Times OF OMAN

Special supplement on

EMPOWERING INDUSTRIES

OMAN DATAPARK   NEBULA AI

Oman Data Park launches Nebula AI service in the Sultanate as a Cloud Service Provider in the NVIDIA Partner Network

MUSCAT: As one of the vital enablers contributing to the improvement of productivity in economic sectors and a key pillar driving the national economy for technological transformation, Oman Data Park (ODP), the Sultanate's first IT-managed and cloud services provider, has launched Nebula AI service today by joining the NVIDIA Partner Network (NPN) Cloud Service Provider Partner Program.

The launching ceremony was under the patronage of H.E. Dr. Ali bin Amer Al Shidani, Undersecretary for Communications and Information Technology, Ministry of Transport, Communications and Information Technology in presence of high-level VIP delegations, business, and media representatives. The event was also graced by both virtual and physical presenters covering various aspects of AI and its benefits and was live streamed to a wider audience.

The launch of the Nebula AI platform, the first of its kind in Oman, comes in line with Oman's vision for 2040 and within the Sultanate's exerted efforts to keep pace with the latest technological developments in the field of computing, compatible with the requirements of the fourth industrial revolution and AI.

The Sultanate had advanced 11 positions in the government's

MAQBOOL AL-WAHAIBI: The launch of Nebula AI service enables the Sultanate to store its data internally

readiness index for implementing AIin 2020, while it ranked 48th globally and sixth in the Middle East, according to the Oxford Insight Index.

Highlighting the Importance of AI for Oman's economy, Eng. Maqbool Al Wahaibi, CEO, Oman Data Park stated: "AI is transforming every industry, whether it is by improving customer relationships in financial services, streamlining manufacturer supply chains, or helping doctors delive better outcomes for patients. It gives us great pleasure to be at the forefront to provide this platform, which will enhance the technological transformation processes in the Sultanate in order to accelerate the utili-

zation of AI in various economic fields in Oman."

"As the launching of Nebula AI service will contribute to sealing Oman's entry into the world of AI, Oman Data Park has practically proven its success of bringing innovative services to Oman to fuel further economic growth. Coupled with our impeccable track record of over nine years of service in the cloud services industry, we now look forward to helping businesses leap ahead on innovation and profitability through the use of AI, both locally and beyond," Maqbool Al Wahaibi added.

Joining virtually for the event, Mr. Jaap Zuiderveld, vice president, EMEA at NVIDIA, stated,

"AI is transforming every industry, helping nations and businesses solve their biggest challenges in agriculture, healthcare, climate and more. As an NVIDIA NPN partner, Oman Data Park is helping to grow the nation's AI expertise to create new opportunities with the world's leading AI systems."

Al Wahaibi also said that the utilization of AI services is considered an important factor for improving the productivity of many economic sectors, such as banking and finance, energy, healthcare, logistics and retail. It saves time and money and enhances operational efficiencies, as well as leads to an increase in revenue. AI also enhances the performance of sophisticated intellectual tasks such as decision making and problem solving, as well as increases customer services proactively.

He also highlighted that the Nebula AI service platform is powered by the NVIDIA DGX A100 system, which is suitable for all AI workloads, offering unprecedented compute density, performance, and flexibility in the world's first 5 petaFLOPS AI system. This will enable both government and private sector entities to explore the various benefits of AI with the guarantee of data sovereignty, security, and reliability.

A teaming agreement was also signed at the launch, between ODP's CEO Eng. Al Wahaibi and Bikal UK's CEO Mr. Raj Sandhu, which was attended by James Goldman, Deputy Head of Mission, British Embassy Muscat.

A statement from H.E. Mr. Bill Murray, Her Majesty's Ambassador to the Sultanate of Oman stated, "Technology is an area of strength for the UK in particular, with London recognised as the 'AI capital of Europe.' The potential for collaboration between the UK and Oman in the technology sector is vast, and I am excited by this partnership between Oman Data Park and Bikal. It will create job opportunities and support the development of Oman's tech ecosystem and local talent in alignment with Vision 2040. Congratulations to ODP and Bikal!"

"Our collaboration with Oman Data Park is key to the creation of new AI and 5G technologies in Oman and the GCC. Having a forward-looking partner in the region will enable Bikal to bring UK university researched innovations with the ability to develop the tech locally. This partnership will open joint opportunities in Oman and the UK over the coming years," said Raj Sandhu, CEO, BIKAL UK.

According to a PWC research, AI is estimated to contribute

around 15.7 trillion USD globally by 2030, while the Middle East is estimated to accrue 2% of the total global benefits of AI in 2030, which is equivalent to 320 billion USD. The forecast reports also show that annual growth is expected to range between 20-34% per year across the region.

Forecasts from Gartner indicate that by 2025, 50% of enterprises will have devised AI orchestration platforms to operationalize AI, up from fewer than 10% in 2020. By 2025, AI will be the top category driving infrastructure decisions, due to the maturation of the AI market, resulting in a tenfold growth in compute requirements. And by 2025, 10% of governments will use a synthetic population with realistic behavior patterns to train AI while avoiding privacy and security concerns.

It is noteworthy that ODP has greatly contributed to providing cloud computing services, cloud storage, cloud networking, as well as web hosting and cyber security services. ODP operates an advanced Virtual Data Center across Oman in the field of cyber security based on the latest industry standards, helping customers mitigate risks with its services and save up to 55% on the total cost of ownership compared to traditional data centers.

OMAN DATA PARK

THE TORCHBEARER IN INTEGRATING ARTIFICIAL INTELLIGENCE TO SUPPORT OMAN'S VISION 2040

ODP employs advanced technologies especially in the field of Artificial Intelligence that find applications in diverse fields without human intervention to change their algorithmic or physical structure.

SECTOR	ABSOLUTE CONTRIBUTION IN IN 2030 (US$ BILLIONS)	CONTRIBUTION OF AI TO MIDDLE EAST GDP BY INDUSTRY (IN %)
Construction and Manufacturing	$99	12.40%
Energy, Utilities & Resources	$78	6.30%
Public sector, including health and education	$59	18.60%
Financial, Professional, Administrative Services	$38	13.60%
Retail, Wholesale Trade, Consumer Goods, Accomodation and Food Services	$23	19%
Transport and Logistics	$12	15.20%
Technology, Media, Telecommunications	$10	14%

SOURCE: INTERNATIONAL DATA COLLECTION

Despite the setback caused by the global pandemic, Oman has much to look forward in its march towards achieving the visions set for 2040. Artificial Intelligence (AI) is expected to an accelerator in the Sultanate's exerted efforts to keep pace with the latest technological developments in the field of computing compatible with the requirements of the fourth industrial revolution and artificial intelligence across the industry segments that would take forward the nation in the days ahead. Artificial Intelligence is estimated to contribute to round USD 15.7 trillion to the global economy by 2030 with 6.6 trillion likely to come from increased productivity and the rest to come from consumer benefits. The Middle East is expected

to have a share of 2% (USD 320 billion) with 34.8% of this coming from the GCC countries. The annual growth in AI is expected to be in the range of 20-34 % with Saudi Arabia and UAE being the major players contributing to USD 231.2 billion by 2030.

