

# The Disruptive Strategist

## Q2 2023

Marketing material for professional, institutional and accredited investors.  
Capital at risk.

### Executive Summary

In this newsletter the Disruptive Strategist team focuses on artificial intelligence (AI) in healthcare, virtual and augmented reality (VR and AR), the disruptive forces shaping China's electric vehicle (EV) market, and how companies should be thinking about 'technical debt'.

Mark Hawtin notes the increased willingness on the part of investors to move back into risk assets and duration, driven by a growing confidence that inflation is being brought under control.

Pieran Maru takes a look at Apple Vision Pro and whether it provides a glimpse into the future of integrated VR and AR.

Wendy Chen analyses the various forces influencing the EV market in China and notes its importance for EV adoption in emerging markets.

David Goodman reminds us of the importance of addressing technical debt and the Darwinian imperative of evolve or die.

And finally, Kevin Kruczynski highlights some of the breakthroughs AI is enabling in the healthcare sector.

### Introduction

#### Mark Hawtin

The first half of 2023 has seen an increasing willingness to move back into risk assets and specifically duration. This has been driven by a growing confidence that inflation is coming under control and that, as a result, interest rates will soon peak. In the US, the drop in inflation has been rapid and has driven a return to risk assets. The first seeds of this sea change were apparent early in the year, but investors remained sceptical – as a result the equity buying was very focused on large-cap, highly liquid names. Expensive tech and non-profitable growth were left behind as the move started. In fact, well over 50% of the MSCI World Growth Index performance in H1 2023 came from just seven names – Apple (+50%), Microsoft (+43%), Alphabet (+36%), Amazon (+55%), Tesla (+112%), Meta (+138%) and Nvidia (+190%). It was the move in Nvidia that reminded us all that disruption remains alive and well in spite of the macro concerns. As we repeatedly argue, true innovation grows through any macro downturns, delivering unimpacted fundamentals even though the market often punishes these names.

The Q1 results print from Nvidia set alight the Digital 4.0 theme that we have written about extensively for the last year or more. Its dominant position in GPUs for AI, particularly on training applications, led to a huge uplift in expected revenues in the guidance periods. We have never seen a guide up of such magnitude from such a large company – it was truly impressive. We were in Nvidia's offices seeing management the day after the print and they were in a confident mood about the long-term opportunity that lies ahead.

It felt as though the blue touch paper had been lit and Digital 4.0 names across the board took off, recapturing a chunk of the 2022 losses.

### Investment management team



**Mark Hawtin**  
Investment Director



**David Goodman**  
Investment Manager



**Kevin Kruczynski**  
Investment Manager



**Wendy Chen**  
Senior Investment Analyst



**Pieran Maru**  
Investment Analyst

As well as AI creating a major catalyst for growth assets, we saw a clear bottoming in the trough of disillusionment (in Gartner Hype-Cycle terms) for crypto. After a really difficult 2022 that saw everything from regulatory resistance to outright fraud (FTX), it seemed that the Wells Notice and ensuing lawsuit against Coinbase by the SEC marked the darkest before the dawn moment. We have firmly believed that Coinbase represents the most regulated onshore platform for blockchain/crypto assets and that it will become the facto winner as regulation takes shape. More recently, a partial win against the SEC by Ripple and the launch of listing applications for Bitcoin ETFs by a large number of leading asset managers has started to turn the tide in sentiment. Coinbase rallied 25% on the day of the Ripple judgement and it is up by 205% year-to-date.

As always, the rising tide of optimism has helped names that we do not consider to be long-term winners. While our much-favoured software platform opportunity Cloudflare has risen 67% year-to-date, higher beta, more smashed down names like Carvana have been driven sharply higher (up 1038% in H1 2023!). Caution is therefore warranted. We do not see this as a bubble (yet) but there are names that have moved into dangerous territory while there are also many names that have significant upside potential left. Stock picking will be key in H2.

## Apple Vision Pro – Our future horizon or the latest hype?

### Pieran Maru

Q2 saw the announcement of Apple's much-anticipated Vision Pro, a mixed virtual reality (VR) headset that blends digital content with the physical world. Although VR has been readily available to consumers since the 1990s, only in the last decade has it emerged as a transformative technology offering truly interactive and immersive experiences.

So what is VR? VR refers to a simulated 3D computer generated environment that fully isolates the user from their physical surroundings. It is achieved through a head mounted display that covers the eyes, enabling users to interact with virtual objects or perform various actions. The term VR is often interchangeably used with augmented reality (AR); however, the key difference is that AR superimposes digital content onto the real world, overlaying virtual elements – allowing the user to be aware of their surroundings.

### Aviation leading the way

VR has gained traction in both the industrial and educational sectors, offering a range of impactful use cases that enables enterprises to scale faster through rapid prototyping and immersive training. One industry at the forefront of adopting this technology is aviation; Airbus has been developing VR procedure training without the requirement to utilise high demand flight simulators or fixed training equipment. VR allows pilots to be immersed in a virtual cockpit, performing repeated drills to build sequence knowledge and muscle memory. Meanwhile the US Air Force found using VR for flight training reduced their training course length by several months.

In healthcare, VR has been trialled as a tool to assist in preparing medical students for clinical practice. This ranges from models to visualise and improve accuracy for complex procedures to patient interaction training. A study<sup>1</sup> led by the Department of Orthopaedic Surgery at John Hopkins University School of Medicine found that training with VR was subjectively higher rated when compared to reading/video and had similar performance results when compared to training with physical simulations.



Airbus Virtual Procedure Training<sup>2</sup>

<sup>1</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9042586/>

<sup>2</sup> <https://aircraft.airbus.com/en/newsroom/press-releases/2022-11-airbus-virtual-procedure-trainer-offers-an-innovative-way-for>

There are still challenges however. VR still faces numerous obstacles and challenges. Cost is a restrictive barrier for the average casual consumer. Further, VR headsets can often feature complex designs with multiple sensors and displays. For instance, Apple's Vision Pro is anticipated to undergo significant production cuts before its release date early next year, due to production inefficiencies and yield issues. