencies. This fragmented infrastructure lacked a cohesive approach to industrial IoT, impeding the company's ability to standardize and streamline processes. Crucially, there was a notable absence of deep insights into quality and performance metrics, making it challenging to identify and act upon key performance indicators that drive improvement.

- Growth by acquisition led to siloed systems and tools.
- Lack of a standardized approach to Industrial IoT.
- Missing insights into quality and performance KPIs.

Solutions

Addressing these hurdles, Litmus deployed its Edge platform, designed to harness edge analytics, coupled with the Litmus Edge Manager for centralized oversight within the AWS Cloud ecosystem. This strategic implementation meant transforming data into actionable insights by connecting and standardizing disparate systems. By leveraging Litmus's edge-to-cloud capabilities, the company could now tap into real-time analytics to optimize operations, embodying the principles of Industry 4.0.

Solution Benefits

- Standardized operations management with a no-code edge-to-cloud.
- Automated quality checks using a digital fingerprint of perfect operating parameters based on edge (video) analytics.
- Reduced operational cost using plant data against benchmarks.



Powered by Intel® Core™ i5 processors on the Intel vPro® platform



- Standardize IIoT practices and democratize best practices across all the plants.
- Improve visibility into plant operations for better quality and performance metrics.
- Implement asset condition-based monitoring for reduced downtimes and improved efficiency.



About LivNSense

We Sense, Innovate
& Sustain!

LivNSense™ is a pioneering Industrial AI Platform venture that aims at maximizing the profitability of the process manufacturing industry with key focus on Efficiency, Energy Optimization and GHG Carbon reduction. We truly believe in “Value driven problem solving” more than just recording & reporting (R-R) Our product delivers immediate financial gains and decarbonization benefits to industries and can be scaled rapidly at lower costs through Process optimization.

Our Mission is to enable Deep Learning and Artificial Intelligence for Heavy Industries to deliver “Greenhouse Gas Reductions”. Mission to impact 100 Mega Tons of GHG Emissions. Reduce GHG Emissions with world’s FIRST Green-AI Platform for Sustainable Manufacturing

Better and Smarter Together

Collaborating for Greener, Safer, and
More Profitable Industries


We at LivNSense truly believe in Co-Existing, Co-Creating & Complimenting with ecosystem partners to deliver winning value proposition to end customers. We work with OEMs with an objective to transition towards Greener, Safer and Profitable Industries. We are addressing together “Energy intensive industries” with high dependence on the fossil-fuel production system (Manufacturers, OEMs and System Integrators)

Popular Solution Applications

Sustainable Solutions in Heavy
Industries: From Mining to Utilities

- Metals** – Optimized energy consumption
- Cement** – Improve Energy Efficiency and Reduce the usage of Fossil Fuels
- Mining** – Mitigate the risks of hazardous working conditions
- Chemicals** – Optimized energy consumption, process efficiency
- Utilities** – Reduce Water Leakages and Energy Consumption

Case Study: Driving the Future of Green and Safer Metals Industry

Industry:  Manufacturing (Metals and Mines)

Challenges

Energy-intensive industries (EIs) account for 22% of Global CO2 emissions. These industries have a high dependence on the fossil-fuel production system with high Greenhouse Gas (GHG) Emissions, Energy Losses and Process inefficiencies. The overall impact is \$200 billion opportunity loss for these industries in incremental revenues annually.

The Aluminum sector accounts for 1.1 billion tons of CO2 emissions per year, it generates around 2% of global human-caused emissions. At present, the global average of CO2 emissions for both virgin and recycled aluminum is 11.5 tons of CO2 per ton of aluminum.

Solutions

The key objective has been to reduce the carbon footprint of the AL Industry with below objectives:

- Improve the Pot Efficiency without compromising on production and reduce process emissions.
- Reducing the overall carbon footprint

Key KPIs /Outcomes

- Reduction in ALF3 consumption /ton of metal produced and increase in current efficiency.
- Reduction of CO2e footprint by 1 MT per ton of metals production
- GHG Intensity Reduction by 6.7%

LivNSense in partnership with Lenovo is targeting to impact the efficiency and sustainability for Metals and Mining Industries by addressing the critical challenges of low latency data processing, real time alerting with Edge to Cloud innovation and reducing cycle time for the customers. The solution leverages Lenovo's ThinkEdge SE30 for edge acceleration, resulting in lesser lead times for deployment impacting 10-15 percent of EBITDA for the end customer.



Lenovo ThinkEdge SE30



Powered by Intel® Core™ i5 processors on the Intel vPro® platform

**meldCX™**

About MeldCX

Vision Analytics for Healthcare meldCX's vision analytics platform

Viana™ allows organizations to consume AI data without the need for developers. Anonymously measure how people work, shop, learn and play in physical and digital spaces. meldCX services also include custom solutions, underpinned by custom model training that delivers results in shorter time frames and lower costs than competitors.



Better and Smarter Together

Elevating Healthcare with Edge AI Analytics

Using the Viana platform, meldCX and Lenovo work together to deliver powerful edge AI healthcare solutions that are secure, cost-effective and provide real-time analytics.

Popular Solution Applications

Smart AI Applications Across Industries

- Parking Management
- Traffic Measurement
- People Counting, Zone Engagement, and Programmatic Advertising
- SAMi® Digitize Clean-Up
- Anonymous Audience Measurement
- Signage Content Effectiveness
- License Plate Recognition

Case Study: Viana™ Vision Analytics Solution

Industry: Healthcare

Challenges

The healthcare industry has seen a huge digital transformation surge in the last few years. The pandemic has exacerbated the need for:

- Stricter adherence to cleaning and compliance
- Tighter security on the hospital and clinic floor
- More optimal patient care and experience

Solutions

The role of AI can make healthcare more human. Instead of replacing staff job roles, AI can in fact enable healthcare staff to provide better, more face-to-face quality care for patients. Viana™ by meldCX connects spaces and breaks down healthcare silos. Through anonymous vision analytics, Viana brings real-time insights so that healthcare providers can provide tighter security by tracking entrances and exits, detect patients requiring help, detect aggressive behavior, monitor zones between rooms and facilities, as well as track surface touches for effective cleaning — ensuring a safe and clean environment for patients and staff.

Create the ultimate safe space for staff and patients with Viana vision analytics solutions, powered by Lenovo edge devices.

Solution Benefits

- Healthcare providers can ensure spaces are cleaned effectively and thoroughly
- Enables preventative measures rather than relying on corrective action
- Ensure patients are attended to in time through slip and fall detection.
- Easier for nurses to understand patients' needs
- Employ tighter security by implementing aggression detection and entrance monitoring.
- Proactively manage safety and cleaning compliance through real-time monitoring of surface touches.

meldCX and Lenovo are jointly bringing forth Edge AI solutions that are secure, cost-effective and provide real-time analytics.

Viana bundled with Lenovo's ThinkEdge SE30 and ThinkSystem SE350 Edge Server process data at the edge, producing fast and accurate real-time analytics for the end customer.



Lenovo ThinkSystem SE350

Lenovo ThinkEdge SE30



Powered by up to Intel® Xeon® processors

Case Study: Viana™ Vision Analytics Solutions for Industry

Industry:  Industrial

Challenges

The manufacturing industry's journey toward automation and Industry 4.0 has been met with the challenge of navigating increasingly complex vision systems. Companies are seeking developer-independent machine vision technologies that are versatile and easy to deploy to keep up with the demands of modern manufacturing.

Solutions

MeldCX's Viana™ platform addresses these challenges head-on by simplifying the deployment of machine vision technology. It allows for high-performance face mapping and real-time insights across a network without the need for extensive development. Viana's capabilities extend to vehicle analytics, surface tracking for hygiene maintenance with SAMi, and ensuring safety and compliance by detecting hazardous behaviors. It also enhances back-of-house efficiencies with manual assembly verification and aids in identifying defects during quality control checks in warehousing.

Solution Benefits

- Viana's stackable AI models improve insight accuracy while minimizing cloud dependencies.
- Enhanced hygiene and safety measures are achieved through automated monitoring and alerts.
- Increased operational efficiency through automated compliance with safety regulations.
- Error reduction in manual assembly leading to improved product quality and traceability.

Incorporating Lenovo's ThinkEdge series, the meldCX solutions provide powerful computing necessary for advanced edge AI applications. These integrated systems facilitate rapid and precise analytics, bolstering the industrial capabilities of clients and delivering a competitive advantage in a demanding marketplace.



Powered by up to Intel® Xeon® processors

Case Study: Viana™ Vision Analytics Solutions for Retail

Industry: Retail

Challenges

In the evolving retail landscape, businesses are grappling with the challenge of integrating digital tools into brick-and-mortar experiences to create a seamless omnichannel presence. There's a pressing need for gathering actionable customer data while ensuring privacy, managing in-store engagement effectively, and maintaining high security and planogram compliance.

Solutions

MeldCX's Viana™ transforms retail operations with its vision analytics capabilities, offering retailers a way to anonymously analyze customer behavior and traffic. With high-performance face mapping, Viana™ provides retailers with real-time insights without storing identifiable information. The platform's AI use cases are expandable, ensuring that retailers can adapt to changing demands and enhance the in-store customer experience. Viana™ also supports vehicle analytics for comprehensive monitoring of logistics, such as back-door pickups.

Solution Benefits

- Enhanced customer experience through data-driven insights into shopping behaviors and zone engagement.
- Improved inventory management with sophisticated image processing for planogram compliance.
- Optimized content delivery, aligning digital media with customer presence to maximize engagement.
- Increased security measures, including the ability to detect and respond to potential thefts promptly.

Leveraging Lenovo's ThinkEdge series, MeldCX solutions provide the computational power necessary for Viana™ to process data efficiently at the edge. This synergy between Lenovo hardware and MeldCX software delivers a sophisticated, integrated AI solution that elevates the retail customer experience while streamlining operations.



Lenovo ThinkSystem SE350

Lenovo ThinkEdge SE30



Powered by up to Intel® Xeon® processors



pathr.
ai®

About Pathr.ai

You can learn a lot
from a dot

Pathr.ai is the leader in retail Spatial Intelligence analytics that drive store operations, merchandising, and display optimizations. Its solution captures customer and staff movement by leveraging existing infrastructure such as security cameras and IoT devices, empowering retailers with privacy-preserving and real-time insights that unlock new revenue and reduce costs in all physical locations.

Better and Smarter Together

Empowering Retailers with AI-Driven Spatial Intelligence by Lenovo and Pathr.ai

Lenovo, in partnership with Pathr.ai, offers a scalable AI-powered Spatial Intelligence solution that delivers real-time analytics into customer behavior inside physical locations. Pathr.ai's edge application runs on a Lenovo edge server to provide retailers with actionable insights that drive +10x annual ROI.

Popular Solution Applications

Transforming Retail Experience: From Entrance Analytics to Loss Prevention

- Entrance and group sizes for measuring true sales conversion rates
- Shopper behavior including traffic and dwell times
- Checkout queue and wait times
- Staffing optimization via insights around customer and staff interactions
- Loss Prevention

Case Study: Department Level Benchmarking for Big-Box Retailer using AI-powered Spatial Intelligence at the edge

Industry: Retail

Challenges

A major big-box retailer is focused on creating store-by-store benchmarking to create individual improvement strategies for each of their stores. Without a true way of measuring customer movement and behavior inside their stores, a critical component of improving their store profitability and decision-making, the retailer risks losing customers, lowering the customer experience, and reducing their in-store profits. Additionally, the big-box retailer is faced with a costly hardware and disruptive installation process to acquire in-store analytics, requiring store closures to set up hardware – time they can't afford to wait.

Solutions

Pathr.ai introduces an AI-powered Spatial Intelligence solution at the edge that delivers real-time insights into customer behavior to the retailer. By integrating with their existing camera infrastructure, Pathr.ai's scalable and non-disruptive solution allows the retailer to compare department level analytics for each store, create a best practice standard for each operational area, including checkout staffing and wait times, and deliver a specific store-by-store improvement plan with quantified improvement potential. The flexible solution delivers insights to various endpoints integrated on the retailer's business systems, including customized dashboards on Tableau, becoming the complete virtual store manager solution for the retailer.

Solution Benefits

- Insights that unlock new revenue and reduce operational costs, projecting +20x annual ROI.
- Privacy-preserving analytics with GDPR and CCPA compliance.
- Flexible analytics delivered to customizable dashboards.
- Scalable solution across all brick-and-mortar stores.
- Leverage existing camera infrastructure.

Pathr.ai's Spatial Intelligence solution allows the big-box retailer to leverage their existing camera infrastructure to create store-by-store benchmarking based on customer behavior inside their physical stores. The retailer now have a scalable, flexible, and cost-effective solution to drive higher profits for their entire fleet of stores.

The solution leverages Lenovo's ThinkEdge SE30, SE350, SE450 edge serves to run its computer vision detection and video analytics at the edge, allowing it to scale to thousands of stores from the big-box retailer.



Lenovo ThinkSystem SE450

Lenovo ThinkSystem SE350

Lenovo ThinkEdge SE30



Powered by up to Intel® Xeon® processors



About Scale Computing

Run applications anywhere you need them with cloud-like simplicity and performance

Scale Computing is a leader in edge computing, virtualization, and hyper converged solutions. Using patented HyperCore™ technology, SC// Platform automatically identifies, mitigates, and corrects infrastructure problems in real-time, enabling applications to achieve maximum uptime, even when local IT resources and staff are scarce. Industry analysts have named SC// an outperformer and leader in the space, including being named the #1 edge computing vendor by CRN. SC// products are sold by thousands of resellers, integrators, and service providers worldwide. When ease-of-use, high availability, and TCO matter, Scale Computing Platform is the ideal infrastructure platform. Read our customer reviews on Gartner Peer Insights, Spiceworks, TechValidate, G2 and TrustRadius.

Better and Smarter Together

Optimizing IT Management:
Autonomous Solutions for the Edge

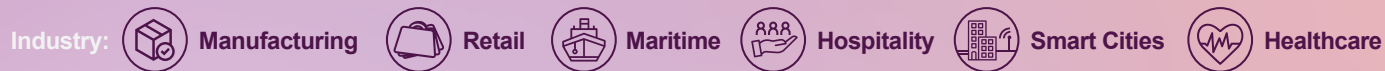
Scale Computing Platform and Lenovo hardware together reduces IT management costs by 70% or more when running applications in distributed and edge locations, close to where data is created and utilized by users and IoT technologies. Our autonomous, self-healing infrastructure platform keeps applications online and available, and cloud-like management simplifies implementation and administration for large-scale deployments.

Popular Solution Applications

Versatile Applications: From Video Surveillance to Computer Vision AI

- Database (SQL, Oracle, etc.)
- Containers
- Windows/Linux
- Video Security & Surveillance
- Point-of-sale
- Computer Vision AI

Case Study: Edge Computing Management and Orchestration



Challenges

The ever-expanding expectations of our digital world demand more applications run outside the cloud or data center, close to where they are used by people, devices and IoT technologies. But managing the sprawl of complex infrastructure to run applications locally in geographically distributed locations is an escalating burden on IT departments

Solutions

Scale Computing Platform is a powerful, all-in-one platform uniquely designed for running applications at the edge. Lightweight software is packaged for uncontrolled, non-IT environments and managed centrally, making it easy to run applications anywhere they are needed while also reducing workloads for IT teams.

Solution Benefits

- SC//Platform combines the best of cloud and data center with the unique needs of on-premises, local computing. Expandable, fault-tolerant architecture, automated intelligence for self-healing, and remote management with cloud-like orchestration together provide the most highly available environment with the least amount of effort at 70% less overall cost.

Scale Computing Platform reduces infrastructure management costs by 70% or more with a unified, easy-to-use platform for running applications at the edge of the network.

The solution leverages Lenovo's ThinkCentre M90q for distributed edge computing, resulting in faster deployments and less management time.



Powered by up to Intel® Core™ i5 processors on the Intel vPro® platform

SUNLIGHT



About Sunlight

Scaling your Edge Infrastructure

Sunlight makes managing your applications and infrastructure as easy as the cloud. Sunlight turns all your edge locations into 'micro clouds' – each running on a highly available, efficient, edge appropriate hardware like Lenovo ThinkEdge servers - and allows you to manage 100s or 1000s of remote sites with a central dashboard in any core cloud.

Better and Smarter Together

Enabling Seamless Edge Innovation with Scalable Solutions

Sunlight and Lenovo are collaborating to deliver an edge platform that can be deployed at speed and scale. Together, they enable organizations to reduce the cost and complexity of running and managing highly available applications away from the datacenter and make it possible for edge innovation to happen.

Popular Solution Applications

Empowering Industries: From Retail Automation to Manufacturing Excellence

- **Retail:** AI / Computer Vision Applications driving store automation and omni-channel experience
- **Quick Service Retail (QSR):** Consolidation and high-availability for in-store automation
- **Energy and Utilities:** Centralized management of application in a highly distributed environment
- **Manufacturing:** Real-time monitoring, predictive maintenance and health & safety applications

Case Study: Smarter Retail Infrastructure

Industry: Retail

Challenges

Retailers need to be able to deliver a variety of in-store applications - from the traditional POS, to traffic analytics to experiential services like smart mirrors and smart signage driven by hyper-personalization. New autonomous store capabilities - bypassing the checkout altogether - will change the way people convenience shop.

Solutions

With Sunlight and Lenovo, you could deploy and manage all your in-store applications on a single power and space efficient hyperconverged cluster, that is resilient, centrally manageable and didn't cost the earth.

Solution Benefits

- Sunlight brings the simplicity of the cloud to the edge
- Consolidation of IT infrastructure - reduce infrastructure and management costs
 - Continuous operations - including offline, in disconnected mode - high availability
 - Support all workloads - container / VM / Legacy - all from a single infrastructure
 - Small footprint – deploys on edge appropriate server platforms

- No downtime - continuous business operations even when WAN fails
- Instant response times whatever the local data volume
- Ability to implement full benefit of real-time video analytics
- Sensitive customer data can remain local when necessary

• **The solution leverages Lenovo's ThinkEdge & ThinkSystem Family of Servers, (SE30, SE50, SE350, and SE450)**

Lenovo ThinkEdge SE50



Lenovo ThinkSystem SE450



Lenovo ThinkEdge SE30



Lenovo ThinkSystem SE350



Powered by up to Intel® Xeon® processors

Case Study: Fast tracking restaurant digital transformation

Industry: Retail (Quick Service Restaurants)

Challenges

Quick service restaurants are experiencing customers demanding a better experience - personalization, touchless ordering, and smart drive-thru with pick-up times measured in seconds. Numerous applications are being deployed in order to service this demand, leading to server sprawl and its associated high cost of operation.

Solutions

Sunlight and Lenovo consolidate your in-restaurant infrastructure from multiple discrete systems down to a single highly reliable and centrally remotely manageable, low-cost platform that runs all your applications.

Solution Benefits

Sunlight brings the simplicity of the cloud to the edge

Consolidation of IT infrastructure - reduce infrastructure and management costs

Continuous operations - including offline, in disconnected mode - high availability

Support all workloads - container / VM / Legacy - all from a single infrastructure

Small footprint – deploys on edge appropriate server platforms

- Consolidate in-restaurant application infrastructure to cut costs by 75%
- Deploy complex applications with a single click from the Sunlight Marketplace
- Centrally remotely manage 1000s of locations - reducing skill set requirements

The solution leverages Lenovo's ThinkEdge & ThinkSystem Family of Servers, (SE30, SE50, SE350, and SE450).

