

THE FUTURE OF HEALTHCARE—AI INSIGHT ON DEMAND



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Guidance for enhancing healthcare operations

Escalating demands in healthcare are rapidly changing the way organizations treat patients, support care givers and staff, and share information. Global trends such as population growth, longer life expectancy, and the widespread need for remote health services have caused organizations to rethink their clinical and operational processes.

The pressure to meet these challenges is mounting as a rising number of patients rely on immediate and personalized care. These patients often require more doctors' visits and sophisticated treatments and medications, as well as the use of specialized equipment and personal devices that produce troves of medical data.

To succeed, healthcare organizations are looking for next-generation solutions that can empower their operations with extreme performance and end-to-end intelligence. For many organizations, [artificial intelligence](#) (AI) is the solution of choice. With AI-enabled solutions, healthcare organizations can exploit petabytes of medical data for a wide range of uses. Today, AI-enabled applications are being used to improve treatments, reduce costs, and unlock exciting new possibilities.

The best practices outlined in this document will act as guiding principles to address key industry challenges, create an AI transformation plan, select the right solutions, and support the organization throughout the step-by-step process. Following these best practices will enable healthcare organizations to gain real-time value from data to:

- Boost clinical and operational efficiency
- Safeguard sensitive health information
- Enhance the standards of care
- Boost clinician and patient experiences




GUIDING PRINCIPLE 1

UNDERSTAND WHERE YOU ARE AND WHERE YOU ARE GOING

BUSINESS CHALLENGE

Assessing the changes and requirements needed to adapt and improve healthcare operations is critical to meet today's needs and tomorrow's challenges.



Enhancing existing clinical processes requires a clear understanding of where you are today and where you need to go.

- **Understand how changes in the work environment can benefit your organization and people:**

New requirements coupled with advancements in AI are speeding the transition to smart hospitals—turning data into actionable insight to improve treatments, streamline efficiencies, and enhance safety and security. Organizations are investing in AI capabilities that will enable their workforces to quickly and easily uncover medical insight buried in vast amounts of data.


- **Evaluate how your clinical workflows can improve outcomes:** Mapping workflows will identify the unique workloads, resources, and support needed to transform with AI to improve outcomes and enhance employee and patient experiences.

- **Determine how best to transform your infrastructure technology:** HPE Pointnext Services can provide world-class expertise to help you design and implement the right approach for your AI transformation. You can work with HPE to plan and implement a successful AI strategy by discussing your healthcare goals, identifying problems, and determining the best technologies and services to create an ideal solution that meets your unique requirements.

CHECKLIST

- Conduct a comprehensive assessment of your medical workload requirements to gain a clear understanding of where you are, where you need to go, and what your options are.
- Perform a full risk assessment to model the impact of workplace disruption—known or unforeseen—on healthcare performance.
- Assess the skills and culture of your organization; ensure your technology strategy supports the culture and people profile you want going forward.

EXPECTED RESULTS


- Clearly defined goals for accelerating transformation and achieving a successful new AI-enabled workplace model
 - Productivity enablement at scale, at all times
 - Map of how data will be used and managed
 - Alignment of transformation and desired culture
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GUIDING PRINCIPLE 2

DEVELOP A PLAN TO ACCELERATE AI INSIGHT

BUSINESS CHALLENGE

Major trends—including the demand for better patient care, data gravity, and data sovereignty—have accelerated the need to transform healthcare operations. Determining how on-site and remote facilities will manage and utilize information are key factors of success.



The expansion of the healthcare industry, coupled with explosive data volumes, are driving the need for organizational and technological transformation. With greater demand comes higher costs, as well as greater consumption of IT and resources, which creates a tremendous strain on existing infrastructure and drives up total cost of ownership (TCO).

Outdated technologies lack crucial levels of compute power and flexibility, which can slow time to insight and open the door to security breaches, medical errors, and non-compliance with health and government mandates. Updating legacy technologies and how they are managed can be a significant undertaking. As another alternative, organizations should consider modernizing healthcare from the ground up to simplify and enhance operations, while also reducing costs.

