



Powering cities of the  
future with

# AI Data Driven Platforms

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Smart Cities Whitepaper

Abstract

Joint Whitepaper of Dell Technologies in collaboration with Presight (UAE)



Dell Technologies Solutions

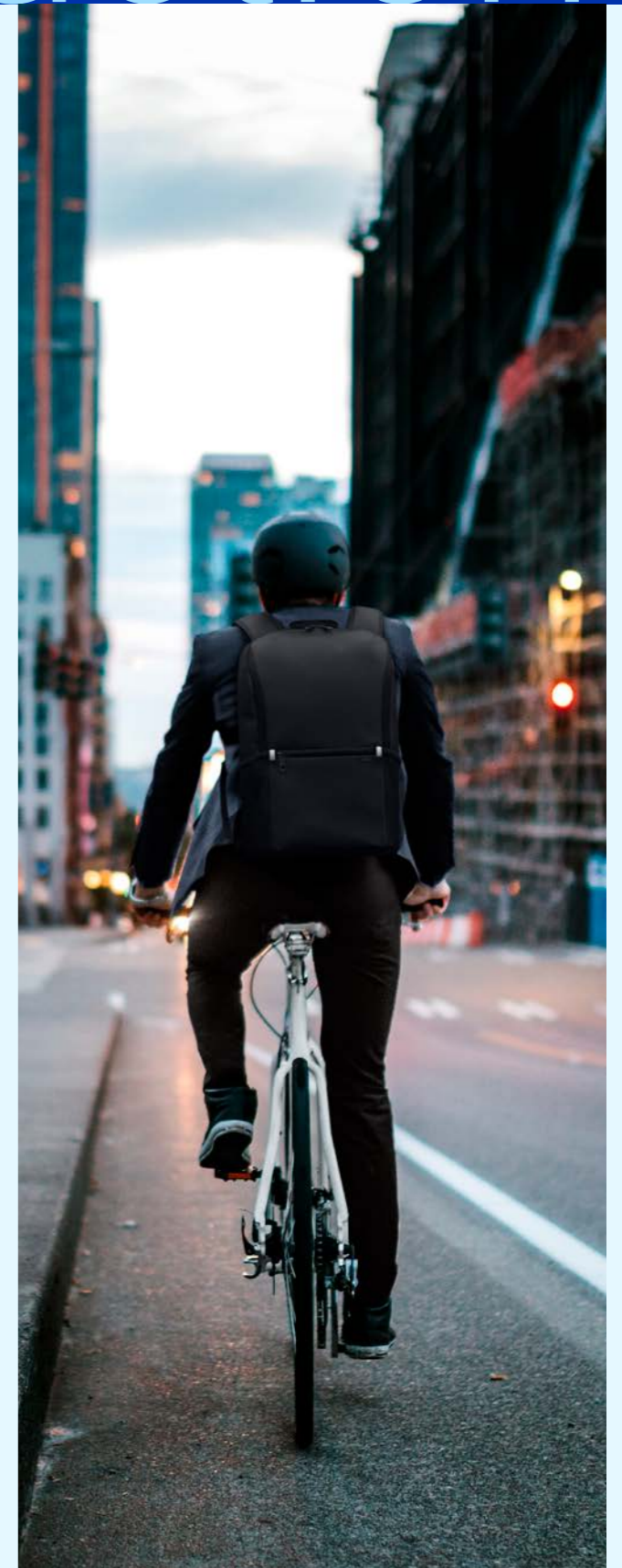
# Introduction

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In an era where urbanization is accelerating at an unprecedented pace, the concept of smart cities has emerged as a beacon of innovation and sustainability. Smart cities leverage cutting-edge technologies to enhance the quality of life for their residents, optimize resource management, and foster economic growth. This whitepaper delves into the transformative potential of smart cities, exploring how interconnected systems and AI data-driven solutions can address the complex challenges faced by modern urban environments.

The journey towards smart cities is driven by the convergence of the Internet of Things (IoT), artificial intelligence (AI), big data analytics, and advanced communication networks. These technologies enable cities to become more responsive, efficient, and resilient. From intelligent transportation systems that reduce congestion and emissions to smart grids that ensure reliable and sustainable energy distribution, the applications of smart city technologies are vast and varied.



