DELL Technologies

NVIDIA

Healthcare Services

Transforming Healthcare and Life Sciences with AI and Edge Computing

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Contents

Tomorrow's Healthcare is Intelligent, Adaptive, and Connected 03

At the Heart of Smart Healthcare Lies a Data Explosion 04

Market Dynamics in Healthcare Innovation 05

Practical Intelligence Powered by Edge AI 06

Breaking Barriers: Tackling Edge AI Adoption Challenges 08

Smarter Outcomes Powered by Edge AI 10

Overcoming Key Barriers to Healthcare Transformation 11

The Dell AI Factory with NVIDIA Accelerates AI Innovation 12

The Dell AI Factory with NVIDIA Drives Healthcare Progress 13

Accelerate AI Innovation at the Edge 14

Why Dell NativeEdge and NVIDIA 16

Tracking Patient Needs and Increasing Responsiveness with AI 17

Transforming Neurosurgery with AI and Edge Technology 18

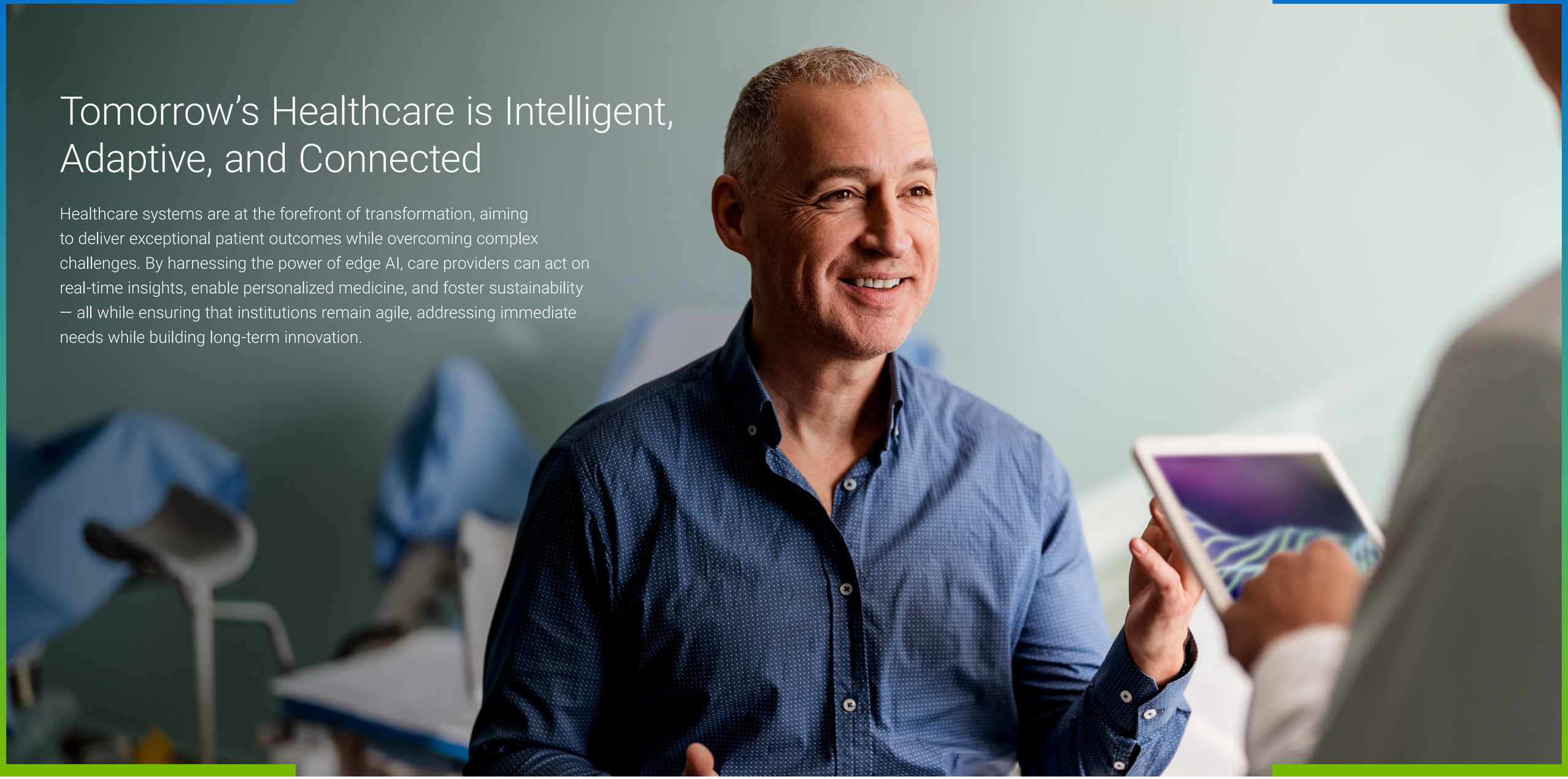
Infrastructure is the Foundation of the Dell AI Factory with NVIDIA 19