- **Facility optimization:** Apply a transformational approach to your on-site facilities and remote locations. Review the use cases, workflows, and resources needed to meet and achieve critical requirements and desired outcomes such as improved patient care, enhanced security, increased productivity, and heightened experience, along with lower management and support costs.
- **As-a-service models:** This approach offers the flexibility of cloud with the control, security, and reliability found in on-premises data centers. As-a-service models allow organizations to pay for IT resources and capacity as they use them and when they need them. This approach helps reduce or even eliminate IT capital expenses and operations costs. With as a service, IT resources can be expanded quickly based on needs, and IT operations are simplified. You gain control over your costs, enhanced security, and increased visibility with flexible and consolidated analytics.

Vendors offering as-a-service solutions need extensive experience and wide-ranging capabilities to get each deployment right. They must offer robust choices of technology, expertise in solutions, strong financing, global enterprise-grade support, and advanced infrastructure management capabilities. HPE GreenLake is a market-leading IT-as-a-service offering that brings the cloud experience to your on-premises infrastructure. HPE GreenLake can also apply to edge and network infrastructure. In addition, HPE GreenLake offers AI as a service—a pay-per-use model that offers the security and control of an on-premises AI environment.

CHECKLIST

- Prioritize potential AI initiatives to accelerate organization-wide transformation efforts.
- Consider a pay-per-use consumption model that will shift capital expenses to as-a-service options and identify the benefits of the project when it is finalized.
- Use prioritization and business cases to inform funding trade-offs.

EXPECTED RESULTS

- Optimizing on-site facilities results in terms of more efficient clinical operations and management, which can free up budget for transformation efforts
- Deploying as-a-service solutions, which lowers capital expenses and IT operations costs
- Leveraging pay-as-you-grow scalability to deliver the resources you need when you need them




GUIDING PRINCIPLE 3

EMPOWER THE FULL POTENTIAL OF AI

BUSINESS CHALLENGE

Adapting to evolving industry, operational, and patient demands with extreme performance and intelligence is a complex undertaking.



The future of healthcare will be powered by insight that is digitally delivered and secured in the cloud. Today's healthcare organizations are leveraging AI to transform from the ground up by harnessing deep insight that can optimize, accelerate, and secure their operations.

Healthcare organizations that invest in AI technologies and have become data-driven are heightening caregiver and patient experiences, driving higher levels of operational efficiencies, and reducing costs, as well as mitigating safety and security risks. AI applications are creating positive outcomes in three primary areas:


- **AI for clinical outcomes:** Harnessing extreme speed and processing power in medical imaging and diagnostics has transformed how organizations derive insight from a variety of data types and sources. This approach has shown extraordinary accuracy and sensitivity in discovering imaging details and abnormalities. AI extends these capabilities for any requirement or use case, including extremely delicate tasks such as surgery analysis. AI and computer vision technologies can significantly improve the quality of surgical procedures by providing tools that help analyze and monitor the surgical workflow. This application is an important step toward the future of robotic surgery.

AI also enhances clinical productivity and outcomes outside the operating room. Contactless health services incorporate voice-activated, touch-free screens that can be used to guide patients to appointments, perform consultations, and better manage patients while reducing direct contact with staff to urgent needs only. These “smart hospitals” also utilize visual sensing for remote care and touch-free assistance, which streams insights to a central location so staff can monitor room hygiene, bed turnover, and patient safety in real time. AI applications monitor patients prone to falling or when a patient changes position. AI apps alert healthcare staff to potential risks, enabling them to intervene quickly and safely.

- **AI for operational efficiencies:** AI applications optimize workflows to achieve faster results from healthcare applications and data. Increased visibility and control of healthcare operations allows organizations to make better-informed decisions that can prevent and/or resolve issues, enable timely patient care, and deliver more effective health and wellness services. In this way, breakthrough AI technologies drive efficiencies across ER and hospital management, patient care management, resource management, claims management, services operations, compliance, and fraud detection. Smart hospitals use these AI applications to transform how they operate—operationalizing intelligence on demand to empower high levels of performance with fewer resources and at a lower cost.

