



Smart Cities

# Transforming Urban Spaces with AI and Edge Computing

Get started >

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# Tomorrow's Cities are Intelligent, Adaptive, and Connected

Urban centers today are hubs of vibrant activity, fostering growth and innovation. However, their complexity brings unique challenges, especially in ensuring public safety and security across bustling streets, public spaces, and critical infrastructure. Advances in artificial intelligence (AI), edge computing and IoT are offering cities new opportunities to address these challenges head-on to create cognitive cities that redefine urban living and enhance the daily lives of residents.

Cognitive cities aren't just about smart infrastructure; they're about enabling sustainable lifestyles, enhancing efficiency, and empowering communities. From real-time monitoring to predictive analytics, cities now have the tools to enhance safety measures, prevent hazards, enhance the resident experience and respond with greater precision. AI's potential extends across diverse areas, from public safety to traffic management and emergency response. These technologies, when integrated thoughtfully, can create thriving ecosystems.



## At the Heart of Smart Cities Lies a Data Explosion

Data isn't just everywhere — it's everything. Every streetlight, transit system and building in a smart city generates data. However, raw data isn't enough. Cities need intelligent systems powered by AI to translate this data into actionable insights. With the ability to analyze, predict, and react in real time, cognitive cities are turning urban management into a science.

# Market Dynamics in Smart Cities

The rise of connected technologies is accelerating the transformation of urban landscapes into dynamic, intelligent systems. Cognitive cities are redefining how we live, work, and interact through AI, IoT, and edge computing.

## Trends Shaping Smart Cities



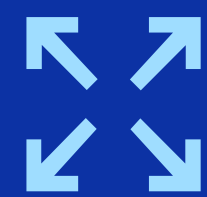
### Predictive Maintenance

Streamlined urban operations, improved resource management, and reduced operational costs.



### Demand for Sustainability

Investments in clean energy and climate-resilient infrastructure.



### Enhanced Resident Experiences

Personalized and automated public services.



### Global Collaborations

Unification of private, public, and governmental partnerships to scale solutions.



# Practical Intelligence Powered by AI

AI is revolutionizing Smart Cities to deliver measurable gains

## AI in Crowd and Traffic Management

AI-powered video analytics and computer vision are revolutionizing how cities manage public spaces. Using large-scale video deployments, AI systems detect anomalies in crowd behavior, assess traffic flows, and flag dangerous situations. For example, AI could alert authorities if someone is dangerously close to oncoming traffic or a construction zone. This capability not only ensures public safety but also helps prevent accidents in high-risk areas.

## Predictive Analytics for Early Hazard Detection

AI-powered systems are redefining how cities identify and mitigate risks before they become critical. For example, video analytics constantly monitor infrastructure and detect issues like leaks, spills, or vandalism. Cities no longer need to rely solely on human intervention to identify problems that could escalate; AI can flag them in real-time, empowering swift, informed responses.

## Transforming Urban living

AI is transforming urban living by personalizing experiences and creating smarter, more connected communities. For example, AI-powered transit apps simplify commutes by offering real-time updates and optimized routes. Smart waste management systems improve cleanliness while boosting efficiency. Meanwhile, AI-driven platforms promote neighborhood engagement by connecting residents with local events, fostering a sense of belonging. Together, these innovations enhance convenience, quality of life, and connectivity in urban spaces.



## Emergency Response and Training

AI's potential extends to emergency response by providing critical, real-time insights during active incidents. Natural language processing (NLP) can analyze emergency calls in multiple languages to assess urgency and stress levels, enabling dispatchers to prioritize effectively. Automated dispatch systems use traffic and location data to send first responders to incidents faster, cutting down on response time when every second counts.

AI is also enhancing training for first responders. Using digital twin simulations of high-risk scenarios, responders can train in realistic environments to prepare for emergencies. Augmented and virtual reality tools add an immersive layer to this training, making emergency teams better equipped for real-world challenges.

## Crime Prediction and Policing

By analyzing extensive crime data alongside real-time factors like weather or large public events, AI can provide insights into potential hotspots for criminal activity. Law enforcement agencies can use this data to focus resources effectively, promoting safer communities by addressing vulnerabilities before incidents occur.

