Accelerating AI innovation for Telecom
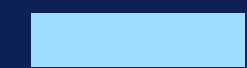
From the Telecom edge to the data center

Contents

Executive summary

For Communications Service Providers (CSPs), artificial intelligence (AI) is generating new opportunities that will shape the future success of their networks and operations. At present, modern networks face a "beyond human scale" challenge – one where humans simply can't monitor, optimize and fix network and business functions in real time, 24/7. However, AI can automate these processes to improve network performance, operational efficiency gains and customer retention. Moreover, it can enable many new revenue-generating use cases for CSPs that inspire substantial business growth.

Adopting AI early is key to maintaining competitive advantage for CSPs, giving them the foundation to create self-optimizing networks, modernize OSS & BSS systems and capitalize upon emerging technologies such as intelligent chatbots.

Discover how CSPs can accelerate their AI journey with an ecosystem of innovative technology capable of transforming ideas into measurable outcomes.

By integrating wireless connectivity, AI & Telecom computing from edge to core, CSPs & businesses can lay a robust foundation for innovation & operational optimization.[1]

Dell AI for Telecom

To unlock AI's greatest value, CSPs need the ability to act upon their data in real-time – and that advantage can be gained through an AI-ready infrastructure harnessing the edge, Telecom data center and beyond. Dell AI for Telecom provides CSPs with the tailored Dell infrastructure hardware, software, partner ecosystem solutions, services and expertise to accelerate their AI adoption and help create innovative, revenue-generating services.

Working closely with industry leaders such as Intel, Dell Technologies enables CSPs to:

Run any AI workload, anywhere

Accelerate AI business outcomes

Optimize network performance

Edge AI

As CSP demand grows for verified solutions that meet their customers' AI needs, Intel and Dell have developed a selection of optimized Edge AI applications with extensive network connectivity – all running on Dell PowerEdge XR8000 servers powered by Intel® Xeon® processors.

Dell PowerEdge XR8000:
Designed for telecom, engineered for all conditions.

- Enables CSPs to run any workload, anywhere. They run natively on CPUs with integrated inferencing capabilities, leveraging Intel® Xeon® AMX instruction sets.

- Ruggedized chassis holds up to four sleds, addressing edge, core and RAN workloads in a single chassis.

- NEBS Level 3 certification delivers continuous, undisrupted operation in extreme and space-limited environments.

Intel® Xeon® processors:
Delivering leadership performance and efficiency.

- AI acceleration in every core, and high performance for the widest range of workloads.

- Performance-cores (P-cores) with built-in AMX (Advanced Matrix Multiplication) instruction sets excel at AI inferencing and other intensive processes.

- Optimized for a wide range of workloads, Intel® Xeon® processors offer the largest ecosystem, a familiar toolset and the ability to scale from edge to cloud.

Using Edge AI, CSPs can enjoy:

Optimized & Verified Edge AI Applications:
ISV applications have been developed, verified and optimized for Intel architecture and Dell PowerEdge XR8000 platforms in small, medium and large sizes (available in various sled options) as per CSP requirements.

Better Total Cost of Ownership (TCO):
Intel and Dell ensure the XR8000 servers are optimized for Edge AI, network and other applications, resulting in lower power consumption, cost, and improved scalability.

Multiple Connectivity Options:
These Edge AI applications are optimized for wired, Wi-Fi, and Private 5G network environments, providing flexibility and reliability.

Ease of Deployment & Market Readiness:
Edge AI applications are connectivity tuned for the XR8000, enabling customers to select the optimal AI system sizes and applications to deliver the most impactful business outcomes.
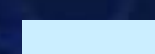
Vertical Expertise and Global Reach:
Dell and Intel's extensive ecosystem ensures solutions can be tailored for numerous industry verticals and use cases.

Telecom Network Operations Use Cases

1. Intent-Based RAN Assistant

Telecom use case

Building and maintaining efficient networks can be an inefficient process due to the knowledge gap between radio frequency domain experts and software engineers. Intent-based GenAI tool RANGPT seamlessly bridges the divide by enabling engineers to generate simple applications and scripts. The vast reduction in time it takes to write, test and deploy code has improved engineer productivity and enhanced performance across design, O&M and field operations.

The solution

A GenAI tool powered by AiRA Technologies, RANGPT enables CSP network engineers to intelligently pool data and generate simple applications and scripts based upon intent. The tool also tests, registers and deploys code, in turn accelerating application development and driving network operational efficiencies.

Partnership benefits

- **Trusted Dell infrastructure:** Access the broadest portfolio of pre-validated solutions and ruggedized hardware to support data center workloads at scale. Cybersecurity is embedded from design to deployment, ensuring you can innovate with peace of mind.

- **Intel architecture:** Designed for performance and efficiency, Intel's processors and accelerators are built to handle high-demand applications such as AI in CSP data centers.