# About Presight



Presight is a new-age company headquartered in the United Arab Emirates that tackles some of the 21st century's biggest challenges.

The company was listed on the Abu Dhabi Securities Exchange on March 27, 2023 and has a footprint in over 15 countries with a client list that is growing across the globe.

By combining the power of big data, analytics, and AI expertise, Presight catalyses information and generates previously-unidentified insight that enables every sector of every scale to solve today's challenges and convert them into opportunities to enable lifelong human advancement.

Presight's industry expertise and solutions span public sector, smart cities, financial services, energy & climate, and education. A strong focus is placed on developing solutions for smart cities culminating in the design and development of the new Presight IntelliCity Platform and AI centric solutions for cities of all sizes and use cases.



## AI enabled platform for future cities deliver on the promise of liveable cities

At Presight a strong focus is placed on developing solutions for smart cities culminating in the design and development of the new Presight IntelliCity Platform and AI centric solutions for cities of all sizes and use cases. The Presight IntelliCity Platform is one of many urban environment solutions that falls under the Presight Intelli Platform powered by modern agile, agnostic IOT and AI composable architecture software.

The optimum platform for a smart city is composed of the following technical foundations:



### Edge Sensors Devices and Platforms

These are the data sources like computer vision and sensors that collect information from the city subsystems.



### Use Case Modular Application Layer

This layer includes the applications which are used in different city services such as traffic management, public safety, smart buildings, and environmental services.



### Cloud and Edge Management

This section includes various infrastructure services (On-Premises, Public, Hybrid) that process the data collected by the sensors. The data is then fed into AI/ML systems for analysis.



### Diversified Operational Management Interfaces

A specialised diversity of interfaces and dashboards based on the exacting need of the end users, command and control nerve centres, special vertical group domain administration, digital twin value user groups and mobile device city management.

A platform approach to implementation of such a system focusses on scalability of these technologies, allowing cities to start small and expand as needed. The Presight Intelli Platform plays a key role in bringing together multiple technology foundations to seamlessly integrate into an end user application. It is composed of AI optimized compute hardware including modern GPU services from Nvidia and Intel.

# Ecosystem of hardware and software solutions

**The Presight Intelli Platform** is an advanced AI-powered, domain agnostic, operations and management platform that can be applied to different aspects of an urban environment to enhance city living and management.

The key component of this platform is GenAI-powered Presight Vitruvian which serves as the 'interconnection fabric' to connect all underlying services, ensuring seamless integration.

The platform can integrate data from a wide variety of city subsystems like environment sensors, traffic systems, ports, etc. Future city leaders, administrators, agencies and citizens will also be able to seamlessly interact with their living city through advanced chatbot, digital humans, and robotic systems with natural language.

Each of the subsystem applications leverage the underlying infrastructure core and the AI fabric to ingest and analyse the data. These applications include the following use cases:

- Command and Control Center – a single view pane to aggregate and summarize data and insights from all city systems.
- Video Management System – to enable public safety through computer vision.
- Video analytics systems – to enable automated detection and notification of incidents/events from real-time video streams.
- Urban mobility systems – to seamlessly manage and control the public transport systems.
- E-Government systems – to implement the delivery of various city services to the citizens.
- Environment services – to monitor and manage the Environment systems and increase city liveability.



The core of the Presight Intelli Platform and use cases are well served by proven advanced infrastructure of Dell employing the most advanced technologies from Intel and Nvidia.

## Dell Technologies Digital Core

Dell Technologies portfolio includes a wide variety of infrastructure solutions that can be leveraged the optimal implementation of such platform-based solutions. This includes hardware that is optimized for AI workloads, leveraging the power of dense GPUs for training complex AI models. The best-in-class Dell PowerScale storage solution offers efficient long-term storage for the large data sets and trained models.

## Dell PowerEdge Servers for computer vision

Computer vision technology is key to implement many of the critical outcomes of a smart city. Hosting such solutions on hardware that is optimized for video workloads ensures that the performance and throughput requirements are catered to.