Lenovo ThinkEdge SE50



Lenovo ThinkSystem SE450



Lenovo ThinkEdge SE30



Lenovo ThinkSystem SE350



Powered by up to Intel® Xeon® processors

Case Study: A real-time infrastructure for manufacturing

Industry: Manufacturing

Challenges

Manufacturing today is moving to real-time monitoring and management with the help of IIOT. Collecting and analyzing data from production lines enables faster and more reliable processes on the shop floor. Pushing these capabilities into the cloud doesn't work as it requires placing compute right next to the sensors, cameras and actuators to minimize latency and cope with the huge volumes of data.

Solutions

Sunlight and Lenovo provide a way to run these applications and manage a highly distributed edge infrastructure at scale. The tiny footprint, uptime, manageability, isolation security and bare metal performance means that Microservices and VMs are easy to deploy and manage remotely from anywhere.

Solution Benefits

Sunlight brings the simplicity of the cloud to the edge
 Consolidation of IT infrastructure - reduce infrastructure and management costs
 Continuous operations - including offline, in disconnected mode
 Support all workloads - container / VM / Legacy - all from a single infrastructure
 Small footprint – deploys on edge appropriate server platforms

Lenovo ThinkEdge SE50



Lenovo ThinkSystem SE450



Lenovo ThinkEdge SE30



Lenovo ThinkSystem SE350



- Efficiently process massive streams of data close to the source
- Deploy datacenter grade computing in extreme or inhospitable environments
- Make significant savings on equipment and overheads
- Remotely monitor and manage your edge infrastructure environment from anywhere 24/7

The solution leverages Lenovo's ThinkEdge & ThinkSystem Family of Servers, (SE30, SE50, SE350, and SE450).



Powered by up to Intel® Xeon® processors

Case Study: The case for smarter energy & utilities infrastructure

Industry: Energy and Utilities

Challenges

Demand for more sustainable and cost-effective ways to extract, manage and use the world's resources means that the industry is innovating at a rapid rate. Applications for predictive analytics and maintenance, surveillance, asset tracking, emissions testing, field management, employee safety, video analytics and machine learning are running across distributed environments. The cost of a day's downtime at sites like these can cost tens of millions of US dollars.

Solutions

Sunlight and Lenovo consolidate your applications running across hundreds or thousands of remote locations to a single highly reliable and centrally remotely manageable, low-cost system. When a new site is commissioned, push out complete pre-configured hardware and software IT builds with ease, reducing time to market by 70%.

Solution Benefits

- Sunlight brings the simplicity of the cloud to the edge
- Consolidation of IT infrastructure - reduce infrastructure and management costs
 - Continuous operations - including offline, in disconnected mode
 - Support all workloads - container / VM / Legacy - all from a single infrastructure
 - Small footprint – deploys on edge appropriate server platforms

Lenovo ThinkEdge SE50



Lenovo ThinkSystem SE450



Lenovo ThinkEdge SE30



Lenovo ThinkSystem SE350



- Infrastructure that enables intelligent operation capabilities at scale
- No downtime - even in remote, off-shore locations
- Centrally remotely manage 1000s of locations - reducing skill set requirements
- Deploy complex applications with a single click from the Sunlight Marketplace

The solution leverages Lenovo's ThinkEdge & ThinkSystem Family of Servers, (SE30, SE50, SE350, and SE450).



Powered by up to Intel® Xeon® processors

SYNTIANT



About Syntiant

Industry leading AI for compute efficiency and performance.

Syntiant provides highly compute efficient AI for Retail Analytics, Security & Industrial applications. Syntiant is deployed in millions of devices worldwide and was named as a Gartner Cool Vendor, CES Innovation Awardee, a FastCompany Most Innovative Company, TinyML Best Product of the Year, High Tech Awards HTA Winner, AI Breakthrough Award, Tech Tribune Best Tech Startup, and more...

Better and Smarter Together

Transforming Retail Insights with AI Analytics

Lenovo and Syntiant have partnered to provide industry leading retail analytics to turn existing camera infrastructure into intelligent ROI via Lenovo near-edge devices.

Popular Solution Applications

Advanced Retail Intelligence: From Traffic Analysis to Employee Efficiency

- Customer Conversion Analytics
- Customer Journey & Loyalty Metrics
- Customer & Vehicle Traffic
- Dwell Time Analytics
- Employee Efficiency

Case Study: Retail Analytics

Industry:  Retail

Challenges

Many businesses do not have real time insights into the effectiveness of marketing campaigns, customer demographics, conversion rates, employee efficiency, customer experience/journey, and security.

Solutions

Syntiant and Lenovo have a cost-effective solution to turn existing camera infrastructure into ROI insight machines that provide real time insight on marketing effectiveness, merchandising conversion rates, operational efficiency, and more!

Solution Benefits

- Top-of-Funnel marketing insights to help understand the effectiveness of marketing spend
- Customer Journey & Loyalty Insights to optimize merchandising conversion
- Customer Demographic information
- Operational Insights for employee efficiency and staffing
- Security alerts for reduction in false alarms

Existing camera streams may be plugged into Lenovo ThinkEdge devices to analyze camera views using Syntiant Computer Vision.