- **Turnkey, scalable solution:** Built to integrate with existing systems and devices, enabling seamless and cost-effective deployment.

Customer benefits

- **Accelerates deployments:** Intent-based interface generates and tests applications and scripts based upon operator requests, automatically links them to relevant libraries, and reduces application deployment from months to hours.

- **Enhances productivity and user experience:** Improves productivity of network and radio frequency engineers by 15-20%, enhancing performance across design, O&M and field operations.

- **Observability and analysis:** Intelligently pools data from multiple sources, enabling network engineers to perform analytical and troubleshooting tasks.

Hardware/software stack
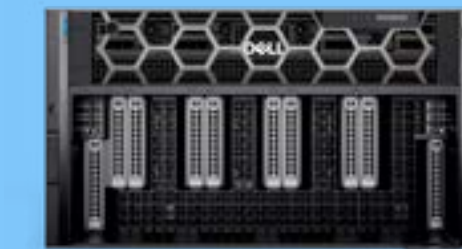
DELL POWEREDGE XE9680 SERVERS

INTEL® XEON® SCALABLE PROCESSOR

INTEL® GAUDI 3® AI ACCELERATORS

AIRA TECHNOLOGIES RANGPT

DELL PRODEPLOY, PROSUPPORT

The co-founder and CTO of a Tier 1 Operator reported a 27% reduction in energy consumption across an 11-site cluster multiband LTE network by using RANGPT – all without impacting user QoS (average throughput per user).

2. Network Traffic Analysis and Optimization

Telecom use case

CSPs need increased visibility of their data traffic, enabling analysis that creates smarter, faster, more effective and sustainable networks. Opanga RAIN™ powers a range of applications that provide operators with the ability to increase network efficiency, deliver faster speeds from existing hardware and reduce energy consumption.

The solution

RAN software is rapidly deployed into the mobile core (either edge or centralized), allowing operators to gain visibility of previously unavailable data traffic. CSPs can utilize this traffic analysis to dramatically increase their network efficiency.

Partnership benefits

- **Trusted Dell infrastructure:** Access the broadest portfolio of pre-validated solutions and ruggedized hardware to support data center workloads at scale. Cybersecurity is embedded from design to deployment, ensuring you can innovate with peace of mind.

- **Intel architecture:** Designed for performance and efficiency, Intel's processors and accelerators are built to handle high-demand applications such as AI in CSP data centers.

- **Turnkey, scalable solution:** Built to integrate with existing systems and devices, enabling seamless and cost-effective deployment.

Customer benefits

- **Network intelligence:** Provides actionable data to increase network efficiency, enhance user speeds and optimize network configuration, planning and automation.

- **Network optimization:** Delivers faster overall user speeds, with existing hardware, by reducing congested site detection of Elephant Flows and use of Radio Aware TCP-O.

- **Energy reduction:** Utilising real-time CX metrics to control spectrum energization with existing hardware.

Hardware/software stack

DELL POWEREDGE XR8000 SERVERS

DELL POWEREDGE R670 SERVERS

INTEL® XEON® SCALABLE PROCESSOR

OPANGA RAIN™ NETWORK OPTIMIZATION

DELL PRODEPLOY, PROSUPPORT

"RAN Optimization software, that can be deployed rapidly in the mobile core, is mission critical to our being able to provide the best-in-class mobile experience for our customers."

– JOCHEN BOCKFELD, DIRECTOR CORE & NETWORK SERVICES AT TELEFONICA GERMANY

3. AI-Powered Network Automation-in-a-box

Telecom use case

CSPs may have a vision of their 5G network, but translating that into a fully realized, operational service requires expertise across the entire stack. EnterpriseWeb's Netwrx.ai powers an AI-enabled no-code platform, enabling CSPs to use speech-to-text commands to intelligently automate their 5G network deployments with intent-based, zero-touch orchestration and management. This enables engineers to enhance network service, deliver day 0 operations and reduce TCO.

The solution

Netwrx.ai provides CSPs with GenAI-powered 5G network automation in a box. Its intent-based natural language interface means users can talk to Netwrx.ai to compose network elements, supported by full stack provisioning, orchestration and management. The zero-touch, no-code platform streamlines configuration and deployment, while offering the ability to host Network workloads and AI-enabled operations in the same server and CPU.

Partnership benefits

- **Trusted Dell infrastructure:** Access the broadest portfolio of pre-validated solutions and ruggedized hardware to support Telecom data center workloads at scale. Cybersecurity is embedded from design to deployment, ensuring you can innovate with peace of mind.

- **Intel architecture:** Designed for performance and efficiency, Intel's processors and accelerators are built to handle high-demand applications such as AI in CSP data centers.

- **Turnkey, scalable solution:** Built to integrate with existing systems and devices, enabling seamless and cost-effective deployment.