## The Dell PowerEdge R760

Dell PowerEdge R760 is a 2U, two-socket rack server designed to optimize even the most demanding workloads like Artificial Intelligence and Computer vision. This is the preferred server for video management systems and video analytics solutions because of its high-performance processors, GPU support and next-generation storage. Multiple VMS and computer vision solutions have been pre-validated with published reference architectures.



Dell PowerEdge R760

### The Dell PowerEdge XR4000 Edge server

The Dell PowerEdge XR4000 is a 2U server with an innovative sled-based design. Dell's shortest depth server to date is purpose-built for the edge; delivering high-performance compute and ultimate deployment flexibility in two new chassis form factors. This server is designed for rugged environments and can handle temperature ranges from -5C to 55C. This makes it an ideal choice to host edge applications like IOT, edge AI inferencing and IT/OT integrations.



Dell PowerEdge XR4000

### GPU Services

Dell PowerEdge servers help Accelerate AI adoptions with Intel CPUs, GPUs and Accelerators. Intel Xeon processors have an open-standards framework to add accelerators and GPUs. For dense HPC and AI acceleration use cases, we can add Intel Data Center GPU Max Series accelerators. For dedicated AI or inference and training on large models, we can add purpose-built Intel Gaudi 3 AI accelerators for an expanded platform that's ready for anything. The Dell PowerEdge R760xa server supports the Intel Flex 140 GPUs which is suitable for inferencing and edge processing use cases.

The Dell PowerEdge AI servers also support a range of GPU options from NVIDIA. NVIDIA AI is an advanced platform with full-stack innovation across accelerated infrastructure, enterprise-grade software, and AI models.

The following matrix lists some of the supported GPUs along with the corresponding use cases that they can be leveraged for:

AI/HPC use cases – **NVIDIA H100, NVIDIA H200 and NVIDIA H100 NVL**

AI Inferencing/Performance graphics/  
Edge/VDI – **NVIDIA L40S, NVIDIA L4**

### Dell PowerEdge XE Series AI Servers

PowerEdge XE servers are acceleration-optimized, purpose-built for Artificial Intelligence (AI), Generative AI (GenAI), and High-Performance Computing (HPC). With superior acceleration and diverse GPU options, these powerful platforms are optimized to turn ideas into action faster.

The **Dell PowerEdge XE9640** is a dense form-factor 4 GPU server purpose-built for liquid cooling that can maximize the data center footprint. Its Slim 2U form factor allows highest GPU core count per rack enabling Lower TCO with optimized power utilization efficiency.



Dell PowerEdge XE9640

### Dell PowerScale Storage

The key technologies of smart cities like computer vision and generative AI (GenAI) happen to be a groundbreaking blend of artificial intelligence and unstructured data, which demand a robust storage architecture capable of navigating complexities and scaling alongside innovation. The Dell PowerScale is a trusted, market-leading storage system engineered to streamline IT environments and drive GenAI model delivery with unprecedented speed, simplicity and cost-effectiveness. At the heart of PowerScale is an AI-crafted architecture, powered by OneFS software, designed to manage unstructured data in distributed environments. Designed for seamless scalability, PowerScale accommodates evolving video and GenAI workload needs, from small clusters to multi-petabyte environments. With easy node additions and upgrades, PowerScale ensures consistent and predictable performance, even across different node types and configurations.



Dell PowerScale A3000

## Dell Edge Management

AI inferencing at the edge can drive better outcomes faster by enabling real-time insights, actions and automation. However, the task of managing edge device operations across diverse locations, devices and applications can be daunting and expensive. The answer to these challenges is Dell **NativeEdge**, an innovative edge operations software platform designed to simplify, optimize and secure the entire edge estate.

NativeEdge streamlines edge operations at scale through centralized management, secure device onboarding, zero-touch deployment and automated management of infrastructure and applications. It lays the foundation for efficient and consistent operations spanning from the edge to the multi-cloud environment. NativeEdge also helps deploy, secure and manage end-to-end AI-based solution blueprints empowering cities to harness the potential of AI at the edge and deliver value faster.