While AI is expected to contribute to 25% of GDP in China and 15% in North America by 2030, in the GCC, it is expected to contribute roughly 10% and whilst the volatility in oil prices is taking its toll on the economic prospects of the region, it is creating the need

for governments to seek alternative sources for revenue and growth. The development of non-oil sectors through investment in AI technologies could strategically position the region for the years to come. Here's the estimated value of AI in Middle East across industry sectors in 2030.

For Oman's vision of a competitive economy that is productive and diversified based on innovation, integration of roles and equal opportunities, and driven by both the public and private sectors, it is imperative that the advancements

in AI and its applications in the various sectors is leveraged and optimised.

Stretching the frontiers in AI in Oman is Oman Data Park (ODP) which is the Sultanate's premier IT Managed Service Provider. As the launching of Nebula AI service will contribute to sealing Oman's entry into the world of AI, the service is a testament of ODP's support towards the advancement of the 4th Industrial Revolution's digital economy where humans and machines collaborate to leap ahead on innovation and profit-

ability through the use of Artificial Intelligence.

In the present digitally evolving fast age, the Sultanate had advanced 11 positions in the government's readiness index for implementing artificial intelligence in 2020, while it ranked 48th globally and sixth in the Middle East, according to the Oxford Insight Index. As the Sultanate's reliance on a sophisticated IT infrastructure to support its industries is increasing, it would only be prudent to foresee a future where AI holds the key to vital information, data gathering and analysis that serves as inputs for decision making and efficient execution that would otherwise be prohibitively time consuming and expensive in a competitive world. Needless to say that Data Centers and Cloud Services has been identified as one of the key digitisation areas of focus where there is huge opportunity to be explored and exploited.

The launch of Nebula AI offers an opportunity for accelerated adoption of cloud services by the Government and also for Oman to be a frontrunner in offering a gateway for AI enabled cloud services in the region. The good numbers of submarine cables available in the Sultanate, qualifies it to host data centers, high-speed computers and cloud services that are used to process artificial intelligence algorithms. Furthermore, the large number of IT graduates who can be qualified and trained in the field of artificial intelligence and advanced technologies also works to Oman's advantage.

Oman Data Park as the torchbearer leading the AI revolution in Oman is helping to enhance the productivity of sectors targeted for economic diversification by adopting AI in sectors contributing to economic growth and social impact through cohesive application of smart technologies in fisheries, agriculture, transport, logistics,

energy, mining, industry, health and tourism. Furthermore the locally hosted Nebula AI infrastructure also enables transfer of AI technologies by supporting R&D in building algorithms, libraries and software tools, in addition to building and adopting open source software that enable AI and its applications.

Oman Data Park also works in enhancing the application of AI technologies in cybersecurity and also in supporting the upgrading of the local cloud computing infrastructure to process AI applications.

With digitisation becoming a national priority across industry segments in both manufacturing and service sectors, AI will play a vital role in automation and data processing that would not only increase efficiency and throughput time but also improve Human Resource Allocation for higher value operations. Oman Data Park's envisions an active role for itself in enhancing the performance of various sectors in Oman through its AI technology services.