Customer benefits

- **Increased ROI:** Netwrx.ai puts the ROI in GenAI through a speech-to-text interface, intelligent automation and intent-based orchestration that delivers AI-powered 5G networking in just three days, compared to months.

- **Performance efficiency:** Users reported a 65% reduction in latency, an 8x improvement in RAM efficiency and 7x improvement in energy efficiency.

- **Abstraction layer and zero-touch management:** Automate service management plans, instantiate system-wide observability and AIOps enables day 2 full lifecycle management. Autonomous 5G networking dynamically optimises 5G slices, services and functions, as well as resources and energy consumption.

DELL Technologies

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EnterpriseWeb®

Hardware/software stack

DELL POWEREDGE R760 SERVERS

DELL POWEREDGE XR8000 SERVERS

intel. XEON

EnterpriseWeb®

INTEL® XEON® SCALABLE PROCESSOR

ENTEPRISEWEB NETWRX.AI PLATFORM

DELL Technologies ProDeploy

DELL Technologies ProSupport
24x7 Support
Predictive & Proactive
NBD Onsite

DELL PRODEPLOY, PROSUPPORT

Fierce Innovation Awards Winner

– **TELECOMS EDITION 2022 FOR AI/ANALYTICS/AUTOMATION**

Enterprise Edge
Use Cases

4. AIoT-Powered Site Security for Safer Venues

Telecom use case

For CSPs' enterprise customers, site management is important as they strive to maintain secure operations across multiple locations. They need the ability to view their equipment and sites from one centralized location, identify potential hazards and deliver insights that improve decision making during unfolding events.

The solution

DeepInsights™ combines an IoT software suite with Open AI to integrate AI models, automate logic and enable visualization, in turn creating safer venues. Centralized management provides complete visibility of locations from edge devices, with automation that streamlines security operations. The scalable solution enables CSPs to extend coverage to new sites as they roll out.

Partnership benefits

- **Trusted Dell infrastructure:** Access the broadest portfolio of optimized, verified Edge AI applications and ruggedized hardware to support edge workloads at scale. Cybersecurity is embedded from design to deployment, ensuring CSPs can innovate with peace of mind.

- **Intel architecture:** Designed for performance and efficiency, Intel's processors are built to handle high-demand applications such as AI, whether at the edge or core.

- **Optimized and verified solution:** Dell and Intel provide a growing catalog of pre-tested and validated Edge AI solutions for CSPs to leverage with their enterprise offerings.

- **Turnkey, scalable edge application:** Built to unify existing IoT systems and devices, providing complete visibility through a centralized application from EPIC.IO.

- **Rapid deployment:** Deploy at scale with trusted partners.

Customer benefits

- **Strengthens security at the edge:** Use cases include posture detection improvement; vehicle and licence plate recognition; heatmaps; detection of people, crowds, garbage, tents and fires.

- **Enhances decision making:** Unified surveillance and automation deliver timely, informed insights via advanced analytics to transform decision making.

- **Cost efficient:** 19% average cost savings from SIM management.

- **Scalable:** Extend coverage to new or existing sites with ease via an interoperable, device-agnostic solution.

Hardware/software stack

DELL Technologies

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EPIC iO

DELL POWEREDGE XR8000 SERVERS (EDGE APP AND CONNECTIVITY)

INTEL® XEON® SCALABLE PROCESSORS

INTEL DISTRIBUTION OF OPENVINO TOOLKIT

EPIC IO DEEPINSIGHTS (VIDEO ANALYTICS APPLICATION)

DELL PRODEPLOY, PROSUPPORT

Example Use cases:

- **Manufacturing:** Robotics automation, worker safety, inventory management, predictive maintenance, temperature/leak monitoring, product defect monitoring, access controls, pump monitoring.

- **Energy:** Site security for critical infrastructure, theft and vandalism reduction, waste disposal management, asset management, worker compliance, remote site access and security, perimeter security, leak detection.

- **Health/Life Sciences:** Asset tracking, air quality monitoring, patient safety, occupancy management, leak detection, slip/fall detection, bio-hazard container monitoring, thermal screening.

- **Retail:** Queue management, parking lot occupancy management, loss prevention, cold storage management, temperate screening.

112 TB of surveillance, access control and automation event data captured last year. 1+ billion media objects captured by customers using DeepInsights™ Site Security platform.

5. Vision AI for Smart Manufacturing

Telecom use case

CSPs' manufacturing customers are always looking for new ways to enhance quality and efficiency in their factories. Creating a smart factory that integrates new digital technologies can drive these efficiencies. Combining IoT devices with computer vision and AI, manufacturers can automate and optimize processes in real time, detect potential defects or interruptions on the production line, and much more.