Enabling Edge AI Innovation with Advanced Server Hardware 20

Take the Next Step 21

Tomorrow’s Healthcare is Intelligent, Adaptive, and Connected

Healthcare systems are at the forefront of transformation, aiming to deliver exceptional patient outcomes while overcoming complex challenges. By harnessing the power of edge AI, care providers can act on real-time insights, enable personalized medicine, and foster sustainability — all while ensuring that institutions remain agile, addressing immediate needs while building long-term innovation.



At the Heart of Smart Healthcare Lies a Data Explosion

Data isn't just everywhere — it's everything. Every device, sensor, and medical system generates invaluable data. However, transforming this into actionable insights requires intelligent systems powered by edge AI. From enhancing diagnostic precision to adapting workflows in real time, edge AI enables healthcare organizations to reduce errors, modernize operations, and optimize patient outcomes.

Market Dynamics in Healthcare Innovation

Emerging technologies such as AI, IoT, and edge computing are sparking a revolution in healthcare by transforming how care is delivered, accessed, and managed. Edge AI bridges the gap between data and actionable insights, enhancing patient-focused outcomes.

Trends Shaping Healthcare and Life Sciences

Predictive Diagnostics

Advanced AI tools detect conditions early, preventing complications and improving outcomes across populations by delivering targeted interventions.

Precision Medicine

AI platforms enable clinicians to craft treatment plans tailored to each patient's genetic and lifestyle profile.

Global Collaborations

Edge technologies ensure equitable access to cutting-edge care. Hybrid models powered by secure infrastructures allow seamless collaboration between researchers, providers, and institutions worldwide.

AI-Driven Monitoring

Real-time monitoring proactively identifies changes in patient conditions, supporting early interventions and enhancing care continuity.

Practical Intelligence Powered by Edge AI

AI is revolutionizing Healthcare & Life Sciences to deliver measurable gains.

AI-Powered Imaging & Diagnosis Enhancement

Medical imaging enhanced by AI enables the early detection of diseases such as cancer, neurological conditions, and more with exceptional precision. By processing imaging data in real time, edge computing supports faster, well-informed clinical decisions directly at the point of care, helping improve outcomes for patients and optimizing the use of critical resources.