<sup>1</sup> NVIDIA Survey Report, "State of AI in Financial Services: 2025 Trends": <https://resources.nvidia.com/en-us-2025-fsi-survey/ai-financial-services>

# Breaking Barriers: Tackling AI Adoption Challenges

The transformation of urban spaces into smart cities holds immense potential to enhance quality of life, drive economic growth, and create sustainable environments. However, achieving this vision is a complex process fraught with challenges.



## Technological Infrastructure

Many cities struggle with legacy infrastructure and outdated solutions. Modern urban environments require advanced technologies, integrated with AI, that are highly agile and scalable.



## Regulatory, Policy, and Funding Challenges

Cities operate at the intersection of technology, governance, and public services, requiring supportive policies and adequate funding to foster innovation. However, outdated regulatory frameworks and limited financial resources often slow down the adoption of new technologies, creating barriers for city planners and businesses.



## Public Acceptance and Engagement

The success of a smart city depends on its residents' willingness to adopt new technologies and adapt to changes. Resistance often stems from a lack of awareness, fears of job displacement due to automation, or skepticism about the benefits of digital transformation.



## Data Privacy and Security Concerns

The extensive data collection involved in smart city operations raises significant concerns about data privacy, security, and misuse. A lack of strong data protection measures risks exposing sensitive information to cyber threats, which could erode public trust.



# Smarter Outcomes Powered by AI



## Infrastructure Modernization

Phased modernization plans powered by edge AI prioritize critical infrastructure upgrades, reducing delays and maximizing efficiency through public-private collaboration.



## Agile Governance

Real-time decision-making powered by edge AI enable rapid response to technological advancements, fostering resilience and driving smarter decision-making.



## Citizen Engagement

Transparent communication and citizen engagement through digital tools, community forums, and workshops foster trust, build awareness, and highlight benefits like faster transit and improved safety.



## Data Security

Robust cybersecurity and transparent data governance ensure compliance with data privacy standards like GDPR, building trust through clear communication and empowering citizens with greater agency over their data.

# Overcoming Key Barriers to Transformation

AI is a catalyst for cities to accelerate innovation, drive profitability, and create a more agile industry. But before they can experience these benefits, AI adoption and scalability challenges must be overcome.

## Hybrid Solutions for Connected Cities

By integrating cloud and edge computing, smart cities can overcome outdated infrastructure and adopt modern technologies more effectively. This approach enables faster data processing and seamless communication among connected systems, improving urban services like traffic management and energy distribution.

## Empowering Urban Workforces

To address skill gaps in managing smart city technologies, partnerships with tech leaders are vital. Upskilling programs can train city workers and administrators in AI, IoT, and data analytics, empowering them to implement and sustain innovative urban solutions.

## Accessible AI Tools for Cities

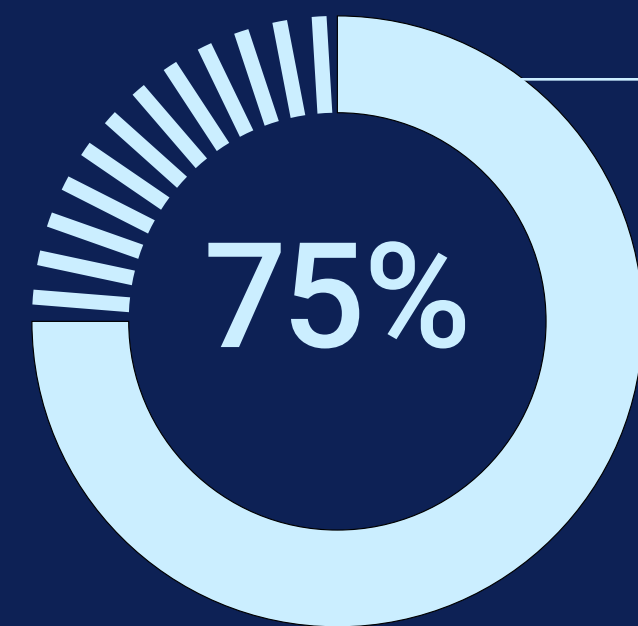
Open-source AI tools provide cost-effective and accessible solutions for cities of all sizes. These tools simplify the integration of AI into urban operations such as waste management, public safety, and citizen engagement, making smart city design more inclusive and achievable.