The solution

Chooch Vision AI offers computer vision-based incident prediction and detection. Manufacturers can build computer vision solutions in minutes, enabling smart processes that avoid production interruptions and improve productivity. Anomalies are caught using object detection and image recognition at the edge or cloud, faster than humans can – enhancing efficiency for manufacturers.

Partnership benefits

- **Turnkey solution:** Vision AI is ready to deploy out of the box, and is adaptable to edge use cases of any sector or industry.

- **Optimized and verified solution:** Dell and Intel provide a growing catalog of pre-tested and validated Edge AI solutions for CSPs to leverage with their enterprise offerings.

- **Faster time to market:** Enables system integrators to rapidly deploy models at scale.

Customer benefits

- **Accelerates compute vision deployment:** AI Vision Studio builds computer vision solutions in minutes.

- **Pre-trained models:** ReadyNow™ AI models offer ready-to-deploy object detection and image recognition, helping manufacturers accelerate their smart factory deployments.

- **Enhances productivity:** Processes images and video data at the edge or cloud, faster and with more accuracy than humans can – helping to avoid production interruptions.

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Hardware/software stack

DELL POWEREDGE XR8000 SERVERS (EDGE APP AND CONNECTIVITY)

INTEL® XEON® SCALABLE PROCESSORS

INTEL DISTRIBUTION OF OPENVINO TOOLKIT

CHOOCH VISION AI

DELL PRODEPLOY, PROSUPPORT

Example Use cases:

- **Manufacturing:** Inventory management, usage tracking, theft detection, anomaly detection, defects in products, predictive maintenance, workforce compliance, safety compliance, loitering detection, forklift monitoring, collision escalation.

- **Energy:** Infra intruder detection, equipment protection and infra object of interest security, worker safety, PPE compliance.

- **Health/Life Sciences:** Workplace employee health and safety monitoring, PPE compliance, controlled substance disbursement monitoring.

- **Retail:** Auto-process future orders, workforce safety and compliance, loitering detection, monitoring of vape usage and lying down, inventory management of on-shelf and related spaces, automated tracking of usage, theft detection.

- **Defense:** Geospatial imagery processing for before/after change analysis, vehicle and people detection identification.

A co-founder and CEO reported their company was able to innovate by placing lightweight inference engines in self-hosted and edge environments, and then fuse traditional computer vision models with LLMs.

6. AI-Powered Mission Critical Communication

Telecom use case

In industries where operations pose a risk to human safety, IoT devices can be deployed into potentially hazardous environments to complete these tasks instead. Human to machine communication can enable users to maintain precise control of their devices, in turn improving worker safety and security.

The solution

FlexEdge™ uses an AI/ML based framework to enable human to machine communication for the voice command and control of IoT devices, including cameras, drones and robots. FlexEdge™ delivers standards-compliant edge communication software for voice and video calling over public and private networks, while supporting Mission-Critical Push-to-Talk functionality.

Partnership benefits

- **Turnkey solution:** FlexEdge™ is ready to deploy out of the box, and is adaptable to edge use cases of any sector or industry.

- **Optimized and verified solution:** Dell and Intel provide a growing catalog of pre-tested and validated Edge AI solutions for CSPs to leverage with their enterprise offerings.

- **Faster time to market:** Enables system integrators to rapidly deploy models at scale.

Customer benefits

- **Enhances mission critical communications:** AI and machine learning enables human to machine communications for resilient communications across use cases.

- **Improves worker safety:** IoT devices can be deployed into hazardous environments such as mines, reducing risk to human life.

- **Security:** Voice authentication delivers secure communications for any industry vertical.

Hardware/software stack

DELL POWEREDGE XR8000 SERVERS (EDGE APP AND CONNECTIVITY)

INTEL® XEON® SCALABLE PROCESSORS

INTEL DISTRIBUTION OF OPENVINO TOOLKIT

FLEXEDGE (ECRIO COMMUNICATION PACK)

DELL PRODEPLOY, PROSUPPORT

Example Use cases:

- **Manufacturing:** Mission-critical push-to-talk, voice-activated hands-free machine management, condition monitoring with anomaly detection, predictive maintenance.

- **Energy:** Notification/response to hazardous conditions, smart grid management, condition monitoring, pipelines/wind turbines monitoring, remote energy asset monitoring, safety & compliance enforcement.

- **Health/Life Sciences:** AI-enabled speech-to-text, text-to-speech, seamless communication between doctors/patients, patient vitals monitoring and reporting.

- **Retail:** Voice-activated controls, secure communication, queue monitoring, checkout delays monitoring and notification.

- **Defense:** Secure communication, situational awareness, voice authentication, secure video analytics, voice command recognition/enhanced decision making with real-time video monitoring for emergency response and perimeter safety.

Winner of the National Security Innovation Network's (NSIN) Catastrophic Communications Challenge, July 2024

7. Real-Time AI-Powered Crowd Analytics

Telecom use case

For CSP enterprise customers, monitoring individual and crowd behaviour at their premises is key to maintaining safe and secure operations. The ability to count, track and analyze people can drive business propositions across multiple verticals, from understanding the main direction of footfall in a smart city or stadium, to tracking queues in an amusement park or convention center.

The solution

WaitTime uses camera feeds to count, track and analyze individual and group behaviour. The end-to-end deployment combines video analytics with existing cameras to generate real-time insights. These can be used to optimize operations, while enabling communication via dashboards, digital and mobile displays.

Partnership benefits

- **Trusted Dell infrastructure:** Access the broadest portfolio of pre-validated solutions and ruggedized hardware to support edge workloads at scale. Cybersecurity is embedded from design to deployment, ensuring you can innovate with peace of mind.

- **Intel architecture:** Designed for performance and efficiency, Intel's processors are built to handle high-demand applications such as AI at the edge.

- **Optimized and verified solution:** Dell and Intel provide a growing catalog of pre-tested and validated Edge AI solutions for CSPs to leverage with their enterprise offerings.

- **Turnkey, scalable edge application:** End-to-end deployment works with existing cameras to accelerate operations.

- **Rapid deployment:** Deploy at scale with trusted partners.

Customer benefits

- **Improves safety:** Use cases include real-time large event control that monitors footfall in key areas, with the ability to remotely manage crowds via screens and devices.

- **Enhances customer experience:** Enables transformative new processes such as queue busting that reduce wait times at transport hubs.

- **Monetization:** Enterprises can offer analytics as a service that monitors hall traffic at convention centers.

- **Scalable:** Extend coverage to new or existing sites with ease as new devices are brought online.

Hardware/software stack

DELL POWEREDGE XR8000 SERVERS (EDGE APP AND CONNECTIVITY)

INTEL® XEON® SCALABLE PROCESSORS

INTEL DISTRIBUTION OF OPENVINO TOOLKIT

WAITTIME SOLUTION

DELL PRODEPLOY, PROSUPPORT

Example Use cases:

- **Sports and Entertainment:** Concessions queues, footfall in zones, ingress/egress queues.
- **Retail:** Cross intelligent property management (analytics-as-a-service), footfall in zones and at ingress/egress points.
- **Amusement Parks:** Queue management (including guest platform).
- **Smart City:** Large event management, footfall in key areas.
- **Transportation:** Footfall analytics, queue busting.
- **Convention Centers:** Hall traffic, analytics as a service to shows.

Successfully deployed in stadiums used by the Denver Broncos, Miami Heat, LA Dodgers and Detroit Pistons, and facilities including Melbourne Cricket Ground, Levis Stadium, T-Mobile Arena and The Ohio State University. Other deployments include the Mall of America, NEC UK, Kyoto Research Park and the city of Manchester.

8. AI-Powered Smart Transportation

Telecom use case

For CSP transportation customers, public and private transport needs to be monitored to ensure journeys are completed efficiently and safely. AI applications with deep learning algorithms can be leveraged to improve transportation monitoring.

The solution

A.I. Smart Total delivers AI solutions that create more efficient transport systems. It uses AI and deep learning for smart video analysis, helping to monitor vehicles, traffic, parking and pedestrian traffic.

Partnership benefits

- **Turnkey solution:** A.I. Smart Total is ready to deploy out of the box, and is adaptable to edge use cases of any sector or industry.
- **Partnerships:** Leverage Dell and Intel expertise for efficient operations
- **Faster time to market:** Enable system integrators to rapidly deploy models at scale.

Customer benefits

- **AI Rail:** Uses advanced AI and deep learning algorithms to detect obstacles on tracks, monitor rail crossings and deactivate trains when required.
- **AI-based licence plate recognition:** Uses an innovative engine based on semantic technologies, the solution can detect vehicle licence plates up to a maximum speed of 230 km/h.
- **Smart parking:** Space occupancy management tool that can detect partially visible parking spaces.
- **AI smart analytics:** A multi-platform application that can be installed on more than 20 different hardware platforms including cameras (edge), small processing systems (embedded devices), workstations and servers.

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Hardware/software stack

DELL POWEREDGE XR8000 SERVERS (EDGE APP AND CONNECTIVITY)

intel. **XEON**

INTEL® XEON® SCALABLE PROCESSORS

OpenVINO™

INTEL DISTRIBUTION OF OPENVINO TOOLKIT

A.I. SMART TOTAL SOLUTION

DELL Technologies
ProDeploy

DELL Technologies
ProSupport
24x7 Support
Predictive & Proactive
NBD Onsite

DELL PRODEPLOY, PROSUPPORT

Example Use cases:

- **Manufacturing:** Spill monitoring, worker safety, intrusion detection, PPE compliance, smoke/fire detection.

- **Energy:** Real-time smoke/fire detection, worker safety, energy efficiency monitoring.

- **Health/Life Sciences:** Sterile area monitoring, tripwire detection, smoke/fire detection, abandoned objects detection.

- **Retail:** Customer characterization, loitering control, high accuracy crowd counting for thousands, vandalism control.

- **Transportation:** Crown monitoring, surveillance, vehicle authorization, license plate recognition.

Already deployed a number of successful use cases globally, including vehicle traffic analysis in Cape Town city center, crowd counting in Puerto Rican national parks, and restricted area monitoring at Sky TV premises.

DELL Technologies

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 TensorGo

9. People Analytics: Footfall, Individual, Crowd

Telecom use case

Using video analysis for people counting & movement can help CSP enterprise customers develop analytics solutions spanning spatial utilization, operational optimization, customer engagement and strategic decision making. These solutions can be deployed for cross-vertical domains including retail, smart cities and transportation. Facial recognition can also be used for identification and access management.

The solution

TensorGo uses video analytics of existing camera feeds to monitor footfall, individuals and crowds, while offering solutions packs that incorporate other functions. Smart cities can count vehicles and detect park spaces; retail can detect burglaries, vandalism or abuse; while transportation can integrate biometric identification, safety compliance, people tracking and licence plate recognition. Enterprises can monetize their investment through the creation of different deployment and subscription models.

Partnership benefits

- **Trusted Dell infrastructure:** Access the broadest portfolio of pre-validated solutions and ruggedized hardware to support edge workloads at scale. Cybersecurity is embedded from design to deployment, ensuring you can innovate with peace of mind.

- **Intel architecture:** Designed for performance and efficiency, Intel's processors are built to handle high-demand applications such as AI at the edge.

- **Tested and validated solution:** Dell and Intel provide a growing catalog of pre-tested and validated Edge AI solutions for CSPs to leverage with their enterprise offerings.

- **Turnkey, scalable edge application:** End-to-end deployment works with existing cameras to accelerate time to online.

- **Rapid deployment:** Deploy at scale with trusted partners.

Customer benefits

- **Accelerates deployment:** Video analytics use existing cameras to streamline operations.

- **Monetization:** Enables the launch of subscription models such as pay-per-use or pricing based on data volume, hours used or inferencing.

- **Flexible integration:** Supports multiple deployment models, including bundled AI/ML & engineering services or PaaS/BaaS offerings.

- **Customization:** API services offer custom solution building to meet unique use cases.

Hardware/software stack

DELL POWEREDGE XR8000 SERVERS (EDGE APP AND CONNECTIVITY)

INTEL® XEON® SCALABLE PROCESSORS

OpenVINO™

TensorGo

INTEL DISTRIBUTION OF OPENVINO TOOLKIT

TENSORGO AI ANALYTICS APPLICATIONS

DELLTechnologies
ProDeploy

DELLTechnologies
ProSupport
24x7 Support
Predictive & Proactive
NBD Onsite

DELL PRODEPLOY, PROSUPPORT

Example Use cases:

*MULTIPLE SOLUTION PACKS AVAILABLE

- **Smart City:** Crowd count, people tracking, vehicle counting, footfall analysis, parking space detection.

- **Health/Life Sciences:** Heart rate, SPO2, stress level, HRV, respiration rate.

- **Retail:** Crowd dynamics, burglary, vandalism, shooting, stealing, abuse, arson detection, parking space detection.

- **Transportation:** Biometric identification, behavioural analysis, safety compliance, crowd count, footfall analysis, people tracking, license plate recognition.

10. AI-Powered Worker Safety and Hazard Detection

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Telecom use case

CSP customers across a range of verticals need to optimize their processes through real-time video analytics. AI can automate defect detection and quality inspection to enhance product quality, keep workers and sites safe through hazard detection, or monitor the movement of people at borders or in retail environments.

The solution

BrainFrame is a smart vision platform that enables any application to leverage AI for real-time video analysis. BrainFrame uses OpenVisionCapsules, an open-source deep-learning model, to define standardized input, output and configuration for AI algorithms. It allows for easy wrapping and packaging of deep-learning models so that they can be easily deployed and configured for fast integration into other software.

Partnership benefits

- **Trusted Dell infrastructure:** Access the broadest portfolio of pre-validated solutions and ruggedized hardware to support edge workloads at scale. Cybersecurity is embedded from design to deployment, ensuring you can innovate with peace of mind.

- **Intel architecture:** Designed for performance and efficiency, Intel's processors are built to handle high-demand applications such as AI at the edge.

- **Optimized and verified solution:** Dell and Intel provide a growing catalog of pre-tested and validated Edge AI solutions for CSPs to leverage with their enterprise offerings.

- **Turnkey, scalable edge application:** End-to-end deployment works with existing cameras to accelerate time to online.

- **Rapid deployment:** Deploy at scale with trusted partners.

Customer benefits

- **Enhances worker safety:** Computer vision monitors sites for hazards, and checks employees for PPE conformance.

- **Accelerates deployment:** Video analytics use existing cameras to streamline deployment, with the ability to use existing/new IP cameras to build applications.

- **Monetization:** Enables the launch of subscription models such as pay-per-use or pricing based on data volume, hours used, & inferencing.

- **Flexible integration:** Supports multiple deployment models, including bundled AI/ML & engineering services or PaaS/BaaS offerings.

- **Customization:** API services can custom-build solutions to meet unique use cases.

Hardware/software stack

DELL POWEREDGE XR8000 SERVERS (EDGE APP AND CONNECTIVITY)

intel. XEON

INTEL® XEON® SCALABLE PROCESSORS

OpenVIN○™

AθTU

INTEL DISTRIBUTION OF OPENVINO TOOLKIT

AOTU BRAINFRAME (EDGE AI APPLICATION)

DELL Technologies ProDeploy

DELL Technologies ProSupport 24x7 Support Predictive & Proactive NBD Onsite

DELL PRODEPLOY, PROSUPPORT

Example Use cases:

- **Manufacturing:** Factory Safety, worker safety, production line anomaly detection, PPE conformance.
- **Smart Buildings:** Building parking safety.
- **Retail:** Store traffic analytics, vision-based video analytics, PPE conformance.
- **Energy/Utilities:** Energy grid safety, geo-fencing, grid access controls.
- **Defense:** Border control, people movement.

—

By using BrainFrame, customers reported a **90%** reduction in safety violations and **60%** reduction in costs.

11. Intelligent Video Analytics for Retail, Transportation and Ports

Telecom use case

CSP customers across a range of verticals require the ability to integrate video analytics into their existing CCTV data, helping to identify potential hazards or suspicious events.

The solution

IVAR's state-of-the-art AI utilizes existing CCTV video data to effectively identify people, vehicles and objects, detect suspicious events and provide actionable analytics – all through a single dashboard.

Partnership benefits

- **Trusted Dell Infrastructure:** Access the broadest portfolio of pre-validated solutions and ruggedized hardware to support edge workload at scale. Cybersecurity is embedded from design to deployment, ensuring you can innovate with peace of mind.

- **Intel architecture:** Designed for performance and efficiency, Intel's processors are built to handle high-demand applications such as AI at the edge.

- **Optimized and verified solution:** Dell and Intel provide a growing catalogue of pre-tested and validated edge AI solutions for CSPs to leverage with their enterprise offerings.

- **Turnkey, scalable edge application:** End-to-end deployment works with existing CCTV video data to accelerate time to online.

- **Rapid deployment:** Deploy at scale with trusted partners.

Customer benefits

- **Enhanced safety and security:** Potential hazards can be identified and acted upon quickly, reducing risk to personnel at the deployment location.

- **Optimized for cost and performance:** Integrates with pre-existing CCTV cameras and data.

- **Improved crime prevention and investigations:** Acts as a deterrent to criminal activity, while facial and license plate recognition can assist with investigations.

- **Optimized traffic and congestion management:** Traffic behavior monitoring can help reduce journey times.

- **Faster responses at the edge:** Reduced latency enables real-time monitoring and decision making.

Hardware/software stack

DELL POWEREDGE XR8000 SERVERS (EDGE APP AND CONNECTIVITY)

INTEL® XEON® SCALABLE PROCESSORS

GORILLA IVAR™

DELL PRODEPLOY, PROSUPPORT

Example Use cases:

- **Retail:** Consumer trend monitoring, statistical customer behavior reporting, front-of-store consumer monitoring.

- **Transportation:** Red light violation tracking, traffic behavior monitoring, record and view violations, license plate recognition, real-time violation alerts, parking management, reduced parking space searches, real-time analytics from bodycams.

- **Ports:** Seafarers and pirate prevention, suspicious behavior assessment, identity verification, actionable insights from bodycams, real-time cargo monitoring.

12. AI-Powered Video Analytics Solution for Worker, Transportation and Site Safety

Telecom use case

Surveillance software is used across many verticals to maintain site security. However, CSPs' customers may need to scale the application to the requirements of their site (or sites), while including customized analytics and archiving.

The solution

Axxon One is an on-prem video management solution which combines capable AI video analytics with a versatile system architecture and highly customizable and configurable user interface. Powerful AI tools can be applied to existing infrastructure.

Partnership benefits

- **Trusted Dell Infrastructure:** Access the broadest portfolio of pre-validated solutions and ruggedized hardware to support edge workload at scale. Cybersecurity is embedded from design to deployment, ensuring you can innovate with peace of mind.