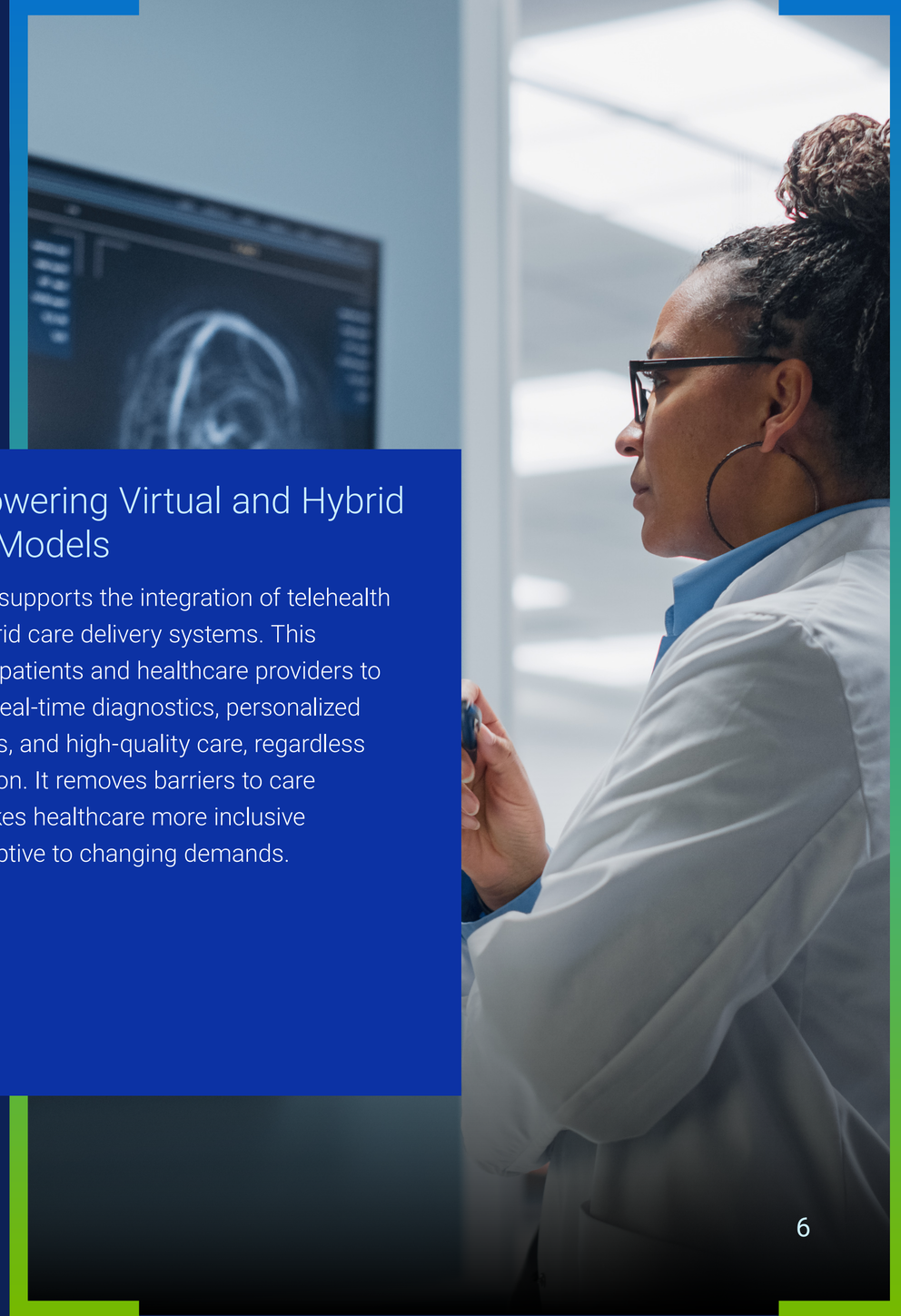
Northwestern Medicine, for example, saw up to 40% productivity improvement in reviewing radiology images - view the full story **here**

Predictive Analytics for Patient Care

AI-driven predictive analytics help healthcare organizations forecast patient needs, streamline workflows, and manage resources more effectively. For example, advanced models can allocate ICU beds efficiently or anticipate shortages in key medical supplies, ensuring patient safety and system reliability.

Empowering Virtual and Hybrid Care Models

Edge AI supports the integration of telehealth and hybrid care delivery systems. This enables patients and healthcare providers to access real-time diagnostics, personalized therapies, and high-quality care, regardless of location. It removes barriers to care and makes healthcare more inclusive and adaptive to changing demands.



Emergency Response and Training Simulations

With digital twins powered by edge AI, healthcare systems can enhance emergency preparedness. Simulated scenarios built using augmented and virtual reality technologies improve the training of first responders, ensuring they are ready to provide effective care during critical instances and emergencies.

AI for Workflow Optimization

AI and automation play a key role in streamlining hospital and clinic operations. By taking over repetitive and time-consuming administrative tasks, AI allows healthcare professionals to focus more on patient care. Additionally, AI-powered smart operating rooms maintain a high standard of precision and efficiency during surgical procedures, leading to better patient outcomes.