## Securing Smart Spaces with Zero Trust

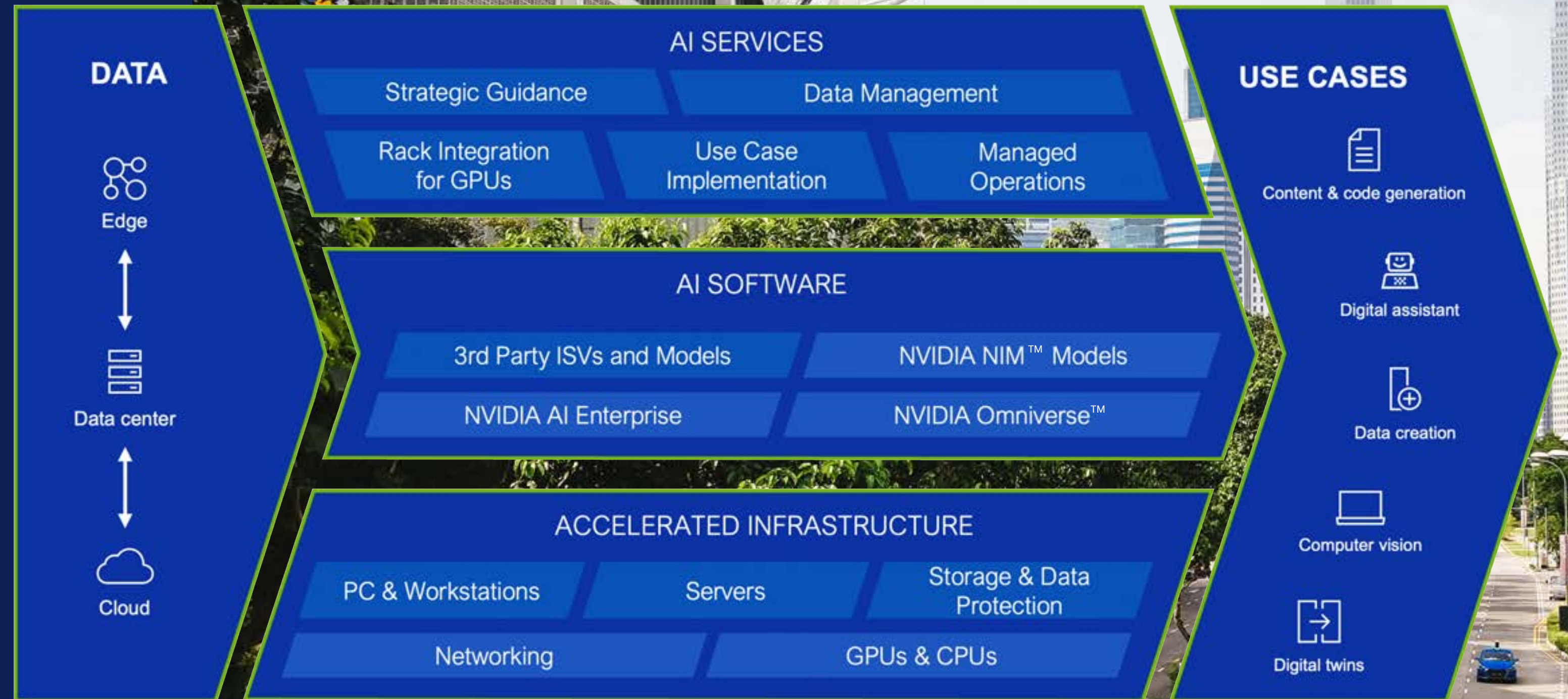
With increasing data vulnerabilities, adopting a zero-trust security model is essential for smart cities. This framework ensures that only authorized users and devices can access critical systems, safeguarding citizen data and maintaining the integrity of urban infrastructure.