- **Intel architecture:** Designed for performance and efficiency, Intel's processors are built to handle high-demand applications such as AI at the edge.

- **Optimized and verified solution:** Dell and Intel provide a growing catalogue of pre-tested and validated edge AI solutions for CSPs to leverage with their enterprise offerings.

- **Turnkey, scalable edge application:** End-to-end deployment can apply powerful AI tools to existing infrastructure.

- **Rapid deployment:** Deploy at scale with trusted partners.

Customer benefits

- **Powerful and flexible real-time detection analytics:** AI video analytics can be customized to meet a variety of use cases while using current systems.

- **Faster results:** Archived footage can be investigated via AI to accelerate search queries.

- **Scalable and customizable:** Versatile system architecture can create everything from small and large video surveillance installations to multi-location deployments. Compatible with any Open Network Video Interface Forum (ONVIF) device.

Hardware/software stack

DELL POWEREDGE XR8000 SERVERS (EDGE APP AND CONNECTIVITY)

INTEL® XEON® SCALABLE PROCESSORS

AXXON ONE

DELL PRODEPLOY, PROSUPPORT

Example Use cases:

- **Manufacturing & Energy:** Machine and parameter security, geo-fencing, critical infrastructure security, worker safety, real-time alerts and AI driven analytics.

- **Retail:** Real-time video-based decision making, worker safety & health, asset security, PPE compliance, customer safety, queue management.

- **Transportation:** Trespass incidence reporting, line crossing hazard detection, security breaches, animal intrusions.

- **Education:** Gunshot detection, glass break-ins, siren and aggression monitoring.

13. Inventory Visibility and Management

Telecom use case

Organizations across retail, manufacturing and health/life sciences need end-to-end visibility of their supply chain to enhance availability and sales. By combining augmented analytics with generative AI, they can identify issues in real-time and take the appropriate corrective actions – leading to optimized processes that reduce costs and wastage.

The solution

C5i Discovery Inventory Visibility Solution identifies inventory issues and recommends proactive corrective actions. Its augmented analytics platform uses generative AI to drive decision intelligence through personalized, actionable insights and conversational AI.

Partnership benefits

- **Trusted Dell Infrastructure:** Access the broadest portfolio of pre-validated solutions and ruggedized hardware to support edge workload at scale. Cybersecurity is embedded from design to deployment, ensuring you can innovate with peace of mind.

- **Intel architecture:** Designed for performance and efficiency, Intel's processors are built to handle high-demand applications such as AI at the edge.

- **Optimized and verified solution:** Dell and Intel provide a growing catalogue of pre-tested and validated edge AI solutions for CSPs to leverage with their enterprise offerings.

- **Turnkey, scalable edge application:** End-to-end deployment can apply powerful AI tools to existing infrastructure.

- **Rapid deployment:** Deploy at scale with trusted partners.

Customer benefits

- **Drives decision intelligence:** Actionable insights and conversational AI can drive outcomes such as increased sales.

- **Improves inventory visibility:** Near real-time alerts can highlight issues relating to stock levels, fill rates, warehouse capacity and more.

- **Reduces waste:** Maintaining base levels of stock and SKU tracking ensures businesses don't carry unnecessary goods.

DELL Technologies

intel.

C5i
Human • AI • Impact

Hardware/software stack

DELL POWEREDGE XR8000 SERVERS (EDGE APP AND CONNECTIVITY)

intel. XEON
INTEL® XEON® SCALABLE PROCESSORS

C5I DISCOVERY

DELL PRODEPLOY, PROSUPPORT

Example Use cases:

- **Manufacturing:** Finished goods waste reduction, supply chain analytics.

- **Health/Life Sciences:** Time-to-sight reduction, behavioral analytics.

- **Retail:** Finished goods waste reduction, predictive behavior and analytics.

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Organizations deploying C5i Discovery saw a **~5%** to **25%** increase in sales by improving fill rates, alongside a **~30%** reduction in inventory carrying costs.

A Robust Foundation for Innovation and Operational Optimization

AI is quickly becoming integral to CSPs' success in the demanding telecom market, helping them to optimize their networks, maximize ROI and generate competitive advantage.
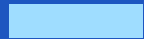
Working with Intel and other telecom partners, Dell AI for Telecom provides the technology, expertise and experience CSPs need to accelerate their AI adoption and achieve meaningful outcomes. They'll be able to:

Maximize network performance at the lowest possible cost from RAN to edge to core

Improve customer service and loyalty

Deliver greater value at the enterprise edge

Discover how CSPs can realize the full benefits of AI via a purpose-built ecosystem of Telecom and AI solutions today.

Learn More

[1]   https://community.intel.com/t5/Blogs/Tech-Innovation/Edge-5G/Intel-and-Dell-delivering-optimized-and-verified-Enterprise-AI/post/1635412