Breaking Barriers: Tackling Edge AI Adoption Challenges

Integrating edge AI into healthcare offers tremendous potential, but it’s not without its challenges. Overcoming these barriers is essential to realizing the full benefits of real-time decision-making, personalized treatments, and improved operational efficiency. Below are four key challenges and approaches to address them successfully:

Legacy Infrastructure

Outdated systems often lack the capacity to support edge AI, creating bottlenecks in implementation. These systems may face limitations with data processing demands, interoperability, and scalability. Gradual upgrades and hybrid integrations can align existing systems with modern technologies, enhancing scalability and performance while minimizing disruption.

Regulatory and Data Management

Strict data protection laws can be daunting, especially when handling sensitive patient information across decentralized systems. Challenges include navigating varying regional regulations and ensuring compliance without compromising efficiency. Strong data governance, compliance frameworks and encryption ensure security and foster trust with patients and stakeholders.

Workforce Upskilling

Adopting AI requires employees to be confident and skilled. Focused training on AI tools and data-powered decision-making prepares healthcare teams for the transition.

Building Public Trust

Proactive monitoring can raise privacy concerns. Transparent communications and showcasing benefits like improved patient outcomes can help ease hesitations and build confidence in AI use.

Smarter Outcomes Powered by Edge AI

Infrastructure Modernization

Phased modernization amplifies efficiency, with AI-assisted load management preventing service delays.

Targeted Patient Engagement

Personalized patient portals, supported by real-time edge AI tools, foster care partnerships.

Secure Healthcare Environments

Edge-driven security solutions ensure resilience to cyber threats while safeguarding sensitive patient data.

Agile Governance and Decision-Making

AI enables dynamic governance models that quickly adapt to changing healthcare needs.

Overcoming Key Barriers to Healthcare Transformation

AI is driving innovation in healthcare, with edge AI enabling breakthroughs in patient care, operational efficiency, and medical advancements. In fact, a recent survey found that AI has helped 81 percent of respondents increase revenue, with 45 percent realizing these benefits in less than a year after implementation.[1] However, realizing its full impact requires overcoming obstacles that limit adoption and scalability. By tackling these challenges directly, healthcare systems can transform into agile, patient-centered models capable of continuous innovation.

Modernizing Healthcare Infrastructure

Legacy systems frequently lack the capacity to support the advanced requirements of edge AI solutions. Introducing hybrid infrastructures that merge cloud capabilities with localized edge computing empowers providers to process data in real time and deliver clinical insights faster. Modernization efforts should focus on upgrading critical technologies, ensuring efficient communication between devices, laboratories, and care teams.

Upskilling the Healthcare Workforce

The adoption of AI-powered systems requires healthcare professionals to develop the necessary skills to use these technologies effectively. Comprehensive training initiatives focusing on AI, IoT, and data analytics equip teams to work confidently with modern tools. These upskilling efforts ensure the seamless implementation of advanced systems and empower care teams to deliver improved outcomes.

Developing Accessible AI Tools

Accessible and cost-efficient AI solutions are vital for enabling healthcare providers of all sizes to adopt digital transformation. Open-source platforms facilitate crucial tasks such as diagnostics, patient monitoring, and data management, helping organizations enhance efficiency and care delivery. These tools also play a pivotal role in extending advanced healthcare services to underserved communities.

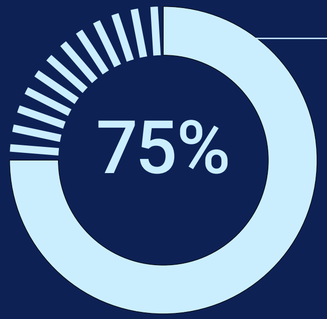
Securing Healthcare Systems with Zero Trust

The sensitive nature of healthcare data demands stringent security frameworks. A zero-trust model minimizes risks by granting system access only to authorized users and devices, enhancing protection across connected environments. Transparent data governance policies further solidify trust, ensuring that patient information remains secure while enabling efficient care delivery.