# The Dell AI Factory with NVIDIA Accelerates AI Innovation

The Dell AI Factory with NVIDIA reduces the time for AI adoption by up to 86% compared to doing it yourself<sup>1</sup>. It provides the foundation for modern AI computing and is the industry's first end-to-end AI enterprise solution.<sup>2</sup> It's a framework that helps maximize the value of data, which is increasingly generated at the edge.



In fact, Gartner predicts that 75% of enterprise-managed data will be created and processed outside of the core data center or cloud.<sup>3</sup>



<sup>1</sup> <https://sponsored.bloomberg.com/quicksight/dell-nvidia/how-ai-factories-accelerate-ai-adoption-and-implementation-and-roi>

<sup>2</sup> Based on Dell analysis, July 2024.

<sup>3</sup> Gartner, "Innovation Insight for Edge AI," Arun Chandrasekaran & Eric Goodness, April 10, 2024



The foundation of the Dell AI Factory with NVIDIA is an end-to-end AI optimized infrastructure portfolio.



This is complemented by an ecosystem of AI software applications and tools designed for AI solutions, such as NVIDIA AI Enterprise, NVIDIA NIM microservices and NVIDIA Omniverse.



Dell Services also provides the insight and skills to maximize the value of your AI use cases – from strategy and planning to implementation and scaling.

## The Dell AI Factory with NVIDIA Drives Urban Progress

The Dell AI Factory with NVIDIA, is set to revolutionize urban development by delivering advanced tools that transform how cities operate and grow. Leveraging AI-driven insights, this collaboration enables smarter city planning, optimized infrastructure, and more efficient public services, such as energy management and transportation.

By streamlining operations and reducing resource waste, the Dell AI Factory with NVIDIA can be utilized to foster sustainability while enhancing quality of life for residents. With this intelligent approach, cities can evolve into more resilient and dynamic environments, epitomizing the future of innovation-driven progress.

# Accelerate AI Innovation at the Edge

Whether it's adaptive signals optimizing traffic flow, real-time alerts enhancing public safety, or smart grids improving energy efficiency, the edge is where modern urban experiences are shaped. With edge computing, this data doesn't need to be sent to a central location for processing – AI inferencing at the edge ensures it can be analyzed and acted on locally. This leads to reduced latency, faster decisions, and enhanced security.

By 2027,  
**62%**  
of data-intensive  
compute will reside in  
edge environments<sup>4</sup>

**87%**  
of the Fortune 100  
use Dell Technologies  
edge solutions<sup>5</sup>

Dell Technologies is  
the **#1** global leader  
in edge storage and  
edge servers<sup>6</sup>

<sup>4</sup>451 Research Market Monitor analysis of low-latency workloads across eight key industries in the US; Edge Workload Total Addressable Market (TAM) Analysis, 2023.

<sup>5</sup>Dell Technologies internal analysis of US Fortune 100, February 2025

<sup>6</sup>IDC Worldwide Quarterly Enterprise Infrastructure Tracker: Buyer and Cloud Deployment, Q4, March 2025. Based on revenue. Edge storage and edge servers refer to the heavy edge category, which IDC defines as the physical equipment that serves as the foundational infrastructure for edge.



Dell NativeEdge brings the power of Dell AI Factory with NVIDIA to the edge by enabling cities to securely scale their infrastructure and orchestrate AI applications across any location. Support for virtualized and containerized environments is seamless, while NativeEdge Blueprints automate the deployment of frameworks and applications for faster, more efficient AI innovations.

 **Boost Efficiency with Zero-Touch Deployment**  
Deploy applications in under a minute, saving time and reducing manual effort.

 **Scale AI Across Operations Seamlessly**  
Centralized management enables rapid adoption of new AI frameworks and applications, enhancing operational agility.

 **Simplify with Automated Processes**  
Automate edge application management to free up resources and focus on innovation.