The solution leverages Lenovo's ThinkEdge SE30 or SE350 for near edge deployments to quickly scale and run analytics on existing camera infrastructure.



Lenovo ThinkEdge SE30

Lenovo ThinkSystem SE350



Powered by up to Intel® Xeon® processors

TaskWatch

Fuel Truck

(Front Door Opened Door

Push Back Tug

About TaskWatch

Zero-code Computer Vision
Platform for the enterprise

AWS Well-architected Certification. Solutions: Attniv ML / CV Engine TaskWatch CV Analytics and work process management for response by frontline workers, robots and IoT.

Better and Smarter Together

Revolutionizing Frontline Operations
with Zero-Code CV Platform

Zero-code Computer Vision (CV) platform that eliminates fragmented tooling and specialized skills necessary for custom CV application implementation for real-time response to events by frontline workers, robots and IoT.

Popular Solution Applications

Enhancing Efficiency Across Diverse Sectors:
From Traffic to Retail Guest Experience

- Traffic management
- Aircraft turn management
- Warehouse Operations
- Order Accuracy in food preparation
- Guest experience in restaurant
- Retail store guest experience management
- Perimeter Security Manage

Case Study: Warehouse process improvement

Industry: Manufacturing Supply chain, Logistics

Challenges

In modern enterprise operations, disjointed workflows and insufficient visibility into process details pose significant barriers to effective analysis and automation. These gaps prevent the seamless integration of data-driven insights into daily operations, hindering responsiveness and the optimization of frontline activities. TaskWatch recognizes the urgent need for a cohesive structure that bridges the divide between real-time event response and operational efficiency for workers, robotics, and Internet of Things (IoT) devices.

Solutions

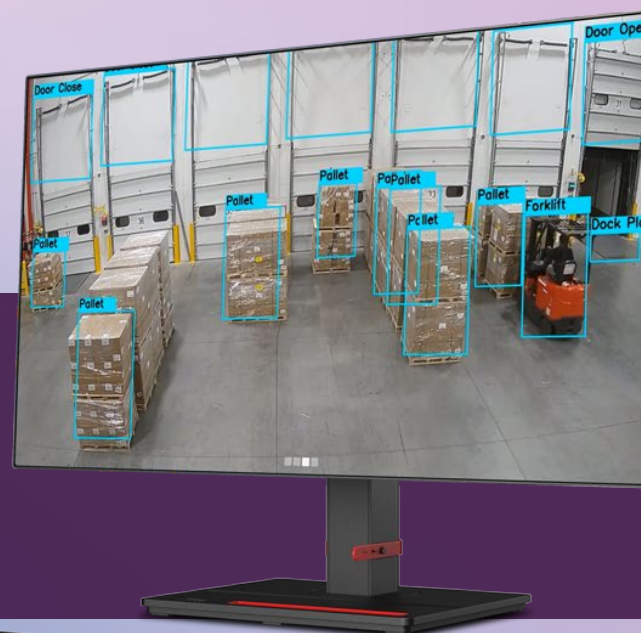
TaskWatch introduces a Computer Vision Workflow platform to unify fragmented processes and improve real-time operational visibility. This zero-code solution integrates with existing CCTV systems, enabling straightforward automation of bespoke workflows. By combining AWS Panorama with Lenovo ThinkEdge, TaskWatch provides precise analytics, streamlining supply chain operations and elevating efficiency.

Solution Benefits

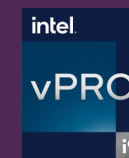
- Instant notification for forklift drivers when a truck pulls into the warehouse dock gate.
- Quick unloading/loading activities and elimination of downtime.
- Validation and documentation of safety measures such as presence of dock plate when unloading begins.
- Time progression analytics of resource utilization and work process efficiency.
- Real-time escalation to supervisors if activities are not completed within specified threshold.

Computer vision on the edge with AWS Panorama helps deliver supply-chain efficiency.

TaskWatch leverages Lenovo ThinkEdge for edge computer vision inference and analytics, resulting in improved operational efficiency.



Lenovo ThinkStation P3 Ultra



Powered by up to Intel® Core™ i9 processors on the Intel vPro® platform



About Telit

A global leader in IoT
enablement

Telit's enterprise-grade modules, connectivity, and platforms transform business through the power of IoT. With over one thousand of the world's leading IoT experts, Telit shares a relentless commitment to delivering the future of digital business for customers.

Better and Smarter Together

Collaboration for Advanced
IoT Solutions

To help manufacturers harness the Industrial Internet of Things (IIoT) to optimize operations and increase efficiency, Telit teamed up with Lenovo to build an all-in-one OT-IT Integration Appliance for a plug-and-play IIoT solution.

Popular Solution Applications

Transforming Industries
with IoT Innovation

- Building automation
- Manufacturing
- Industrial automation
- Shipping and logistics
- Energy management

Case Study: DeviceWISE Factory Monitoring and Maintenance

Industry:  Manufacturing

Challenges

Many other IoT platforms focus either on device management, connectivity management or application enablement capabilities. With the Telit IoT Platform, all of this functionality is combined into one easy-to-use system that saves time and allows customers to get their solution to market quickly. And, with deviceWISE®, legacy and modern devices work together without custom coding, regardless of the different protocols they may use.

