NVIDIA

AI Services

It’s time to get real about GenAI in your industry

Discover the Generative AI use cases that will deliver real outcomes, faster with Lenovo and NVIDIA

It's time for real... growth, advantage & leadership

Generative AI (GenAI) has captured the attention of industry leaders worldwide, prompting developers and executives alike to seek a deeper understanding of how the technology can differentiate them in their chosen markets.

The potential of GenAI lies in making faster decisions, use of deeper insight and producing competitive advantages at a pace and cost not previously achievable at scale. However, turning this potential into real-world outcomes demands a realistic understanding of where GenAI can be successfully implemented today and the kind of challenges that implementation will bring.

While surveys from PwC suggest embedding new technologies into business models is the top strategic priority for executives in the next three to five years, they also suggest that just 48% of CIOs feel prepared as tech leaders to support new business models. That discrepancy perfectly describes the situation in which businesses find themselves. They know they need GenAI, but don't quite know where to start or what their likely barriers will be.

As competitive advantage is driven by improvements across all functions, from front to back office, it's only a matter of time until every aspect of a business will need to be transformed through use of GenAI.

A race has begun, and it's those enterprises that can understand and adopt GenAI fastest and in meaningful ways that will prosper most in the short-term and set themselves up for sustained growth.

With that as our starting point, this guide aims to shine a light on the range of use cases for GenAI across a business, outline typical implementation challenges and inspire forward-thinking executives to begin their GenAI journey. At its heart, GenAI is just a way to accelerate and differentiate businesses – but doing that means coupling the right infrastructure with the right GenAI solution.

That's the purpose of the Lenovo and NVIDIA partnership – to create a best-in-breed, end-to-end offering so customers can get to real business outcomes, faster.

GenAI will generate real outcomes, but the adoption journey is littered with real barriers...

1. **Starting dilemmas:**
   Businesses often struggle with where to begin. Identifying quick wins and prioritizing use cases are crucial first steps.

2. **Readiness and business case:**
   Assessing GenAI readiness and creating a compelling business case are essential for obtaining internal support.

3. **From concept to reality:**
   Moving from experimentation to GenAI model production is a significant hurdle, requiring careful planning and execution.

4. **Ethical and secure adoption:**
   Ensuring responsible and secure GenAI implementation is not just an IT concern but a business imperative.

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value Generative AI can unlock across key business functions.[1]

80%

Feel significantly or somewhat challenged by developing solutions that get up and running quickly.[2]

85%

Feel significantly or somewhat challenged by security concerns – including 43% feeling significantly challenged.[2]

#1

priority for organizations implementing AI is ensuring an ethical and responsible approach.[2]

1. McKinsey, 2023, The Economic Potential of Generative AI
2. Lenovo, State of Enterprise AI Buying, Quantitative Survey, 2024

Getting real with GenAI across all your major business functions

Almost nine out of every ten CIOs expect GenAI to reinvent business models.[2]

Whether your organization is looking to increase efficiency, improve experiences, accelerate innovation or drive sustainability, the need to adopt GenAI boils down to one main goal: sustained and increased competitive advantage.

Almost nine out of every ten CIOs expect GenAI to reinvent business models, says PwC. Yet, that suggests that significant outcome generation from GenAI lies in the future. That's almost certainly true, but let's not rule out the major difference GenAI can make today.

However, gaining real advantage from GenAI today isn't going to be straightforward. Building transformational business systems will place significant pressure on your IT infrastructure. GenAI demands huge processing power and the integration of innovative machine learning (ML), image processing and natural language technologies into your existing tech stack.

[2] PWC, 2023, PwC Pulse Survey: Focused on reinvention

4 key challenges to overcome for GenAI success:

Training data

For models to understand, predict and generate human-like text, organizations need diverse, high-quality and high-volume data. Customizing pretrained models requires significantly less data than training from scratch.

Large-scale infrastructure

The scale of computations needed to train GenAI models from scratch is immense. It needs robust, large-scale infrastructure, which is expensive and complex to manage. The compute requirements are significantly less when customizing a pretrained model.

Training and software

Implementing GenAI into applications requires the right hardware and a software stack and tools to overcome both training and inference obstacles, everything from algorithm development to accelerating inference on distributed infrastructure.

GenAI expertise

This new type of solution demands an understanding of at least AI, ML and data science principles. To build and fine-tune generative models, organizations need to add new technical expertise to their data science, AI or application development teams. This expertise will also help you overcome any hesitation in your workforce in embracing AI every day.

The good news is that with these barriers overcome, GenAI will deliver impact and advantage. GenAI's versatility means it can be deployed across various business functions, offering both cost reduction and operational efficiencies.

GenAI use cases across some of your business functions

How GenAI can help optimize IT resources and experiences

A GenAI-driven IT solution can drive heightened productivity across your IT estate or digital workplace. Hyper-personalized employee experiences are achievable at a scale and cost not previously possible through the power of GenAI. Employees gain solutions tailored to their needs whilst computing resource utilization is optimized.

Benefit

GenAI will optimize tech allocation based on individual needs and drive new efficiencies through automation, removing operational burdens from IT teams, aiding energy management and empowering businesses with hyper-personalized employee experiences.

Challenge

Accurately modeling complex resource allocation scenarios demands significant training data. Also, insights must be actionable and not suffer context switching when being pulled from across the estate or workplace.

Bring automated accounting into finance

In finance, GenAI supports enhanced fraud detection and financial forecasting, improving accuracy and reducing risk, alongside automating previously manual tasks.

Benefit

GenAI can streamline accounting processes, reduce errors and free up accountants for more strategic tasks.

Challenge

Integrating GenAI into existing accounting systems and ensuring regulatory compliance will be complex.

Using predictive analytics in sales and product development

Acceleration is what GenAI can bring to product development and sales cycles using analytics to understand demand, expectation and customer timelines.

Benefit

GenAI tools can predict future sales trends based on historical data, enabling businesses to optimize inventory, development and marketing strategies.

Challenge

Data quality and integration of innovative new technology with existing sales and marketing systems will present hurdles.

GenAI use cases across some of your business functions

Reaching new levels of customer experience

Enhance customer interactions with GenAI, helping to personalize individual promotional engagements and making it possible to generate highly targeted marketing efforts.

Benefit

With GenAI enabling personalized interactions at scale, engagement and loyalty with customers will be enhanced.

Challenge

Balancing personalization with privacy and ensuring your GenAI model understands diverse customer behaviors and attitudes.

Optimizing logistics for a streamlined supply chain

With GenAI automating key aspects of the supply chain, businesses can benefit from better inventory forecasting, optimize product and raw material flow, warehousing and distribution and connect sales and offers directly with supply and availability.

Benefits

GenAI will optimize delivery routes and schedules, automate real-time alterations based on demand, reduce fuel costs and improve delivery times.

Challenges

Implementing GenAI in logistics requires comprehensive historical and real-time data on transportation networks and adaptability to flex around disruptions.

Getting real with GenAI for manufacturing

In 2022, just 11% of entrepreneurs thought it a critical supply chain element, yet predictions for 2025 put the figure at 38%.[3]

[3] MIT Technology Review Insights report

GenAI will revolutionize manufacturing. In fact, it's already begun. A recent survey by MIT Insights shows how quickly GenAI is being accepted. In 2022, just 11% of entrepreneurs thought it a critical supply chain element, yet predictions for 2025 put the figure at 38%.

The question today isn't 'if' manufacturers will implement GenAI, it's how they can overcome big implementation challenges as they aim for sustained competitiveness and growth.

Alliances are the route for harnessing innovation so it can properly address key industry challenges and unlock new opportunities. That's why Lenovo and NVIDIA have forged a key strategic partnership.

We understand all needs are different and, as such, the joint aim of our partnership is to help organizations whatever their stage of transformation.

Lenovo AI Services provide a single vendor solution to guide development and implementation for easily deployable, purpose-built solutions. NVIDIA AI Enterprise and our best-in-class ecosystem of AI Innovators delivers a platform and software that drives differentiation, fuels growth and helps shape the future of AI-driven solutions.

Three real world ways GenAI can transform supply chains (and what needs to be overcome to get there):

Demand forecasting

Benefit

GenAI will predict inventory needs with historical, trend and macroeconomic data to reduce overstocking or stockouts.

Challenge

Integrating GenAI with existing systems and ensuring accurate predictions across diverse product lines.

Logistics optimization

Benefit

GenAI optimizes delivery routes and schedules to help reduce fuel costs and improving delivery times.

Challenge

Implementation necessitates comprehensive transport network data and real-time adaptability to disruptions.

Supply resilience

Benefit

GenAI predicts and then mitigates disruption by using of advanced analytics to find solutions to problems that arise.

Challenge

Complex global supply chains and the dynamic nature of risk create significant implementation challenges.

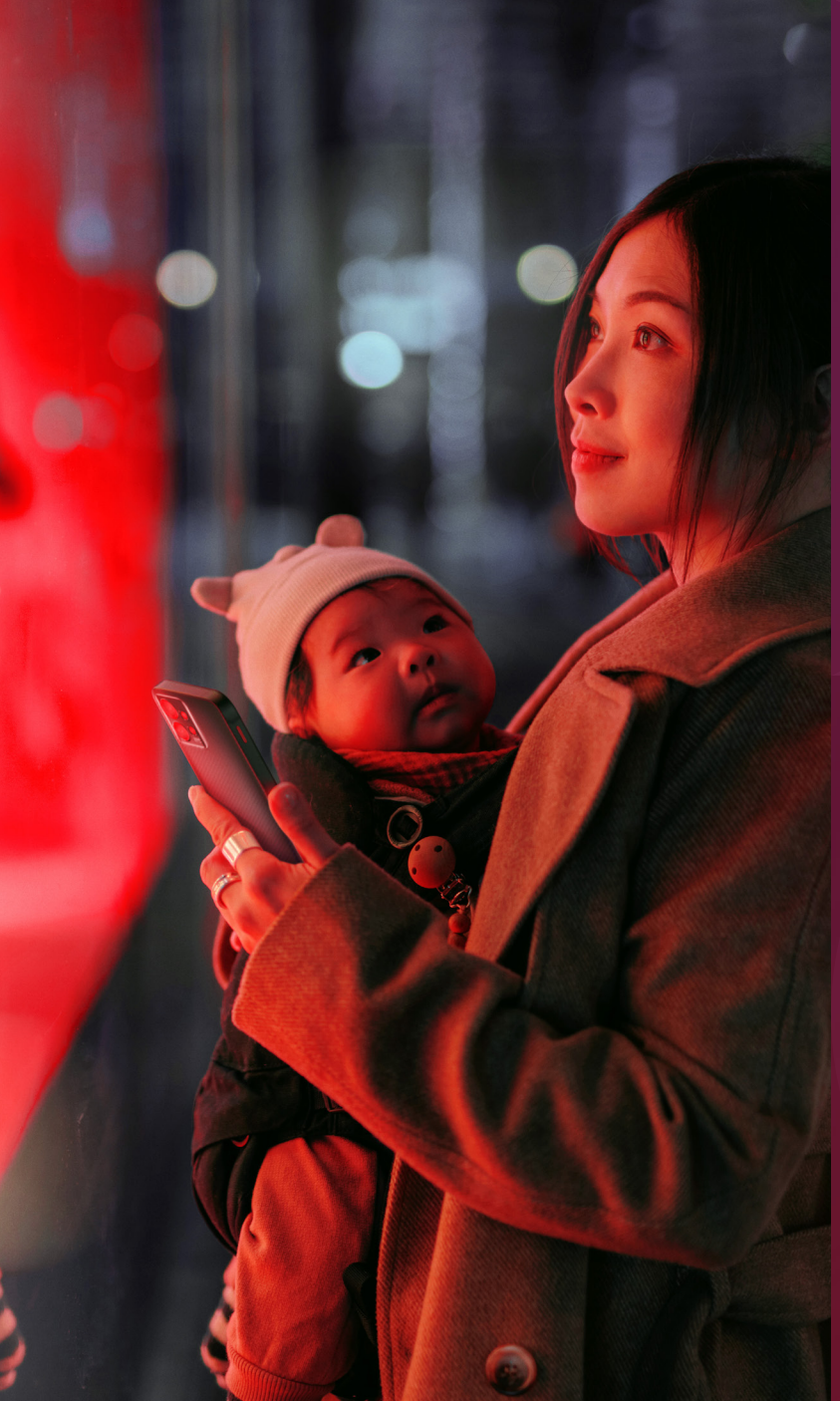
And the impact GenAI could make on smart factories...

Quality checks & predictive maintenance

GenAI will ensure product quality remains high by using computer vision to check for defects and irregularity. It will also help reduce costs by predicting where and when maintenance is required and identifying faults in real time. Training and assistance can be enhanced with interactive manuals and guides, while field technicians can use handhelds to query documentation and instantly access instructions. However, none of this is possible without reliable quality data and integrated systems.

Warehouse & inventory management

With systems correctly integrated, GenAI will improve inventory accuracy and operational efficiency with accurate forecasting and by matching production to wavering demand, dealing with returns and picking and packing in real time. Interactive chatbots for shippers and receivers, for instance, will surface documents and info on shipping, customs, tax responsibilities, general Q&A and more.



Getting real with GenAI in retail

Despite growing digital sales and improving in-store experiences with interactivity and omnichannel services, the outlook in retail lacks positivity. In fact, a Shopify/Ipsos Commerce Trends Study highlights big concerns around the impact of inflation, price rises and the sector's need to reduce costs and be more agile to cope with growing uncertainty.

The role GenAI will play in retail locations is to create new possibilities for ever deepening customer engagement, to build on existing in-store innovation to drive interest and sales.

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Creating unique, personalized in-store experiences for shoppers

By harnessing the power of GenAI, retailers can ensure store-level edge computing is a critical component of their digital evolution. Advanced cameras, custom software and easy-to-use dashboards will empower retailers to know customers as well in-store as online.

That means gaining and using real time insights in each individual store to inform product placement and pricing decisions, inventory planning and even crime prevention measures. GenAI can enhance experiences with features like design assistants, voice-enabled search, review summaries and smart recommenders that understand context.

Understand customers better

Benefit

Computer vision coupled with store analytics will turn visual info on shoppers' reactions, behavior and movements into rich data for marketers.

Challenge

Capturing the right data and turning that into usable insights to inform personalized marketing and real-time offers and insights for staff.

Enable frictionless shopping

Benefit

Automated, scan-free stores will revolutionize payments – long queues and mistakes will be replaced with walk-in, walk-out shopping experiences.

Challenge

For computer vision to change retail requires perfect data training, capture and recognition for seamless experiences.

Optimize prices dynamically

Benefit

Automatically update prices based on any number of factors – such as demand, location, stock levels, offers from rivals or even the weather.

Challenge

Establishing a robust, scalable system isn't easy – it needs real-time processing, quality data, multiple sources and integration with existing technology.

Smart inventories & quality control

Benefit

Track products by using cameras to scan for empty shelves or misplaced, out of date and damaged items to enable efficient restock and reordering.

Challenge

Infrastructure must gain real-time data and compare it to historical data to determine an appropriate course of action for maximum efficiency.

Getting real with GenAI in financial services

51% of financial service executives say achieving measurable value from new tech is a challenge.[4]

[4] PwC Pulse Survey, August 22, 2023

Technology is both the strategic priority and biggest pain point for financial services. The sector must stay relevant, competitive and present a robust defense against cybercrime, yet at the same time onboarding new solutions, innovating and making that work within an existing tech stack is a challenge that won't go away.

According to a recent PWC study, 51% of financial service executives say achieving measurable value from new tech is a challenge. When it comes to GenAI, the potential for discernible ROI is compelling, but the first challenge to be overcome lies in understanding all the many and varied ways it can be used and the implementation barriers that stand in the way.

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We understand all needs are different and, as such, the joint aim of our partnership is to help organizations whatever their stage of transformation. For example, we can help enterprises make use of domain-specific and proprietary data attuned to their applications.

Financial transformers, or "FinFormers", can learn context and understand the meaning of unstructured financial data. They can power Q&A chatbots, summarize and translate financial texts, provide early warning signs of counterparty risk, quickly retrieve data, and identify data-quality issues.

These generative AI tools rely on frameworks that can integrate proprietary data into model training and fine-tuning, integrate data curation to prevent bias, and add guardrails to keep conversations finance specific.

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Four real world ways GenAI can transform the front office (and what needs to be overcome to get there)

In-branch facial recognition

Benefit

Prevent unauthorized account access without the need for customers to authenticate with ID cards or passwords.

Challenge

A new layer of sensitive biometric data only increases the pressure for secure networks and communications.

Enhance recommendations

Benefit

ML recommendation systems can help advisors make suggestions faster, better and with more accuracy.

Challenge

Connecting multiple data sources for a ‘real time’ view and to make all necessary data available to advisors.

Elevate CX & WX with chatbots

Benefit

Save people time with instant and accurate responses. Ease stress, enhance productivity and satisfaction.

Challenge

Ensuring responses are natural, brand aligned and offer accurate advice requires a wealth of training data.

Automate claims processing

Benefit

Streamline and automate routine processes like data entry, document verification and eligibility checks.

Challenge

Integrating data from diverse sources and new technology with legacy systems to ensure interoperability.

And in the back office

Enhance risk prevention

Benefit

Identify, assess and mitigate risk with enhance pattern identification, real-time monitoring and predictive analysis.

Challenge

Real-time processing requires low latency, while new technology needs integrating and multiple data sources.

Automate compliance management

Benefit

Automating data gathering for regulatory compliance and extract insights from corporate disclosure.

Challenge

Interoperability with other legacy compliance systems is necessary for creation of new, seamless workflows.

Automated document processing

Benefit

Automate whole workflows from data extraction without error. Sort, categorize and route appropriately.

Challenge

Need to centralize, protect and clean data from disparate systems for consistency, quality and easy access.

Better fraud detection

Benefit

Gain minimized false positives, real-time detection, behavioral analysis and adaptability for evolving threats.

Challenge

Building a robust architecture that unifies storage, processes in real-time, scales and uses ML to streamline.

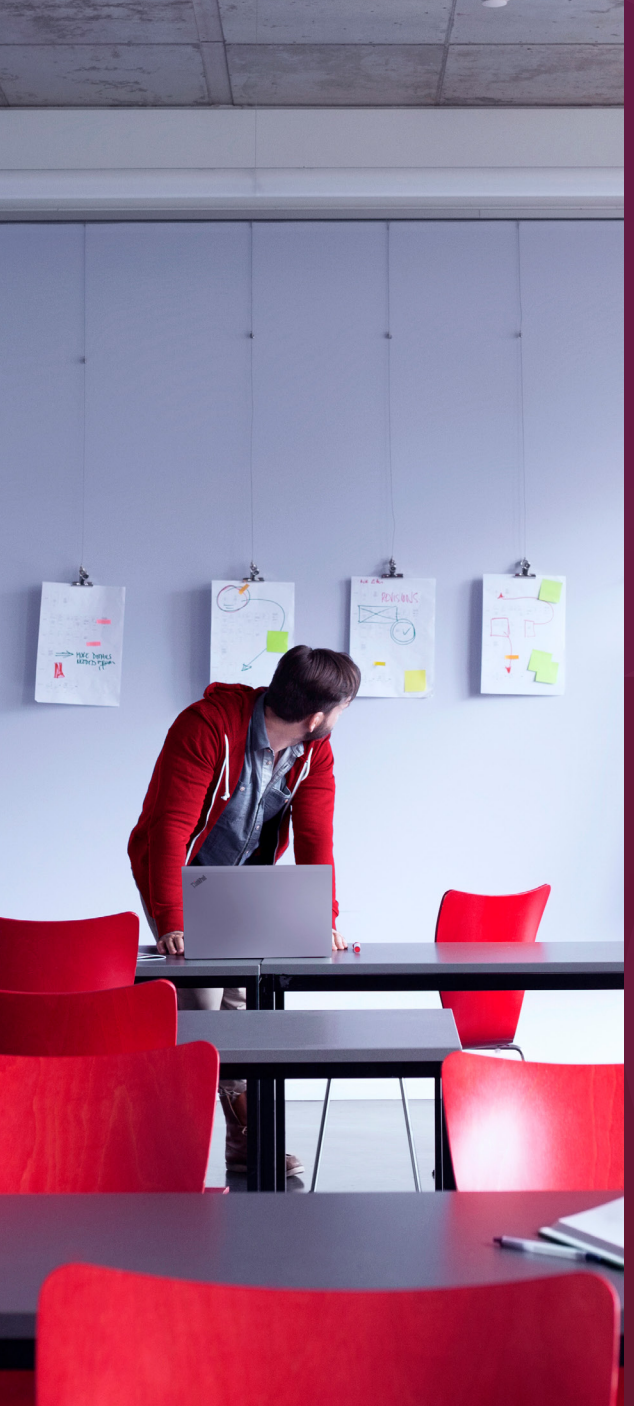
New product innovation

Benefit

Analyze markets, customers and competitors to understand opportunities faster, personalize and validate.

Challenge

Training and running complex models demand investment in high-performance computing infrastructure.



Getting real with GenAI in education

Tech adoption in education is complex. The sector is awash with major challenges around digital literacy, prohibitive costs and concerns around privacy and security. Yet, it's widely recognized that GenAI can have transformative impact on learning and that technological evolution is a necessity.

From personalized learning to helping tutors with grading, GenAI has the capacity to enhance the quality of education and remove much of the drudgery and needless repetition. However, ensuring GenAI is used ethically and transparently will be a vital piece of the implementation jigsaw.

The key question for educators today is how they can overcome the main implementation challenges as they aim for better student outcomes and experiences. Universities can train chatbots to support students with general information, registration, financial aid and more. At the same time, researchers can automate experiments, collect data, create synthetic data for model training and conduct data analysis.

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Three real world ways GenAI can transform student experiences (and what needs to be overcome to get there)

Adaptive learning systems

GenAI can personalize experiences for individual students, changing in real-time to suit performance and learning style and providing customized resources and learning paths.

Benefit

Improved engagement, better understanding of complex subjects and accommodation of different learning speeds and styles.

Challenge

Ensuring these systems are accessible to all students and maintaining data privacy requires high-performance computation and robust architecture.

Automated grading and assessment

GenAI algorithms can automatically grade work – everything from multiple-choice tests to complex assignments, such as essays.

Benefit

Reduced workload on educators, allowing them to focus more on high-value teaching to ensure embedded learning and less time on admin tasks.

Challenge

Ensuring fairness and accuracy, particularly for subjective assignments, recognizing and managing potential biases in GenAI algorithms.

Engagement and performance analytics

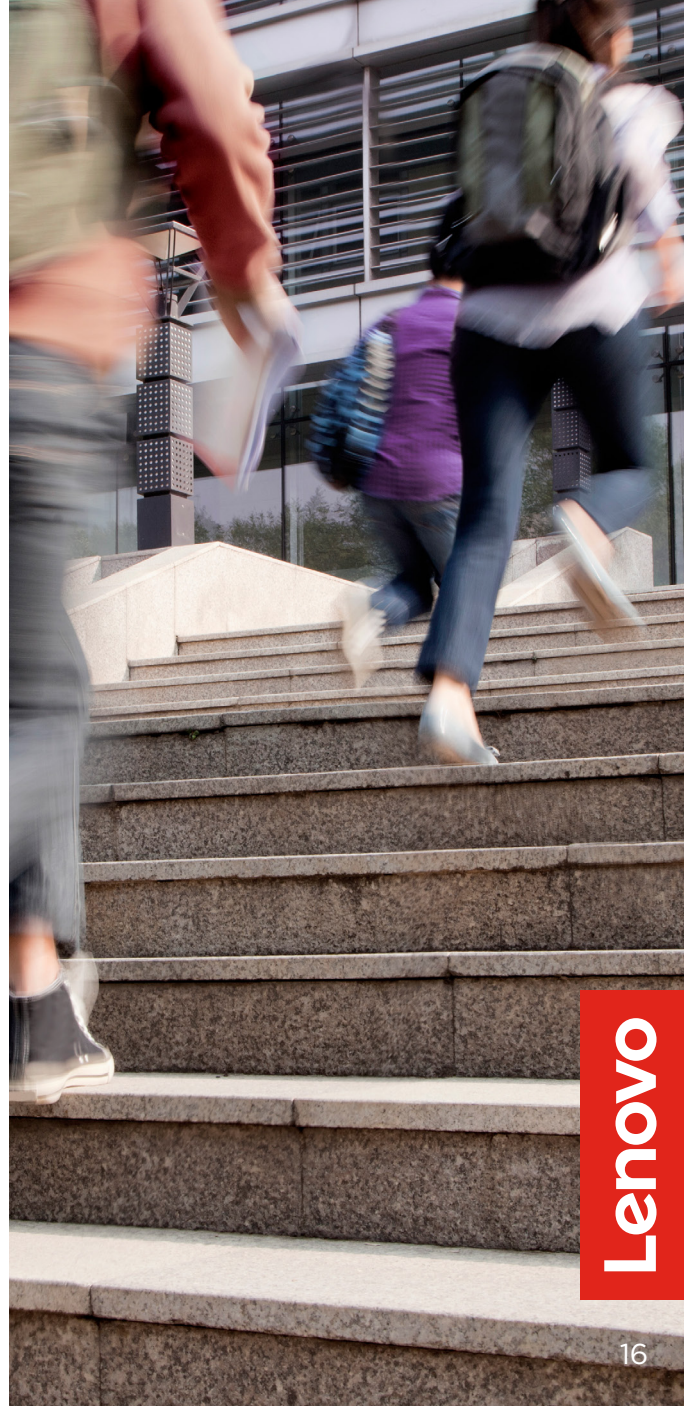
GenAI tools can analyze data on student interaction and performance to provide insights on their engagement and learning progress.

Benefit

Educators can easily identify students who need extra support, then ensure interventions are timely and appropriate and tailored to the individual.

Challenge

Balancing data-driven insights with personal interactions and maintaining the privacy of individual students is of critical importance.



Using GenAI to streamline further in the classroom and across campus

GenAI can bring rapid evolution across a range of educational use cases, including the introduction of automation into the classroom to relieve teachers and administers from mundane, repetitive tasks and improve the overall student experience. For example:

- Automated attendance systems can use students ID cards or facial recognition software to identify them, making the process quicker
- Intelligent scheduling can optimize planners, avoid clashes and maximize utilization of classrooms and other learning environments
- Real-time language translation resolves the issue of students from various linguistic backgrounds attending a lecture
- Using cameras and GenAI to monitor school or campus premises to detect unusual activities or unauthorized access

GenAI can also be used to automate campus management workflows, curriculum development and even provide AI-powered tutor support and self-service tutoring for students.

Want to put reliable tech in the hands of your students and teachers – with security as standard?

Find out more about our end-to-end services and how they're designed to enable safe, accessible learning and to spark the imagination.

To maximize everyone's potential, Lenovo is committed to continuous innovation that anticipates and meets tomorrow's challenges.

Discover more

Getting real with GenAI in life sciences & healthcare

700+

Algorithms approved for use by FDA, as of December 2023.[5]

[5] Health Imaging, 2023, FDA has now cleared 700 AI healthcare algorithms, more than 76% in radiology

Of the many varied uses of GenAI, it's impact on the health and wellbeing of our friends, families and communities could be the most profound. At an industry level, the economic impact of GenAI could also be startling, as it tidies the inefficiency that has long mired the sector. Goldman Sachs says it takes eight years and $2 billion to develop a drug – and only one in ten candidates is expected to then gain regulatory approval. That's a lot of waste.

These two key aspects of health create an enormous opportunity for uses of GenAI and ML to improve and accelerate diagnostics, community care, drug development, telehealth and treatment outcomes. In fact, there are GenAI use cases for almost every aspect of healthcare, so the question today around GenAI is how quickly the sector will overcome its main implementation challenges and start to reap the potential benefits.

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In the real world, GenAI is already transforming healthcare

From chatbots to virtual assistants, remote patient monitoring, natural language processing for health records, GenAI can transform care and improve processes in a sector burdened by chronic inefficiencies.

Benefit

Better outcomes with real-time insights and predictive diagnosis that enable early intervention and/or prevention, reduce waiting times and ensure faster treatment. Shorter management time and resource allocation optimization will lead to improved efficiency and cost-effectiveness, while also enabling staff to spend more time with patients and less on lower priority tasks or those that can be automated.

Challenge

A lack of standardized infrastructure is as much or a barrier in healthcare as in other sectors, which leads to compatibility issues. Of course, training and running GenAI effectively demands high-performance computing and good quality data, from multiple sources, whereas health data is often inconsistent and/or inaccurate. Critically, there is the need to safeguard patient data and ensure responsible and transparent use of GenAI.

Unlocking much-needed efficiencies in life science development cycles:

In everything from clinical trial management and recruitment to drug discovery, demand, pricing and revenue management, GenAI can have a profound impact on life sciences. None more so than a much-anticipated reduction of the traditionally high costs of drug development and its often-lengthy timelines.

Benefit

Enabling synthetic data generation and fast tracking early-stage discovery with molecular docking. GenAI's predictive analytics and recommendations will also evaluate viability, potential side effects of drug candidates and help assess the repurposing of existing drugs for new treatments.

Challenge

Patient data protection will require enhanced surveillance systems. Continuous education will be needed for professionals on use of new technologies, while concerns that AI/ML models may be susceptible to bias will need to be overcome to build trust and reliability in new working methods.

It starts today – real and sustained growth from Generative AI

Your four critical considerations on the road to real-world GenAI adoption are...

1

Start small, plan big

Can you develop a strategic plan for scaling GenAI built around use cases that drive strategic business outcomes?

2

Build, buy or outsource

Will you develop in-house solutions, purchase or outsource to an expert team?

3

Beyond technology

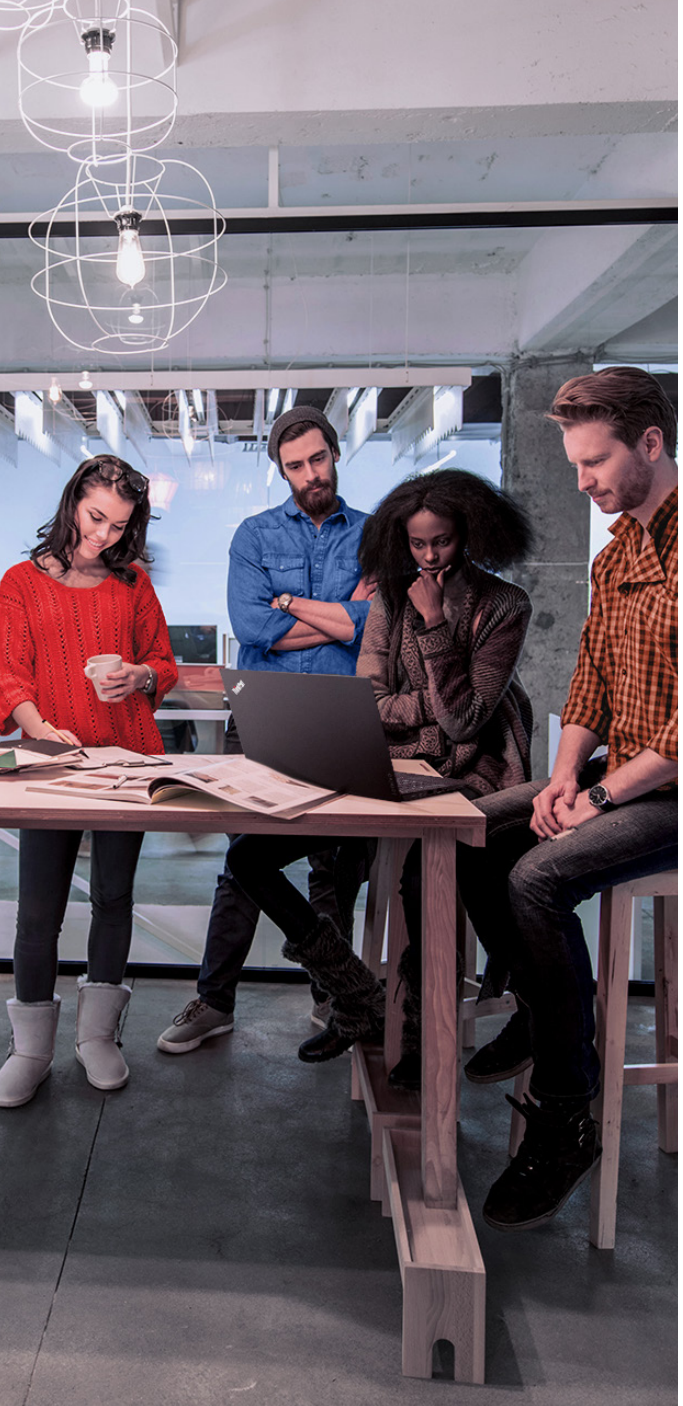
Can you consider data, people and processes as one entity?

4

Choose the right partner

Generative AI is new. It demands knowledge of AI, ML and data science. To build and fine-tune GenAI models, organizations need new expertise. Selecting the right partners will bring certainty and clarity.

That's why we have forged our strategic GenAI partnership. Lenovo AI Services provide the single vendor solution to guide implementation and easily deploy purpose-built solutions. NVIDIA AI Enterprise delivers a platform that drives differentiation, fuels growth and helps shape the future of AI-driven solutions.



How we help create real outcomes with GenAI

With our best-in-class software innovation, AI Services and cutting-edge infrastructure, Lenovo and NVIDIA accelerate GenAI implementation and deploy next-level solutions.

Together, we offer five services to support every step of your AI journey:

Click to learn more →

Step 1 AI Discover	Step 2 AI Advisory	Step 3 AI Fast Start	Step 4 AI Deploy and Scale	Step 5 AI Managed

AI Discover

Identify your GenAI vision

What should you prioritize? What would fit your business needs? What's secure and scalable?

Here's how we help:

- Work hard to understand your organization and offer solutions that fit your GenAI maturity and work culture.
- Outline key objectives and use cases to support your vision for GenAI.
- Create a clear vision for GenAI in your business and 360º visibility on what it takes to get there – from strategic planning to implementation.

NVIDIA

The vision is yours. Get there with Lenovo and NVIDIA

Ready to find out how we can help, whatever your GenAI maturity? Let's arrange a discovery session with one of our experts...

Book an AI Discover Workshop.