## Benefits of Dell NativeEdge

The world's most **adaptable and open** edge operations ecosystem<sup>7</sup>

Up to **68% time savings** by automating edge application orchestration<sup>8</sup>

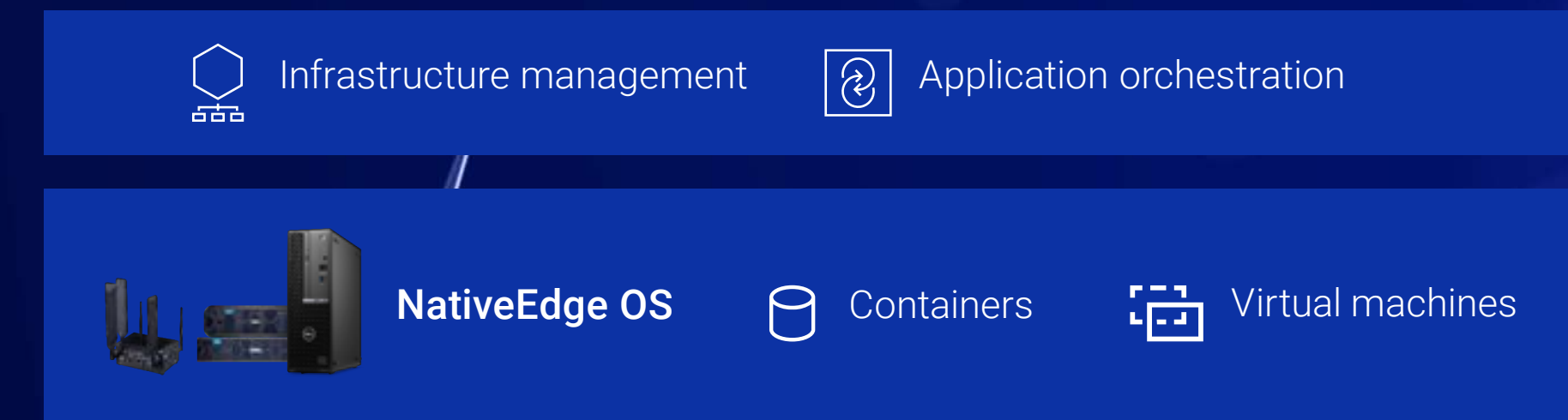
**Less than 1 minute** to deploy infrastructure and applications<sup>8</sup>

<sup>7</sup>Based on Dell Technologies internal analysis, February 2025

<sup>8</sup>Enterprise Strategy Group by TechTarget Technical Validation commissioned by Dell Technologies, "Dell NativeEdge - Edge Operations Software Platform," February 2025



# Dell NativeEdge: Accelerate AI innovation at the Edge



# Why Dell NativeEdge and NVIDIA

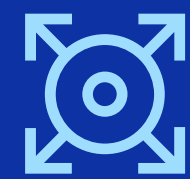
Dell NativeEdge is the first edge orchestration solution that automates the delivery of NVIDIA AI Enterprise software, bringing NVIDIA frameworks for video analytics, speech and translation, and optimized inferencing to your edge devices.

This capability is powered by NativeEdge Blueprints, which act like a recipe, detailing the ingredients and steps for automated deployment. This includes application settings, infrastructure resources, network configurations, and custom workflows.

This tight integration between Dell NativeEdge and NVIDIA delivers:



Faster, easier deployment of AI models and inferencing solutions to distributed edge locations.



Zero-touch deployment of edge AI apps across infrastructure based on zero-trust security principles to meet even the most rigorous standards.



Ease of Edge AI solution lifecycle management with scalability to support the unique requirements of any workload.



# Bringing Emergency Situations Into Focus for Palm Springs with NativeEdge

MatrixSpace's AI-enabled radar systems deliver the low airspace awareness and ground awareness needed to maintain public safety in busy regions. Yet it needed a means to efficiently deploy, manage and maintain its fleet of devices within a single pane of glass.

By using Dell NativeEdge, MatrixSpace can support projects such as the Palm Springs Police Department's (PSPD) 'drone as a first responder' program. The largest radar-enabled drone responder program in the USA, MatrixSpace and NativeEdge enable the PSPD to quickly dispatch drones to emergency responses, delivering complete situational awareness before boots arrive on the ground to enhance decision-making.

By creating a single set of deployment blueprints in NativeEdge, MatrixSpace saved a year's worth of development time and removed the cost of hiring system engineers.