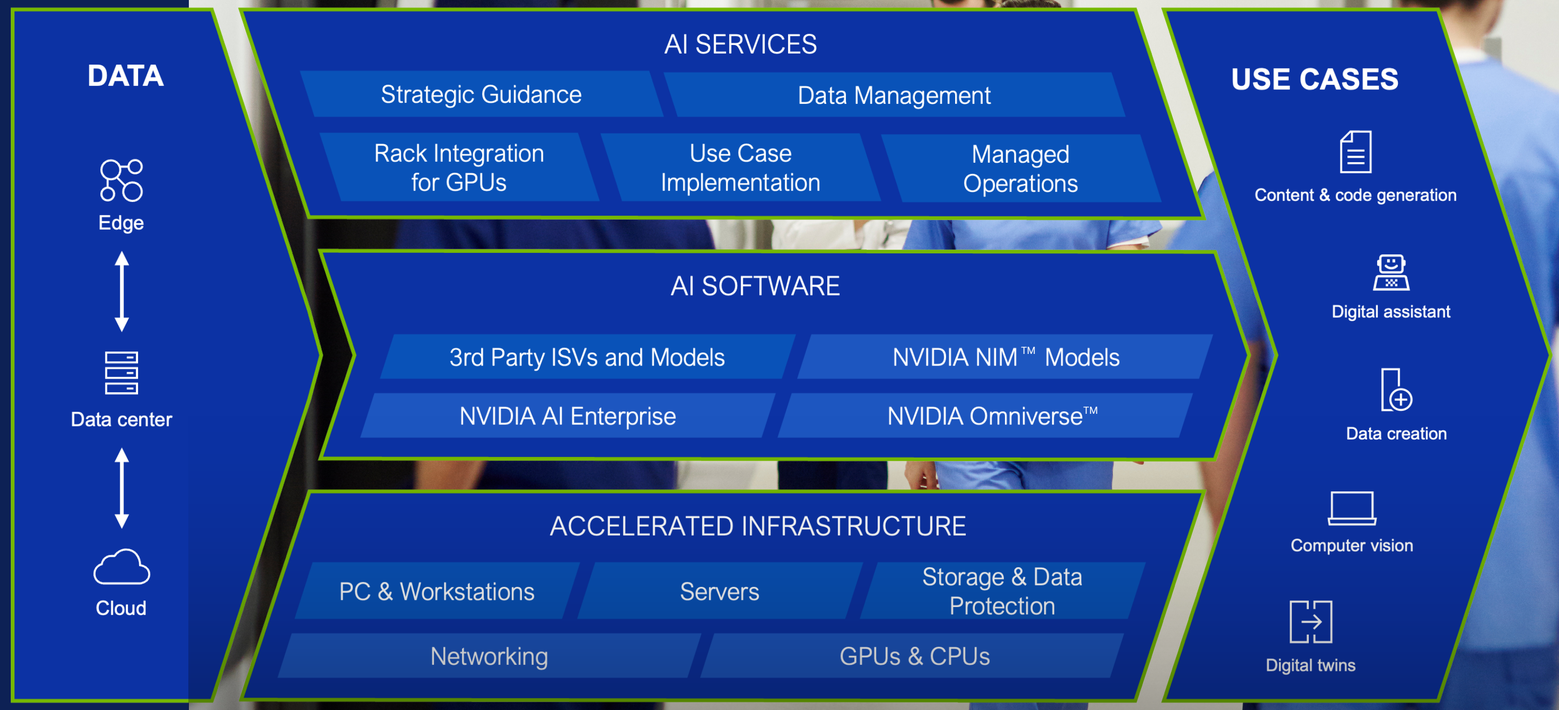
[1] https://www.nvidia.com/en-us/lp/industries/healthcare-life-sciences/ai-survey-report/

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.[2] It provides the foundation for modern AI computing and is the industry's first end-to-end AI enterprise solution.[3] 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.[4]



[2] https://sponsored.bloomberg.com/quicksight/dell-nvidia/how-ai-factories-accelerate-ai-adoption-and-implementation-and-roi

[3] Based on Dell analysis, July 2024.