Some of the key sectors where Oman Data Park is looking to make further inroads and create a significant impact in Oman through it's advanced technologies in AI services in the days ahead are; Banking & Finance, Retail, logistics, Healthcare and Energy. Right from simplifying and reducing the lead time required to convert an individual's or a corporate's loan application, to early detection of illness and providing appropriate information for optimum treatment, predicting consumer behavioural patterns for retail solutions, to optimising routing of merchandise based on information and data efficient or harnessing of power in the energy sector, ODP's Nebula AI will be at the forefront with constant innovations in technology and AI solutions.
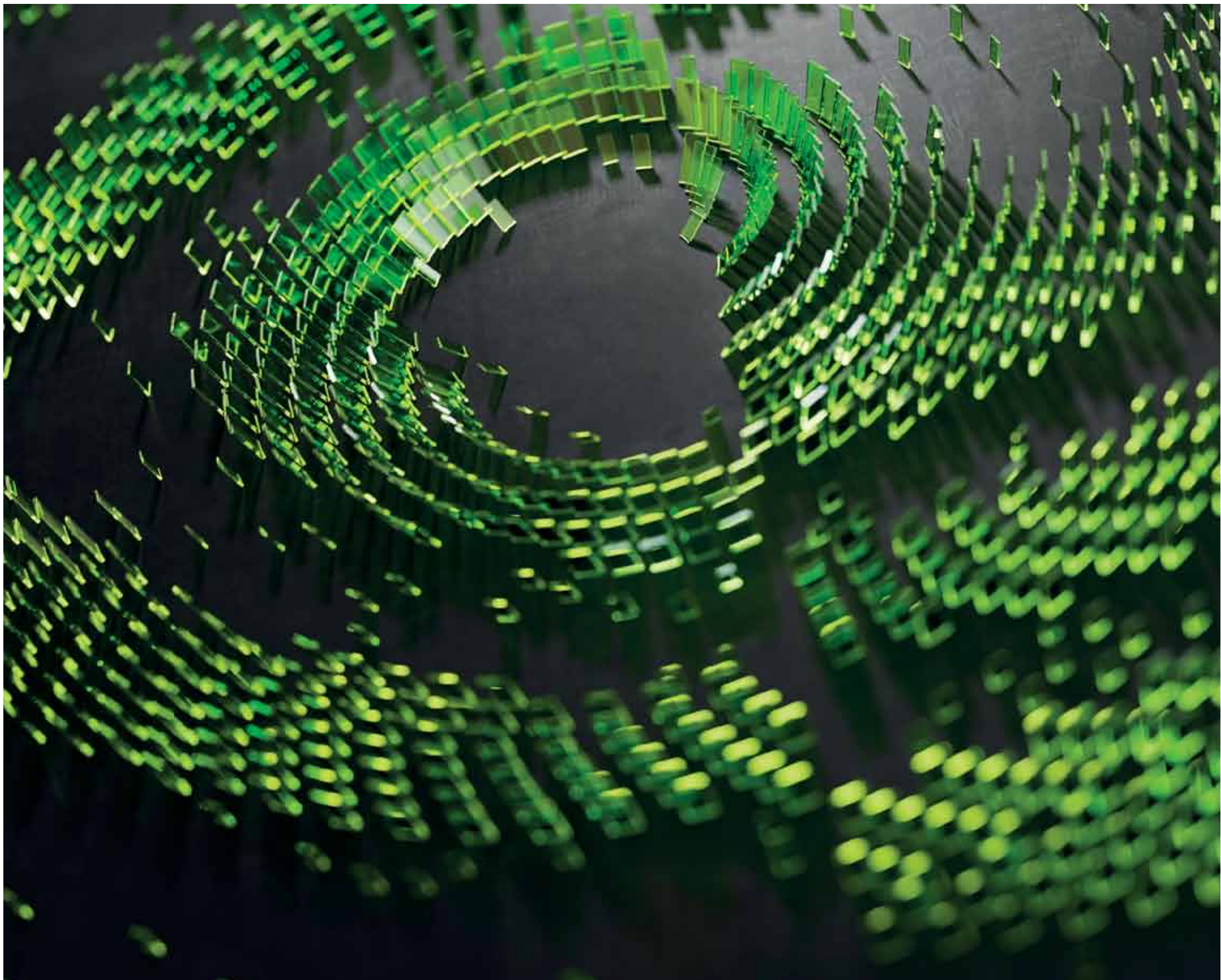
CONGRATULATIONS TO OMAN DATA PARK ON THE LAUNCH OF NEBULA AI WITH NVIDIA DGX A100 SYSTEMS
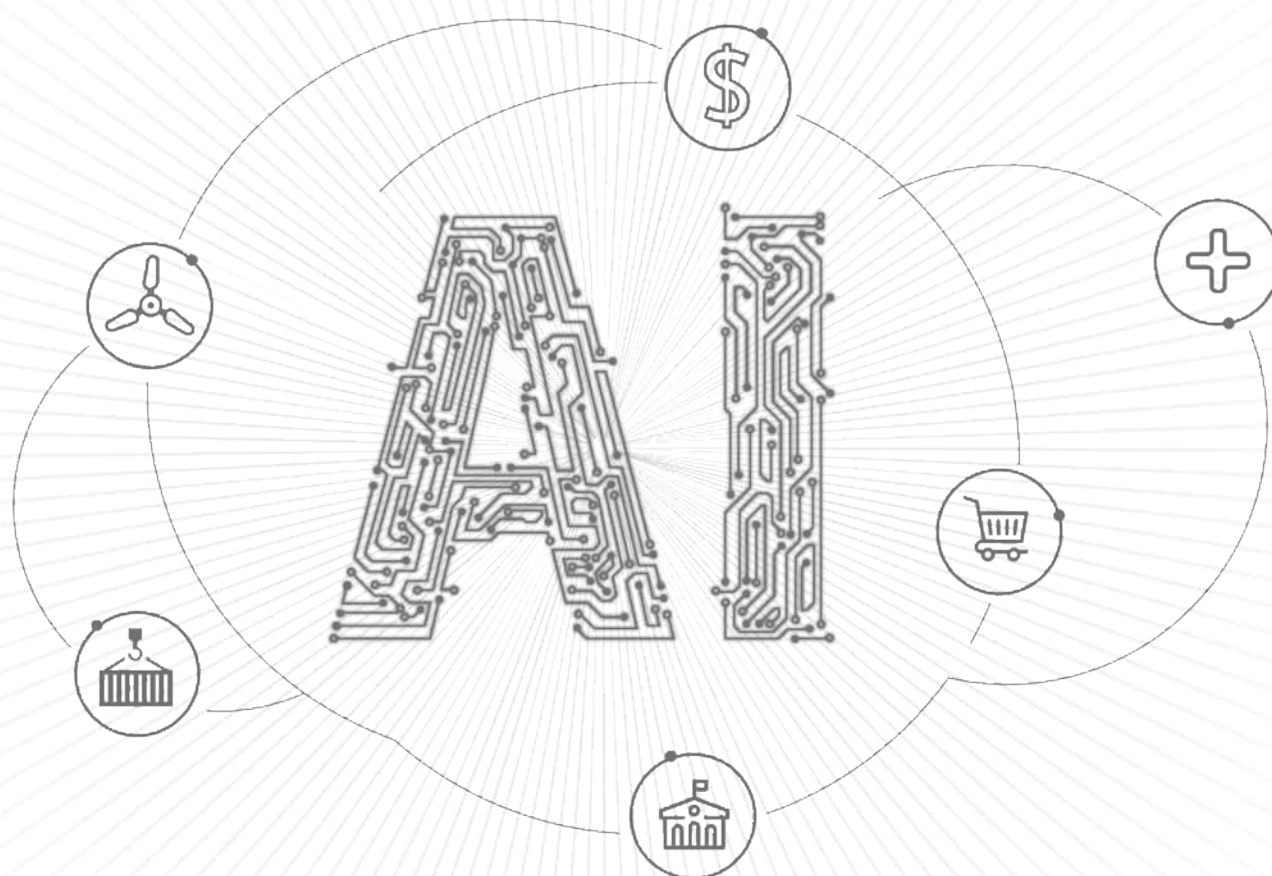
NVIDIA's invention of the GPU sparked the PC gaming market. The company's pioneering work in accelerated computing—a supercharged form of computing at the intersection of computer graphics, high performance computing and AI—is reshaping trillion-dollar industries, such as transportation, healthcare, and manufacturing, and fueling the growth of many others.

ᴛ EMPOWERING AI INDUSTRIES

OMAN DATAPARK NEBULA AI

BANKING

Unlock the potential of smarter banking with AI

AI HAS THE ABILITY To transform the way banks operate. By helping identify key insights in vast amounts of data, calculate risk, and automate routine tasks—all at unprecedented speed and scale—every line of business and function can be enhanced. This enables the AI-powered bank to increase productivity, expand services, reduce risk, and dramatically improve customer service.

THE AI-POWERED BANK
The key to successful AI implementation is a full-stack solution that includes both hardware and software—AI as a platform. This implementation of a shared, centralized infrastructure for AI consolidates expertise, productivity, and scale; shortens the life cycle from development to deployment; and drives down total cost of ownership with efficient utilization of compute and storage resources. Enterprises that successfully embrace AI as part of their operation get an additional benefit that sets them apart—they become the kind of organization that attracts the world's best talent. The people who lead AI innovation come to companies that offer these tools and scale, enabling them to do their life›s most important work. The private AI cloud can run thousands of simulations and analyze millions of data points in a fraction of the time that it could before. As a result, the customer banking experience is transformed with a new generation of smart applications. And that's just the beginning. It reduces client calls and enables faster delivery of applications to clients thanks to the accelerated performance of the Graphics processing units and automated orchestrated containers

In handling the Capital markets, AI enables to train thousands of statistical models in parallel to cover the vast space of possibilities. This would be impossible without a distributed and fully automated environment. Now the entire cluster could be populated with a single click using the automated pipeline.

FRAUD DETECTION
Some of the biggest AI wins are those related to fighting transaction fraud for banks and credit card companies—a multi-billion-dollar problem. Detecting true fraud is critical, but traditional systems have historically generated many more false-positive than true-fraud signals. AI offers solutions that enhance the detection and cuts false positive rates by employing advance machine learning techniques AI is revolutionizing multi-trillion-dollar industries like financial services and powering growth around the world. From PayPal to American Express to Ping An, firms are leveraging AI to improve customer outcomes, reduce costs, and combat fraud.

ENHANCED CUSTOMER SERVICE
Conversational AI is enabling consumers to manage all types of financial transactions, from bill payments and money transfers to opening new accounts. AI through significant computing can help train Chatbots to communicate and engage customers in life like conversations in real time. By offering these self-service interactions, banks can free customer service agents to focus on higher-value interactions and transactions.

PERSONALIZED BANKING OFFERS
On some of the largest commercial platforms, recommendations account for as much as 30 percent of revenue, which can translate into billions of dollars in sales. This is one area where AI makes a significant contribution in a recommender system by recording and analysing every consumer action from visiting a webpage to prioritizing which debt to pay off first. Recommenders increase conversion by providing personalized messages to consumers, improving customer loyalty and satisfaction with the bank.

ACCELERATING FINANCIAL SERVICES WITH AI
Massive datasets, perpetual market fluctuations, remote workforces, intelligent technology can all address critical challenges within the modern financial services industry. Institutions can boost risk management, improve data-backed decisions and security, and enhance customer experiences with AI—including, deep learning, machine learning, and natural language processing.

ACCELERATED COMPUTING FOR TRADING.
Faster processing results in smarter trade strategies, more successful trade execution, and increased revenue. AI with GPU-powered hardware acceleration decreases time to insight, allowing operations to remain competitive respond faster to market fluctuations.

PAYMENTS:
From transferring money to friends and family, paying bills online, using your phone to check out at the grocery store, payments—online, mobile, in-store, business to consumer and Business to Business, AI can help banking firms better their detect mechanism and prevent payment fraud and improve processes for anti-money laundering (AML) and know-your-customer (KYC) systems. With AI's accelerated machine learning and deep learning platforms, data scientists can deliver results in days, instead of the weeks more traditional methods require AI in payments enables greater security and more transparency, creating a better experience for both firms and customers.

INSURANCE:
Firms are moving beyond traditional claims management by embracing digital opportunities and adopting a fully analytics-driven approach. This includes using AI to automate claims handling for simple and clean cases, implementing AI-powered services to fast-track complex cases, and creating new digital services to increase customer satisfaction.

FINTECH
Fintech is driving global innovation that is transforming how companies, consumers, and money interact across industries, from financial services to retail to transportation and beyond. Utilizing AI, fintech interactions are more personalized with recommendation engines, self-service is improved via conversational AI, and transactions are more secure because of deep learning fraud detection models.

HEALTH CARE

Paradigm shift to AI health care

HEALTHCARE demands new computing paradigms to meet the need for personalized medicine, next-generation clinics, enhanced quality of care, and breakthroughs in biomedical research to treat disease. Healthcare institutions can harness the power of artificial intelligence and high-performance computing (HPC) to define the future of medicine. Today's healthcare system is facing unprecedented challenges. To meet them, healthcare workers, from doctors to researchers, need powerful, flexible computing tools that will let them work from anywhere—whether they're in the hospital, in the field, or at home.

POWERING HEALTHCARE SOLUTIONS WITH ACCELERATED COMPUTING

DRUG DISCOVERY
Drug development can cost billions and take up to 14 years but only 8% of drugs make it to market. AI helps researchers make smarter decisions about which potential medicines to invest their time developing. AI analyzes simulations 100x faster than traditional screening methods to determine whether a potential treatment works against its target. With AI accelerated computing, researchers can virtually model millions of molecules and screen hundreds of potential drugs at a time, reducing costs and speeding time to solution.

GEONOMICS
Using High Performance Computing to accelerate genome analysis in population and cancer genomic studies can help identify rare diseases and bring tailored therapeutics to market faster, advancing the journey to precision medicine. Faster analysis leads to quicker diagnosis and better treatment outcomes. Understanding individual rare disease patients at the molecular level is critical to assessing what their future may hold and for optimizing treatment approaches.

MEDICAL IMAGING
AI-powered tools can be an extra set of "eyes," helping clinicians to quickly read images, calculate measurements, monitor changes, and identify urgent findings to optimize workflows and enhance patient care. Several ailments including heart disease, various manifestations of cancer, dementia, diabetic retinopathy etc can be detected early and outcome predicted using non invasive, faster and smarter AI medical imaging tools.

SMART HOSPITALS & MEDICAL INSTRUMENTS
From smart sensors to medical instruments that support real-time, advanced image processing, AI at the edge can deliver immediate insights, optimizing patient care and realizing the promise of smart hospitals. AI offers visual intelligence to safeguard patients and staff. They also enable surgeons who need to work in demanding situations where that must operate with a narrow field of view. AI also helps reduce healthcare workers' needs to interact with information systems allows them more time to do what they do best focus on caring for patients.

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OMAN DATA PARK LAUNCHES FIRST-OF-ITS-KIND NEBULA AI PLATFORM

RETAIL

Retail operations through AI-enabled solutions

From Walmart and Meijer to Domino's and Stitch Fix, innovative retailers and disruptive startups are using AI to transform how they operate. They're using deep learning and machine learning algorithms to streamline logistics, cut operational costs, prevent shrinkage, increase revenue, and improve decision making. Recent estimates from Accenture suggest that AI has the potential to create $2.2 trillion worth of value in retail and wholesale by 2035 by boosting growth and profitability.

And this new wave of smart retailers is looking beyond improved operations to improving the overall customer experience. Combining in-store analytics with online customer behavior enables retailers to better understand their customers and their buying preferences, so they can tailor promotions to drive revenue and deliver better shopping experiences, both in store and online. Leading retailers are leveraging AI to reduce shrinkage, improve forecasting, automate warehouse logistics, determine in-store promotions and real-time pricing, enable customer personalization and recommendations, and deliver better shopping experiences—both in stores and online.

INTELLIGENT STORES
Using data from cameras and sensors, retailers are leveraging AI to reduce shrinkage, eliminate stockout, and gain insight into customer behavioural patterns. The same infrastructure can also power faster checkouts. Retailers are using AI to create intelligent stores in the context of public safety, asset protection, store analytics, autonomous shopping, and store operations.

ASSET PROTECTION IN INTELLIGENT STORES
Theft can happen in the blink of an eye, so it requires quick detection. Using existing camera systems, retailers can install intelligent video analytics (IVA) applications to improve loss prevention and significantly reduce shrinkage. With GPU-accelerated IVA, asset protection applications can detect ticket switching and misscans in real time at the point of sale. They can detect shrinkage with up to 99 percent accuracy and immediately notify sales associates for intervention.

INTELLIGENT STORE ANALYTICS
Online-shopping data and in-store data generated from points of sale, cameras, and sensors are ripe with insights that can help determine customer preferences. IVA data can provide customer demographics as well as identify popular and unpopular store aisles, customer dwell time, and the number of unique visitors.

With a better understanding of shopper behavior, retailers can improve store merchandising, increase overall sales, and deliver a better omni-channel experience for their customers. They can even break down product interest by age and gender to group similar products for the target customer.

AUTONOMOUS SHOPPING IN INTELLIGENT STORES
The convenience of intelligent grab-and-go stores, where customers can use their mobile phones for cashierless checkout, is jumping in popularity. Autonomous checkout locations are expected to increase 4X annually in the next three years. With autonomous checkout, retailers can provide customers with frictionless and faster shopping experiences, while increasing revenue and margins.

Autonomous checkout solutions range from frictionless AI-enabled shopping carts, to nano stores and smart cabinets, to fully autonomous stores. These solutions reduce costs while delivering a much better and faster shopping experience.

INTELLIGENT STORE OPERATIONS
Store associates are the face of retail organizations, so it makes sense to reduce the time they spend on tasks that aren't customer facing, such as performing inventory counts, replacing misplaced items, or scanning for out-of-stock situations.

Large retailers are using robotics to handle these basic, repetitive, and tedious tasks, freeing store associates to spend more time helping customers. The technology can scan items on store shelves to check stock levels, correct shelf location, and price accuracy. It can also sort items unloaded from trucks based on priority and department, allowing associates to shift inventory from storage to the sales floor more efficiently.

FORECASTING & INVENTORY MANAGEMENT
Using AI and predictive analytics, retailers are improving demand forecasting and inventory management. By tapping into data insights from various sources, they're the right products are in the right store at the right time and optimizing their supply chains. Walmart is using GPU-accelerated technology for product forecasting of more than 500 million store-item combinations each week.

RECOMMENDATION & VISUAL SEARCH
Understanding customer behavior has never been more critical for retailers looking to drive growth. AI applications powered by video analytics can give retailers the same insight into customer behavior in stores as they currently have online. The AI can give data on sectional footfalls, throughput and browsing to conversion data which serves as vital inputs in the store sections alignment and resource allocations. With insights into popular aisles, dwell times, and demographics, retailers can improve merchandising and offer real-time promotions in store to increase revenue and provide a better experience. For e-commerce, retailers are using AI algorithms for faster, more accurate recommendation engines to boost revenue.

CONVERSATIONAL AI
Natural language processing (NLP) helps retailers personalize customer experiences, turn consumer data into actionable insights, and improve customer service. Retailers build and deploy AI applications by fusing deep learning models for speech recognition and speech synthesis, language understanding, and vision.

POWERING SMARTER RETAIL WITH AI
AI is fundamentally changing the retail space, from customer experience and how they engage with retailers to store operations and logistics. By taking advantage of the massive amounts of sensors and data available, retailers can move from traditional to disruptive technologies that will increase revenue and delight customers.

Leading retailers are looking to capitalize on these trends and transform their business with a top-down AI strategy. But to do that, they need access to advanced resources, including state-of-the-art infrastructure, a rich ecosystem of software, and a team that's trained in the technology.
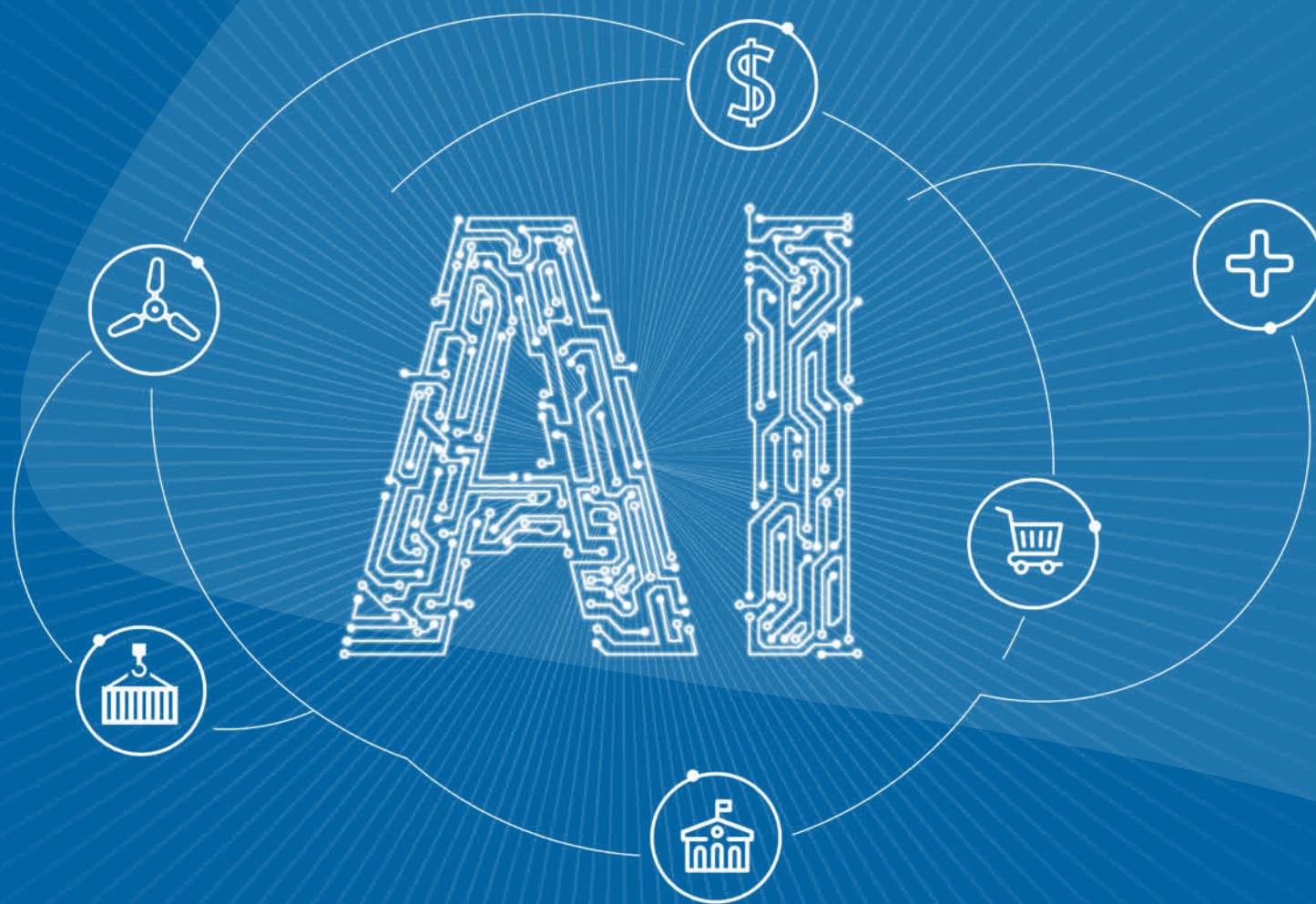
REMOTE WORK CHALLENGES IN RETAIL
With the recent changes to consumer buying behaviors, retailers need to become more agile than ever and respond in real-time to shifts in customer buying trends, while keeping employees and customers safe. This requires that data scientists continue to develop AI applications that help with daily forecasting, optimizing supply chains, and automating self-checkout. From data scientists to IT managers, professionals in the retail industry are accustomed to working in highly customized, onsite work environments. But as working remotely becomes a necessity in times of emergency, these professionals find themselves navigating uncharted waters with dispersed teams working from home. Data scientists who routinely train their algorithms in data centers, or on GPU hardware in their offices, now need cloud, virtual GPU access, or GPU-powered laptops to develop and train algorithms.

AI allows large retailers to centralize data and applications in the data center, delivering virtual workspaces with improved manageability, security, and performance, while reducing downtime and support costs. IT can also easily manage large-scale virtualization deployments with end-to-end visibility of the organization's infrastructure and proactive monitoring. AI also enables IT organizations to remotely manage, install, and update software across thousands of distributed devices, without the need to do so individually in each store. Even without access to local compute resources, or with limited access, organizations can still provide users with the resources they need to be productive. Many applications can be accessed from the cloud, and these solutions can be leveraged to provide compute cycles for specific initiatives.

A partnership for success

Congratulations to Oman Data Park on the launch of Nebula AI. We look forward to supporting Oman's government & business entities with trusted solutions to leap ahead on innovation and profitability through the use of Artificial Intelligence.

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OMAN DATAPARK   NEBULA AI

FUELING AI INNOVATION TO INDUSTRY-DRIVEN ECONOMY

Energy touches every aspect of modern society, from impacting world economies to enhancing individual ways of life. Today, the industry faces challenges with exploring new resources, reducing costs, maintaining safe conditions for workers and communities, and ensuring reliable delivery to customers. In response, leading companies are using AI technologies to expedite energy production, increasing asset utilization, streamlining oil refinement and distribution, and reducing environmental impact.

CUTTING EDGE COMPUTING
By collecting and analyzing data at the network's edge, companies can predict mechanical problems in areas like oil pumps more quickly. Today's industrial edge computing requires GPU-powered compute capabilities for industrial inspection and robotics in factories and predictive maintenance for equipment in the field. This calls for a single, unifying foundation for AI applications and frameworks.

COMPUTING IN DATA CENTERS
AI creates efficiencies through high-performance computing, data processing, and data management that support the unique requirements of the Energy sector's key segments and processes. GPU-accelerated solutions dramatically speed up training of deep learning and machine learning models to deliver insights that were previously not possible.

DEMOCRATIZE THE DATA CENTER WITH CLOUD
AI helps deliver power from suppliers to consumers using cloud computing to save energy, reduce costs, and increase reliability.

PIPELINE OPTIMISATION
Leverage big data and AI systems to optimize how you fill a pipeline, detect corrosion to identify potential leaks, and automate ultrasonic flow meters to increase throughput.. These technologies can also be used to monitor the locations of transports and verify their security. Other areas include demand forecasting to optimize commodity trading and shipping and pipeline capacity optimization.

PREDICTIVE MAINTENANCE
AI helps avoid blackouts, downtimes, and unnecessary maintenance costs by identifying discrepancies in machinery in real time and predicting the remaining useful life of equipment. With GPU-based deep learning servers well operators can visualize and analyze massive volumes of production and sensor data such as pump pressures, flow rates, and temperatures. Other areas of focus include capacity optimization, economic forecasting, ,site surveillance and electricity retail where it helps prediction of future load demand by using advanced metering infrastructure (AMI) data in machine learning models.

PERFORMANCE OPTIMISATION
AI assists to increase the reliability and performance of your refining assets by identifying the root cause of underperformance, virtually testing operational or asset changes, and minimizing unanticipated risks of proposed changes.

POWER GENERATION & DISTRIBUTION
Accelerate the transition to a more sustainable future with resilient grids that use AI to forecast demand, generate power, and manage energy resources.

Some of the other areas in the energy sector where AI can be used effectively include exploration of new energy deposits and discovery of available hydrocarbon reserves with seismic processing. It also helps build accurate models of the subsurface in less time. Optimization of renewable energy production and reduction of operational costs, such as wind turbine inspection and maintenance and improvement of performance of complex power grid operations are also areas that can be effectively optimised with AI.

Artificial intelligence in warehouse logistics

WAREHOUSE logistics, more specifically "intralogistics operations," is the art of integrating, automating, and managing the flow of products in fulfilment or distribution centers. AI solutions deliver a level of consciousness to the supply chain. With intelligent video analytics, robotics, automation, and management, operations become more efficient, process throughput accelerates, and warehouse robots deliver end-to-end visibility, increasing the accuracy of orders picked, packed, and shipped.

AI IN SMART WAREHOUSES
Smart warehouses are using cutting edge technologies in AI to automate inventory processes, simplify general package handling, and optimize real estate when receiving orders and sending packages to other distribution centers. Developers can leverage the different components of building, training, and deploying algorithms for inference at the edge.

ROBOTS FOR PACKAGE HANDLING
In store staffs are the face of retail organizations. To maximize time with customers, retailers are working to reduce the time they spend on non-customer-facing tasks, such as inventory counts. Large retailers are using robotics technology to unload and sort items based on priority and department, check stock levels, correct shelf locations, and ensure price accuracy. To resolve throughput challenges from the scale and variety of products, companies are using AI based edge computing to detect, classify, estimate the size of, and position packages, automatically adjust the speed of conveyors and optimize mechanical sorting. This helps to minimize product damage and machine downtime.

ROUTE OPTIMIZATION FOR LARGE DISTRIBUTION NETWORKS
Warehouse and manufacturing centers are solving the enormous complexities of product flows with AI-powered robots. These robots utilize powerful deep neural networks for perception, segmentation, and pose estimation to perceive their environment, detect objects, navigate autonomously, and move objects. Market leaders are widening their

competitive advantage with increased throughput, per-order customization, and differentiated customer experiences. The big players in the automobile industry easily manage new models and configurations to meet customer demand, using AI technology to innovate factory logistics. With this approach, they can produce high-quality, highly custom-configured vehicles more rapidly on the same production line.

LAST-MILE DELIVERY SOLUTIONS
Several factors can impact the last mile of delivery, including traffic, construction, and weather. Using real-time data from a variety of sources—from GPS data to weather forecasts—routes can be optimized using AI, which can significantly impact fuel, personnel, and other overhead costs. Beyond that carriers can provide more accurate delivery windows, improving the level of service provided to customers. This instils a higher degree of trust, which matters when customers have an array of options for sending and receiving important parcels.

EMPOWERING AI INDUSTRIES

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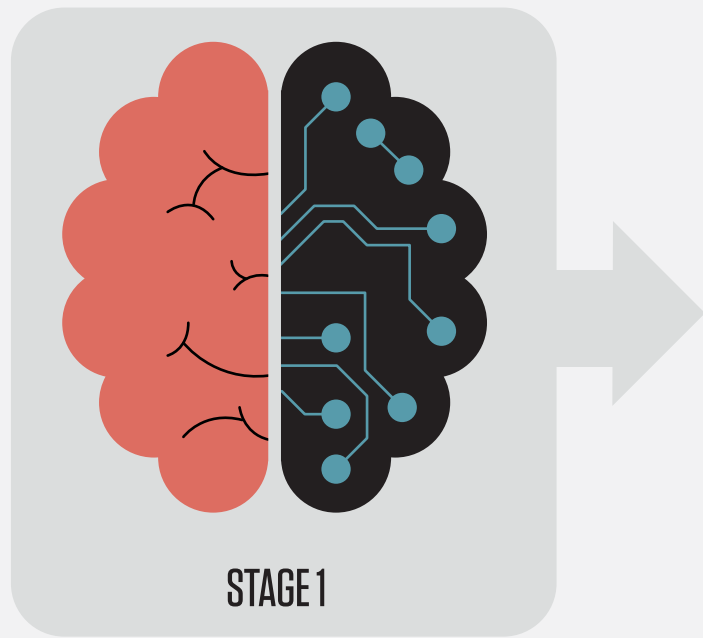# HOW AI WILL INFLUENCE OUR LIVES IN THE YEARS TO COME

Artificial intelligence (AI) is a term used to describe machines performing human-like cognitive processes such as learning, understanding, reasoning and interacting. It can take many forms, including technical infrastructure (i.e. algorithms), a part of a (production) process, or an end-user product. AI looks increasingly likely to deeply transform the way in which modern societies live and work. Already today, smartphones, smart assistants, and cars are connected to this technology. With the rise of AI come the important questions of how much it will affect businesses, consumers, and the economy in more general terms.

THREE TYPES OF ARTIFICIAL INTELLIGENCE

ARTIFICIAL NARROW INTELLIGENCE (ANI)

STAGE 1

MACHINE LEARNING

Specializes in one area and solves one problem. It provides systems the ability to automatically learn and improve from experience without being explicitly programmed.

ARTIFICIAL GENERAL INTELLIGENCE (AGI)
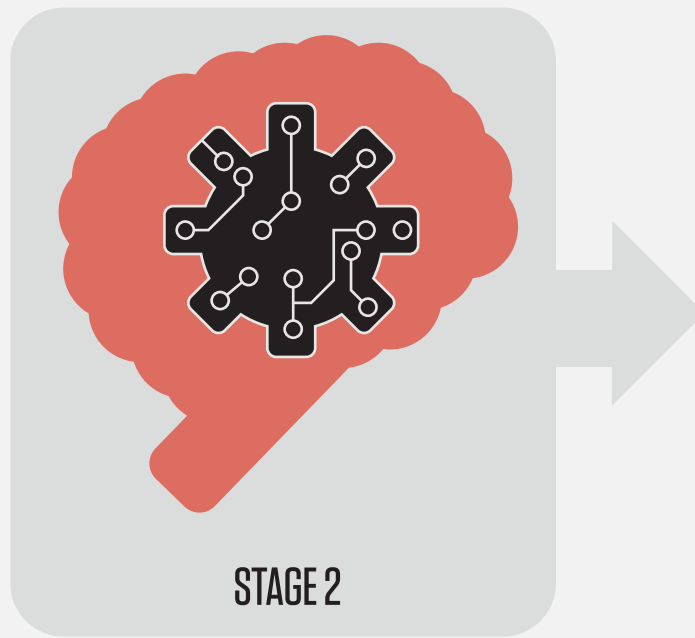
STAGE 2

MACHINE INTELLIGENCE

Refers to a computer that is as smart as a human. It is related to understand human intelligence, but AI does not have to confine itself to methods that are biologically observable.

ARTIFICIAL SUPER INTELLIGENCE (ASI)
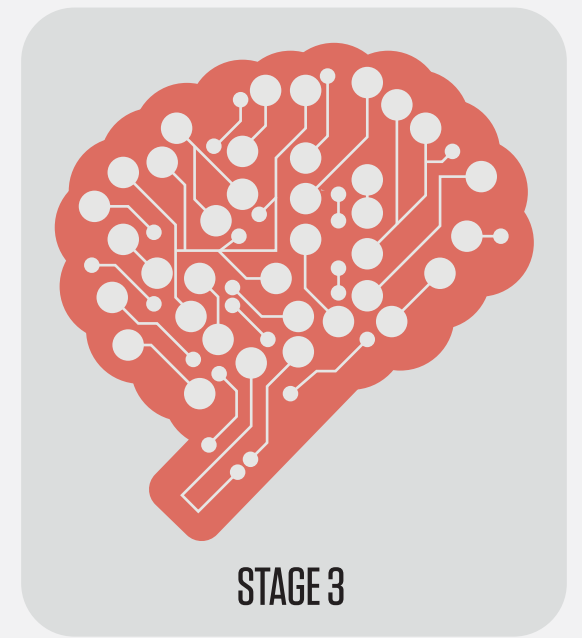
STAGE 3

MACHINE CONSCIOUSNESS

Artificial superintelligence (ASI) is a software-based system with intellectual powers beyond those of humans across an almost comprehensive range of categories and fields of endeavour.

THE ECONOMIC IMPACT OF ARTIFICIAL INTELLIGENCE

Historically, innovations like the steam engine and typewriter have either increased capital or labour, or helped people use them more efficiently. It changes the game by acting as a force multiplier for both capital and labour and has the potential to double the annual economic growth rates in terms of gross value added (a close approximation of GDP).

■ Baseline
■ Steady State

Country	Baseline	Steady State
ITALY	1.0	1.8
SPAIN	1.7	2.5
BELGIUM	1.6	2.7
JAPAN	0.8	2.7
FRANCE	1.7	2.9
AUSTRIA	1.4	3.0
GERMANY	1.4	3.0
NETHERLANDS	1.6	3.2
SWEDEN	1.7	3.6
UK	2.5	3.9
FINLAND	2.1	4.1
UNITED STATES	2.6	4.6

ARTIFICIAL INTELLIGENCE DATA AND ALGORITHM CYCLE

- Data is collected from user's activity
- Existing algorithm improve
- Better algorithms create better user experience, attracting more customers
- More customers generate more data
- More data further enhance algorithms
- Tech companies' products become even more attractive and entice more customers

AI gains an upper hand over its competitors, it will be very hard to resist a self-perpetuating cycle of monopolization. Such a company, thanks to the already large set of data, will have advanced algorithms. Advanced algorithms mean better user experience and more features, thereby attracting more customers. More customers, in turn, generate more data, which further improves the existing algorithms and makes the company's products even more appealing, ultimately resulting in an even larger customer base, ad infinitum.
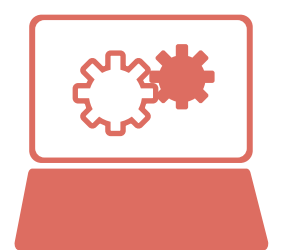
ARTIFICIAL INTELLIGENCE AND BANKING

AI can help by facilitating complex analysis of data, automating manual compliance processes such as "Know Your Customer" (KYC), and "Anti-Money Laundering"(AML). Both of these processes rely on gathering data from various systems to understand customer and transactional behaviors.

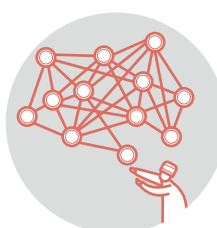### DATA ANALYSIS AND INSIGHT
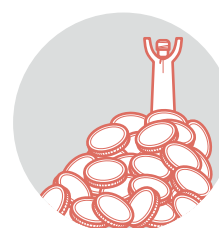**60%**
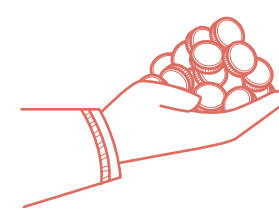
COST BENEFITS AND SAVINGS
54%

INCREASED PRODUCTIVITY
59%

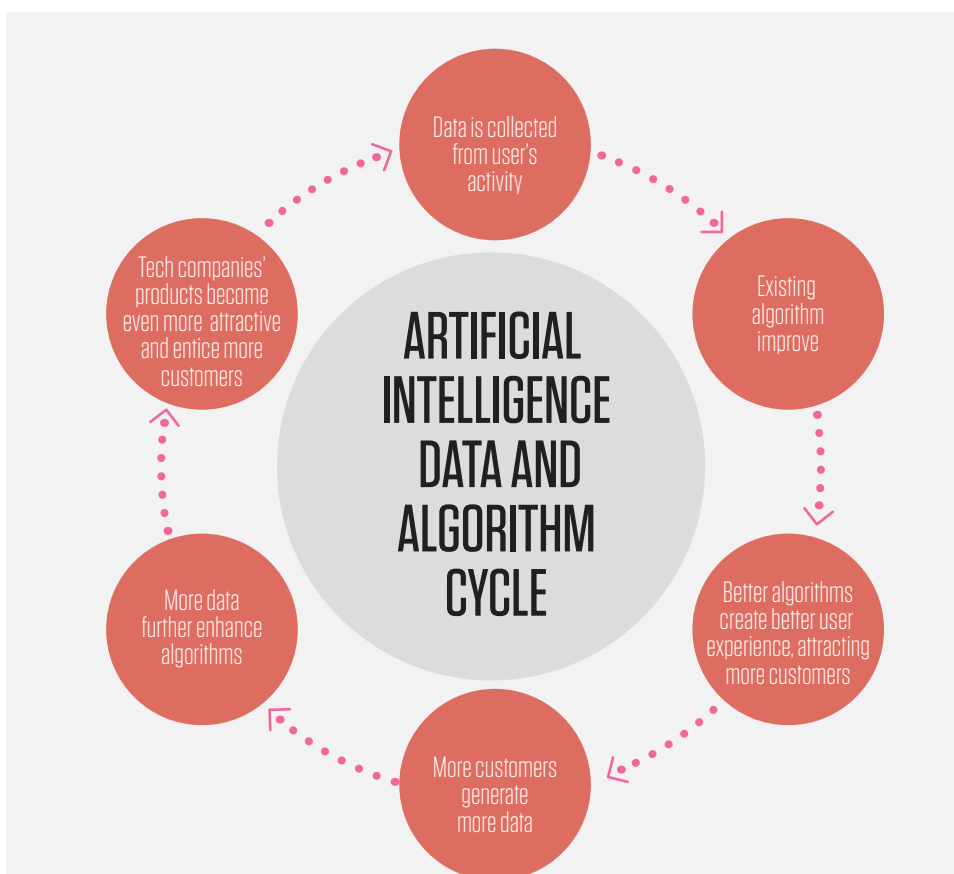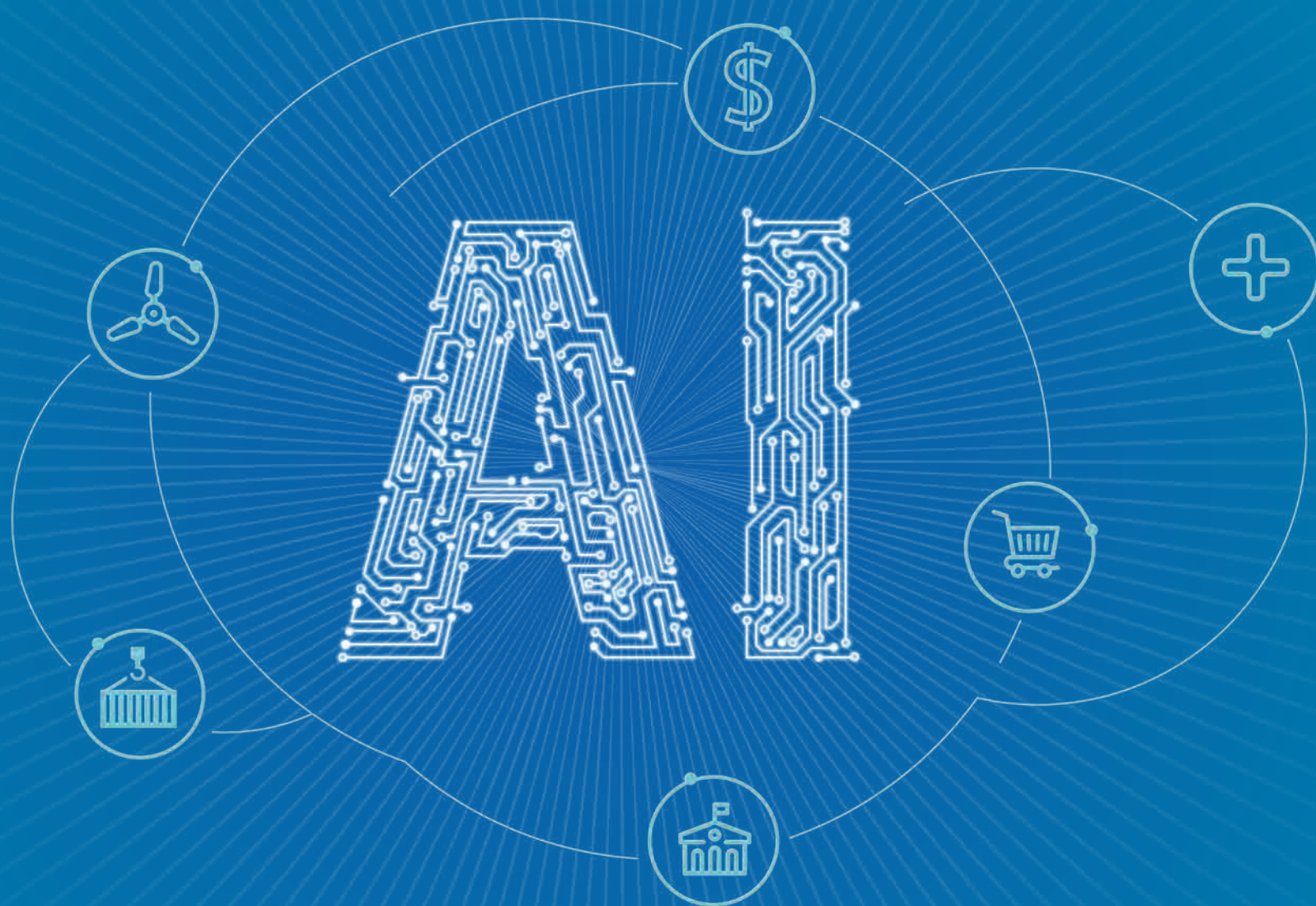## ARTIFICIAL INTELLIGENCE PAYS OFF FOR BANKING

AI computes and connects data sets to help banks smarter, data-driven decisions for their clients.

AI helps streamline customer interactions (such as applying for a loan) by removing unnecessary manual steps.

AI isn't eliminating jobs. It helps bankers use data to be more productive and effecient.