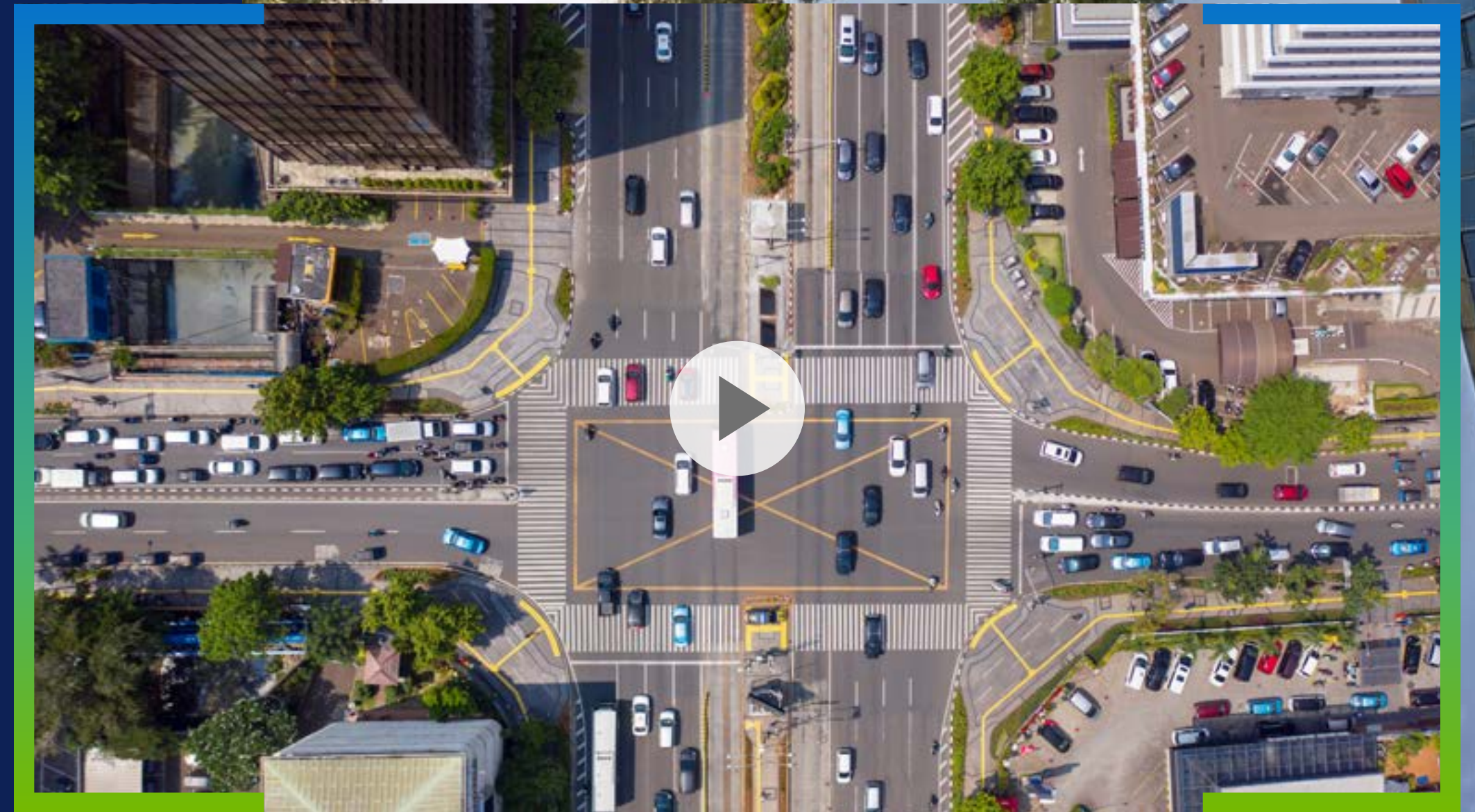


Watch the video



# Building Smarter, Safer Cities and Spaces With AI

NVIDIA Metropolis is revolutionizing urban innovation by harnessing the power of AI to build smarter, safer cities and spaces. From streamlining traffic flow to enhancing public safety and optimizing resource management, this advanced platform transforms complex data into actionable insights. By empowering communities with intelligent solutions, NVIDIA Metropolis is shaping a future where technology improves daily life for everyone. Explore how AI powers smarter, safer cities. [Learn more.](#)