### Dell Edge Gateway 5200/3200

The new intelligent Dell Edge Gateway 5200 and 3200 help cities connect OT and IT environments and extract value from their edge-generated data without interruption to their infrastructure. The Edge gateway enables the collection, consolidation, and performance of lightweight analytics on the vast data generated from multiple edge endpoints. With a rugged and fan-less design, the edge gateway is compact and robust enough to endure 24x7 and 365 days of operations at extended temperatures without compromising on reliability or endurance. It bridges the gap between legacy systems and modern sensors, thus enabling cities to collect and process data at the edge with ease while reducing response time and saving bandwidth.

### Dell Edge Gateway 5200

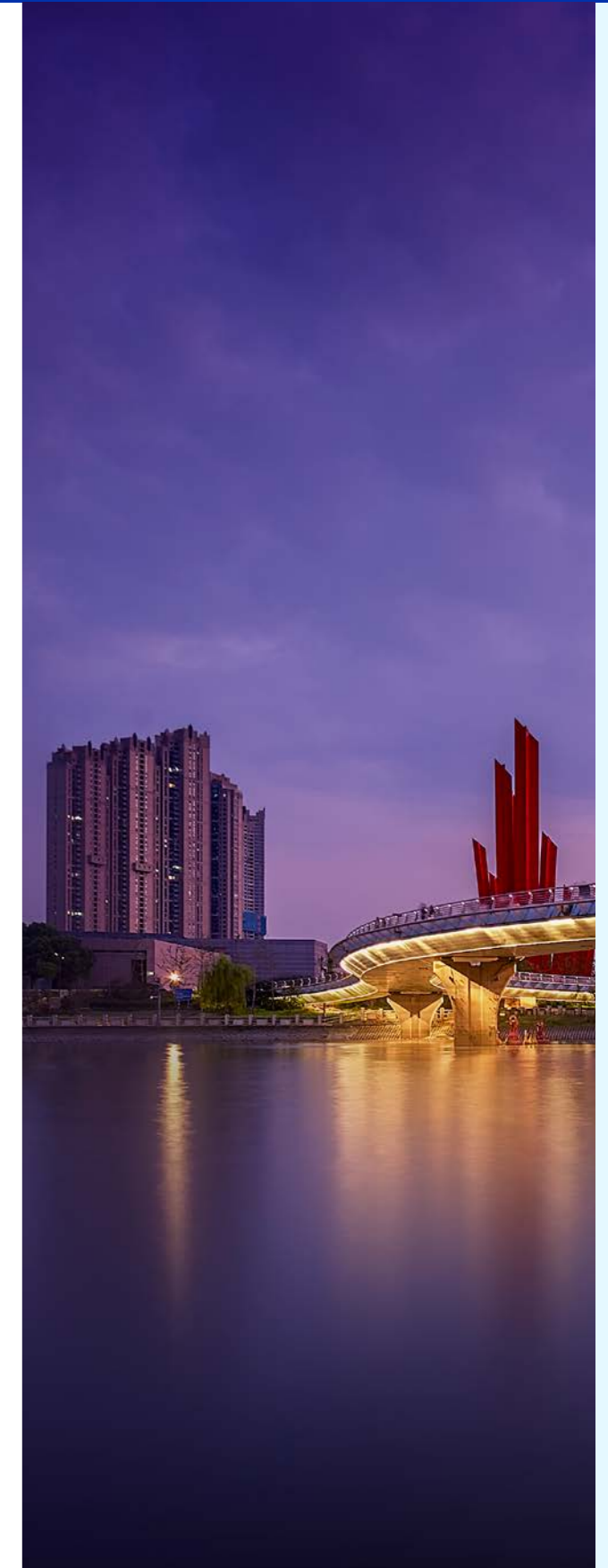


# Conclusion

Smart cities that leverage connected technologies using IoT and AI across their operations reap a host of benefits. From the extensive experience of both **Dell** and **Presight** in helping multiple cities develop technology plans, here are a few outcomes we see cities derive from implementing such platform based intelligent technologies:

- Enhanced citizen and government engagement.
- Reduced environmental footprint.
- More effective and AI data-driven decision making.
- Seamless and integrated mobility.
- More efficient public utilities.

These benefits cascade directly to citizens and businesses that operate in the city, thereby leading to an enhanced quality of living.



**DELL**Technologies