Solutions

With Telit deviceWISE running on Lenovo IIoT gateways, manufacturers can collect data from any machine on the factory floor, enabling real-time decision-making. The deviceWISE platform provides edge intelligence for industrial asset management, secure remote access, OT to IT data exchange and processing, and other IIoT applications. The platform enables manufacturers to accelerate IIoT deployments, empowering them to connect the factory floor to the enterprise with speed and ease.

Solution Benefits

- Extensive Drive Library for a high speed, low latency direct connection to a wide variety of Industrial operational and automated equipment
- Enterprise integration with a wide range of traditional manufacturing and IT middleware as well as multiple Cloud computing systems
- Low Code/No Code logic development
- Edge logic and event stream processing

Combining robust, reliable Lenovo ThinkEdge devices with innovative software, the Telit deviceWISE platform accelerates IoT deployments, empowering manufacturers with deployments, empowering manufacturers with real-time insight into operations on the factory floor in a plug-and-play appliance model.

Lenovo ThinkEdge devices can be connected to almost any factory machinery, even older assets that do not have any embedded communication modules.



Lenovo ThinkEdge SE30

Lenovo ThinkSystem SE350



Powered by up to Intel® Xeon® processors

**VIZETTO**

About Vizetto

We Make Virtual Meetings Memorable

Most remote meetings are boring, passive and exhausting leaving audiences with minimal impact. Our software Reactiv SUITE is developed around the principles of neuroscience to increase interaction and long-term retention of information in any remote meeting. Reactiv SUITE manages not only your content, but your on-screen image and branding allowing you to stand out during a presentation. You don't have to be a tiny postage stamp that no one pays attention to, allow your audience to see you making the meeting more personable. In addition, presenters can leverage best in class whiteboarding tools that allow you to not only write, ink and mark-up in real-time but save the markup back into the document and share reducing workload in capturing meeting notes.

Better and Smarter Together

Revolutionizing Remote Meetings with Integrated Presentation Solutions

Our partnership with Lenovo allows any customer to buy Reactiv SUITE bundled with a host of Lenovo powered hardware simplifying purchasing, installation and support. We reduce support by standardizing on the hardware platforms and Lenovo's customers get access to next-gen meeting platform. Reactiv SUITE leverages everything from rack servers for video wall implementation to P360 Tiny and laptops for personal meetings.

Popular Solution Applications

Broadening Horizons: From Virtual Training to Enhanced Customer Service

- Remote sales presentations/
- Product Demos
- Education and Online Learning
- Virtual training and coaching
- Company meetings, internal & external
- Customer service and tech support

Case Study: Ineffectiveness of Remote Sales Presentations

Industry: Future of Work / Hybrid Work / Video Conferencing

Challenges

Remote meetings are exhausting! Especially, remote sales calls fail to maximize the opportunity as customers watch presentations passively, find it hard to pay attention and rarely remember the presentation after the fact. This makes it difficult to establish trust, understand customer needs, and overcome objections to create real value.

Solutions

Reactiv SUITE allows presenters to create an interactive meeting experience that is as close to a real-world in-person meeting experience. Our software allows you to manage your content, your brand and your camera image such that customers can easily look you in the eye. In addition, the inking and markup tools allow you to help your customers to focus and provide visual feedback.

Solution Benefits

- Our solution helps salespeople to build trust resulting in higher close ratio.
- A better, more interactive, meeting experience results in greater engagement and long-term retention of you and your message.
- Allows you to differentiate yourself from your competition.
- Reduce your workload as notes are saved, and shared, directly from your presentations.



Lenovo ThinkPad P1




Lenovo ThinkPad X1 Carbon

Reactiv SUITE leverages Lenovo laptops like the ThinkPad X1 Carbon and ThinkPad P1 with their integrated touchscreen and stylus capability increasing efficacy of our application.



Powered by up to Intel® Core™ i9 processors on the Intel vPro® platform

Case Study: Next Generation Remote Education Experience

Industry:  Education / Higher Education  Corporate

Challenges

Remote classes can be boring! Students cannot learn by passively watching PowerPoint slides or pre-recorded lectures. It is hard for anyone to focus and pay attention to passive content that does not engage our minds, especially when students are surrounded by distractions.

Solutions

Reactiv SUITE allows the teacher to bring students into an interactive virtual classroom that mimics the in-person experience. Teachers can write on large interactive whiteboards, diagram and markup documents in real-time and provide visual feedback to students and create an experience where the line between remote and real-world can be blurred.

Solution Benefits

- Increases the retention of information for students
- Allows students to focus and ignore distractions
- Teachers don't have to feel like they are talking to a blank wall increasing teacher satisfaction
- Creates an interactive teaching environment where discussions can happen, and visual feedback can be given increasing student engagement

Large interactive video walls can be powered by Lenovo workstations like the ThinkStation P3 Ultra and P3 Tiny.