- **AI for safety and security:** AI applications dramatically reduce risk by recognizing patterns and uncovering important changes or events from endless streams of data. With AI, organizations realize critical insight for applications—such as temperature screening, mask detection, social distance tracing, contact tracing, touchless entry, and video surveillance—to create a more secure healthcare environment.

For healthcare organizations, ensuring the physical safety of patients, visitors, and staff is as vital as responding to medical needs. Intelligent video analytics (IVA) enables healthcare organizations to monitor their facilities to protect patients and their sensitive information. Using IVA and smart sensors, smart hospitals can recognize objects such as medical equipment and face coverings, detect and match faces of doctors and patients, and even detect elevated body temperatures. These inputs are used to determine high-risk individuals and create actionable outcomes.



Working together, HPE, Artisight, and NVIDIA® empower the future of healthcare with insight on demand. Designed to transform the clinical experience, the HPE AI platform is a comprehensive solution designed to deliver end-to-end intelligence so hospitals can:

- Unleash medical insight
- Extend personalized care to more patients
- Improve the caregiver experience
- Drive clinical outcomes and efficiencies
- Ensure safety and security
- Deliver all services at unprecedented speed and scale

The HPE AI platform includes three core components: Artisight software, HPE systems, and NVIDIA GPUs.

ARTISIGHT SOFTWARE PLATFORM

This comprehensive solution is designed to support a wide variety of use cases and deliver impressive results.

| Application function | Example clinical results ¹ |
|-------------------------------------|---|
| OR coordination | 5% more OR procedures and 16x return on investment (ROI) |
| Surgical quality improvement | Fourfold reduction in supply variation |
| Patient monitoring | 78% fewer patient falls 20-30x ROI by cutting human room-sitters from the budget |
| Virtual consultation | 45-minute reduction in stroke evaluation |
| Capacity management | 0.4 shorter length of stay (LOS) |
| Clinical care | 93% improved patient satisfaction |
| Parking lot optimization | 90% fewer patient complaints |

This modular platform is designed for extendibility. You can start with one Artisight use case—such as patient monitoring—and then systematically add more modules after you experience the productivity, efficiency, and cost benefits first-hand. With the HPE, Artisight, and NVIDIA solution, you can solve one problem today, as well as the next 100 problems you will face over time.

¹ Results will vary within each environment and implementation.



Regardless of which modules you deploy, the HPE, Artisight, NVIDIA solution will connect all data gathered from all sources and then use AI to add meaning to the data. Able to analyze data at rest (in storage) or in motion (generated in real time), this practical, highly efficient solution can help you meet your healthcare objectives with confidence.

HPE SYSTEMS, POWERED BY NVIDIA GPUS

- **HPE ProLiant servers**—The intelligent compute foundation that delivers unmatched workload optimization, security, and automation. These servers seamlessly integrate NVIDIA GPU computing for dramatically higher application acceleration, including deep learning and AI applications.
- **HPE Synergy systems**—Composable, software-defined infrastructure for your AI environment is characterized by:
 - A single intelligent physical infrastructure that combines compute, storage, and fabric so all resources are instantly available to run any application
 - Compute modules that can be ready to boot in fewer than 30 seconds and be provisioned with pooled storage, network connectivity, and images
 - High-density, integrated storage that delivers new levels of simplicity, density, and flexibility

CHECKLIST

- Deploy infrastructure that meets the changing needs of healthcare and supports critical AI applications.
- Evaluate AI technologies based on creating a standardized approach to AI while enabling extreme levels of performance, security, cost efficiency, and intelligence for driving data-informed outcomes.
- Understand the three primary application areas of AI to determine how to optimize your healthcare operations.

EXPECTED RESULTS

- Rapidly deploying information and integrated health services while controlling IT costs and complexity
- Boosting efficiency by providing secure, fast access to applications and data when and where caregivers need it to enable well-informed decisions about patient treatments
- Leveraging data analytics to ease staff burdens, drive cost efficiency, and limit preventable medical errors
- Accelerating medical insight and knowledge transfer for achieving medical breakthroughs
- Remaining compliant with health and government mandates






GUIDING PRINCIPLE 4

DRIVE CULTURAL TRANSFORMATION

BUSINESS CHALLENGE

Choosing the right approach and support model for initiating change will help ensure a positive cultural transformation with AI.




Driving cultural transformation is more than simply supporting an organization's culture. True transformation is about leveraging AI to accelerate the culture moving forward. Organizations should identify changes that have already delivered positive results to guide further enhancements in clinical and operational processes.

Leveraging momentum and improving outcomes are immediate steps to a potentially new organizational culture. The ultimate outcome is a shift to a new AI-enabled model that optimizes data management, drives innovation, enables breakthrough performance, and sometimes reveals new ways of delivering care.

Evaluate recent changes in the culture of your organization—how people access data, gain valuable insight, and implement workloads. This evaluation process creates an excellent opportunity to listen to your employees and learn about the hurdles they face. Be bold in reimagining how work can become more efficient and data-driven with AI while you maintain secure operations.

In response to the demands of this new AI-enabled environment, we recommend that you determine how these changes will impact your staff and identify the resources they will need to reach insights faster, work more productively, and grow their skills. Reaching these objectives may require a redesign of job roles and training in new tools and technologies.

Key areas to consider:

- **Culture and people:** Ensure that your organizational culture reflects your desired clinical outcomes. Communication is key. Explain the change, why your organization is making it, and what is expected of people as they adjust to the new environment. Key leaders need to understand and promote the change, taking the message to their teams and peers. An effective communication program is a driving factor in employee motivation and positive change. People need to know where to find information on new technologies and processes, how to acquire the right skills, and how to access available resources.
 - **IT organizational transformation:** Analyze your organization to determine how it should be restructured in the new operating model. Identify the skills and competencies that will be necessary in current and new organizational roles. Ensure that new technologies, human resources (HR), operations, IT, and data science departments should work together to employ ethical AI principles and improve data governance across your organization. Success does not depend on just the technology foundation. Success depends on how you maintain culture and performance using that foundation.
 - **Knowledge and skills:** Make sure all the people involved have the right knowledge and skills at the right point in time to effectively utilize diverse healthcare applications and data. Perform a skills gap analysis to determine training requirements and build a training plan to meet your staff's needs. Enable your people to remain productive by providing new capabilities when they need them.
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To drive a new way of working, take bold new approaches with confidence. The ability to become data driven and maintain a culture of innovation is crucial, regardless of the diverse applications and workloads your employees implement. This bold vision will enable you to create a more inclusive, flexible, and modern way of working—leveraging the value of AI.

CHECKLIST

- Assess recent changes in the culture of your organization. Discover how data-driven decisions impact performance and efficiencies.
- Ensure that HR, operations, IT, and data science departments work together to build the foundation for AI-enabled healthcare operations.
- Invest in organizational development programs to shift the culture to support new ways of working and gaining medical insight.
- Identify any skills gaps to define training requirements and build a training plan.

EXPECTED RESULTS

- Buy-in from key clinical leaders in your organization who understand and embrace transformation and promote it within your organization
- Increased IT and data science team productivity using new technology, tools, and processes to support AI
- Accelerated adoption and enhanced productivity as employees can acquire and act on the skills they need when they need them







CONCLUSION

AI is modernizing healthcare operations from the ground up.

HPE, in partnership with Artisight and NVIDIA, is empowering healthcare organizations with cutting-edge technologies, tools, and services designed to enhance AI capabilities and fuel positive outcomes. With Artisight software running on NVIDIA-certified HPE systems, your organization will benefit from:

- Greater operational efficiency
- Better clinical outcomes
- Enhanced care giver experiences
- Better patient experiences

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