Watch the video

# Infrastructure is the Foundation of the Dell AI Factory with NVIDIA

The Dell AI Factory with NVIDIA brings together Dell AI Infrastructure for powerful computing and networking, enhanced by NVIDIA acceleration, NVIDIA AI Enterprise software, and Dell Professional Services, to form a seamless, all-in-one solution for businesses ready to unlock the power of AI. Our edge-optimized platforms for AI provide a wide range of capabilities, such as:

- Ruggedized platforms
- GPU-enabled systems
- Small form-factor products
- Long life systems
- Industry certifications
- OEM-Ready solutions (de-branded, re-brand ready)
- Customization capabilities



## PowerEdge Servers

Fast-track your Edge AI goals using PowerEdge servers with superior acceleration, diverse GPU options and rugged, small footprint and industry certified platforms.



## Dell Laptops and Workstations

Allow AI processing locally on the device. Our broad portfolio of AI workstations and AI PCs provide the necessary hardware and software infrastructure to enable AI inferencing at the edge, empowering organizations to leverage the power of AI in real-time, even in resource-constrained environments.



## Edge Gateways

Compact in design, Edge Gateways enable you to collect, consolidate, and extract value from vast amounts of edge-generated data.



## Storage and Data Protection

Unlock the value of edge data and secure AI workloads against data loss and cyber-threats with modern, simple, and resilient storage and data protection solutions.



## Hyperconverged Infrastructure (HCI)

Benefit from the breadth of the Dell Technologies HCI portfolio that allows for choice based on your desired outcomes.



## Networking

Enable simplified design, management and monitoring of powerful Ethernet fabrics to handle modern workloads like Generative AI and Edge AI inferencing.



## Data Management

Empower your customers to access data across edge, core and multicloud to power analytics workloads for faster model tuning and business insights.



# Enabling Edge AI Innovation with Advanced Server Hardware

As cities navigate an increasingly digital-first world, the demand for secure, high-performance infrastructure has become a top priority. Dell PowerEdge XR servers, powered by NVIDIA accelerated computing, are engineered to meet these demands head-on, delivering powerful, scalable solutions for AI applications at the edge. With real-time data analysis capabilities, these servers ensure low latency and high performance beyond the traditional data center, even in space-constrained or challenging environments.

## Built to withstand the toughest environments:

- Extreme heat and cold
- Dust
- Shock and vibration of factory floors
- Construction sites
- Mobile command centers
- Other extreme environments



# Take the Next Step

The **Dell Accelerator Workshop** is a great first step for cities looking to begin their AI and edge journey. This half-day program focuses on the activities required to achieve your desired end state, concluding with next steps to further advance your business and IT strategies.

Your team will work with Dell experts to develop a point of view on important GenAI questions and create a vision for your future state. Utilizing our “AS-IS” / “TO-BE” methodology, we’ll conduct interviews and review your existing environment to identify challenges, opportunities and drive consensus for GenAI, synthesized in an Executive Overview.

Interested in validating the capabilities of NativeEdge in your edge environment? Contact your Dell sales representative to discuss the possibility of deploying an onsite proof-of-concept experience for Dell NativeEdge.

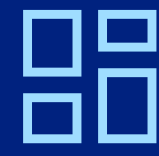
## Accelerate and simplify your AI journey with Professional Services



Develop a Generative AI strategy and roadmap tailored to your organization



Prepare your data for Generative AI integration, inferencing, and model customization



Build your Generative AI operations with training and infrastructure management expertise



Harness the power of data generated at the edge to meet the evolving and rigorous requirements of smart cities with the Dell AI Factory with NVIDIA and Dell NativeEdge.

For more information about Dell NativeEdge and AI solutions for smart cities, visit [Defining the digital future of our cities | Dell USA](#)



# Dell AI Factory

WITH NVIDIA

 **DELL**Technologies

 **nVIDIA**

[Learn more about the Dell AI Factory with NVIDIA >](#)

[Learn more about Dell NativeEdge >](#)