[4] 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 Healthcare Progress

The Dell AI Factory with NVIDIA is revolutionizing healthcare with AI tools that optimize operations and improve patient outcomes. By delivering real-time insights, it enables smarter diagnostics, personalized treatments, and efficient workflows. This approach enhances care quality while fostering sustainability through reduced waste and greater efficiency, creating a more resilient healthcare ecosystem.

Accelerate AI Innovation at the Edge

Whether it's real-time monitoring of patient vitals, AI-enhanced diagnostics, or secure data management for critical care, the edge is where modern healthcare delivery is being redefined. With edge computing, this data doesn't need to be sent to a central location for processing—AI inferencing at the edge analyzes and acts on data locally. This ensures reduced latency, quicker clinical decisions, and improved data security, ultimately empowering care teams and enhancing patient outcomes.

By 2027,
62%
of data-intensive compute will reside in edge environments [5]

87%
of the Fortune 100 use Dell Technologies edge solutions [6]

Dell Technologies is the **#1** global leader in edge storage and edge servers [7]

[5] 451 Research Market Monitor analysis of low-latency workloads across eight key industries in the US; Edge Workload Total Addressable Market (TAM) Analysis, 2023.

[6] Dell Technologies internal analysis of US Fortune 100, February 2025

[7] 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 healthcare and life sciences 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 infrastructure and applications in under a minute, saving time and reducing manual effort.[8]

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 [9]

Up to **68% time savings** by automating edge application orchestration [8]

Less than 1 minute to deploy infrastructure and applications [8]

[8] Enterprise Strategy Group by TechTarget Technical Validation commissioned by Dell Technologies, "Dell NativeEdge - Edge Operations Software Platform," February 2025

[9] Based on Dell Technologies internal analysis, February 2025

Dell NativeEdge: Accelerate AI innovation at the Edge

Edge operations software solution

Infrastructure management
Application orchestration

NativeEdge OS
Containers
Virtual machines

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 the rigorous standards of healthcare and life sciences.

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

Tracking Patient Needs and Increasing Responsiveness with AI

Exceptional patient care relies on the responsiveness of healthcare personnel, and in today's digital world, technology is what will enable it. With a team of over 10,000 and a service area spanning 10,000 mi², Pennsylvania-based Guthrie Clinic needed a technology partner that could help to empower its staff to administer care more efficiently. By implementing Dell AI Factory with NVIDIA in its call center, the clinic has equipped its teams with time-saving tools that enable them to track patient needs in real-time, and increase patient throughput.

For example, by combining AI and computer vision, the clinic can monitor patient behavior and motion patterns to anticipate the risk of a fall. If a risk is identified, appropriate teams are automatically alerted, allowing them to intervene before an incident occurs. This has reduced the number of falls by 70%, and helped the clinic provide 24/7 virtual care to its patients both in the hospital and at home. The efficiencies provided by Dell AI Factory with NVIDIA has also increased the speed at which patients can be discharged, which has enabled the clinic to accept 85% of transfers from other hospitals and clinics.

Watch the video

Transforming Neurosurgery with AI and Edge Technology

Michael T. Lawton, MD is a leading neurosurgeon as well as the President & CEO of the Barrow Neurological Institute. In addition to caring for patients and performing surgeries, Dr. Lawton is actively defining and realizing a vision for the future of neurosurgery that has the potential to save lives. With recent advances in AI and edge technologies, that vision is coming into focus.

Dr. Lawton imagines a future where operating theatres act as edge nodes, where technology can augment a surgeon's own capabilities in real-time, and where vast data sets can be turned into practical, live-saving knowledge.

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 healthcare and life sciences navigate an increasingly digital-first world, the demand for secure, high-performance infrastructure has become a top priority. Dell PowerEdge XR servers, accelerated by NVIDIA 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 Healthcare and Life Sciences organizations 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 the healthcare and life sciences industry with the Dell AI Factory with NVIDIA and Dell NativeEdge.

For more information about Dell NativeEdge and AI solutions for healthcare and life sciences, visit **Healthcare IT Solutions & Transformation | Dell USA**

Dell **AI Factory** WITH NVIDIA

DELL Technologies | NVIDIA

Learn more about the Dell AI Factory with NVIDIA

Learn more about Dell NativeEdge