Lenovo ThinkStation P3 Tiny



Lenovo ThinkStation P3 Ultra



Powered by up to Intel® Core™ i9 processors on the Intel vPro® platform

VORTEX

GLOBAL

About Vortex

Leading video optimizer for analytical quality streams

Vortex Global is a North American software company, backed by defense industry experts, with major strategic partnerships across the globe. Vortex Global software integrates seamlessly into existing systems, works with existing hardware, and is adaptable to the needs of many industries and projects. Vortex Global solutions are designed, developed and deployed to optimize the protection of people, high-value assets and critical infrastructure while significantly reducing bandwidth consumption and both acquisition and operating costs.

Better and Smarter Together

OmniCompressor: Streamlining Video Feeds Across Diverse Networks

OmniCompressor is a powerful stream optimizer designed to adapt to any network environment, including 3G and 4G networks. Featuring plug and play functionality, the OmniCompressor is simple and fast to deploy on the field. This powerful tool is ideal for addressing high bandwidth costs and low quality feeds for real-time video.

Popular Solution Applications

Vortex Global: Securing Critical Sectors from Smart Cities to Oil & Gas

- Smart Cities
- Government
- Healthcare
- Banking and Finance
- Oils & Gas

Case Study: Bank Branches & ATM CCTV

Industry:  Financial Services

Challenges

The bank has 14 branches with several remote sites with ATM Machines, giving a total of 100 Cameras. The main challenges the bank is facing are issues with the capacity due to the length of time the video has to be stored, in addition to bandwidth constraints with Live Streaming from Branches and ATM Machine. As per the Government Rules, the Central banks are required to archive video for a duration period of up to 1 Year. The Police Department regulations requires the bank to archive the video for up to 6 Months with 24/7 access. Each Branch consists of approximately 5 Cameras and 2 cameras from the ATM's.

Solutions

Vortex Global are proposing a solution which reduces the amount of video storage whilst increasing bandwidth and improving video quality over the remote network. OmniCompressor software with Vortex NVR compresses video feeds by up to 95%.

A gateway is installed at the ATM and branch, taking takes the stream directly from camera, compresses the feeds and then will be transmits across the network.

Using the Lenovo SE30 and SE50 gateways, integration and deployment time can be faster especially if the Vortex software is preinstalled on the gateway. The software has already been successful tested and validated on the SE30, SE50 and SR650 server

Lenovo ThinkEdge SE50



Lenovo ThinkEdge SE30



Powered by Intel® Core™ i5 processors on the Intel vPro® platform

Case Study: Telecom for video surveillance as a service



Challenges

Video surveillance is a major component of any infrastructure today and smart city initiatives have only added to requirement. Considering the ever-changing regulations, it's extremely difficult for organizations to manage the massive amount of data generated. For example, a 2MP camera @25FPS generates 837GB data in a month, Large scale surveillance deployments including those in smart cities or corporate environment are a major challenge today. Organizations prefer to have the data available for video analytics however it is beyond their means in most of the cases.

Solutions

Vortex global offers to compress the needs for bandwidth and storage to manage such massive data generated by thousands of cameras.

OmniCOMPRESSOR is a powerful stream optimizer designed to adapt to any network environment, including 3G and 4G networks. Featuring plug and play functionality, the OmniCOMPRESSOR is simple and fast to deploy on the field. This powerful tool is ideal for addressing high bandwidth costs and low-quality feeds for real-time video. OmniCOMPRESSOR addresses the obstacle of high bandwidth costs and low-quality video feeds for security and defense environments in monitoring real-time video. The video compression solution can reduce bandwidth consumption by up to 90% for live video streams.

Solution Benefits

- Up to 90% compression per stream.
- Compress video, audio, and recordings Reliable video over unstable networks.
- Lightweight, portable, compatible.
- Interfaces to all VMS.
- Centralized model, easy to deploy.
- Adaptive technology for low band width.

The solution leverages Lenovo's ThinkCentre series, ThinkEdge series, Datacenter Server series for edge / centralized video compression offering valuable savings and improved network performance.



Lenovo ThinkEdge SE30



Powered by Intel® Core™ i5 processors on the Intel vPro® platform

Program Tiers

**Bronze**

Meet in the Channel

- Verified/Certified reference architecture boxed solution brought together by channel partner or SI

Inquire**Silver**

Sell Software with Hardware

- Lenovo & Partner productizes the solution
- Lenovo sells the software
- Partner receives revenue for services
- Software validated by Lenovo review board
- Re-seller licensing agreement covers support/services
- Sold on Lenovo.com
- Worldwide Software Procurement PSSD (PC & Smart Devices)
- TSP (Trusted Supplier Program)
- SSRD Software & Security Review Board

Inquire**Gold**

Preload Software on Hardware

- Software validated by Lenovo review board. Preload licensing agreement required
- Contractual Agreements cover support/service.
- Lenovo productizes hardware + software solution
- Enables the Transactional Channel to participate seamlessly

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Partner Tiers



Bronze



Silver



Gold

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fogsphere Gravio holoone Headwaters
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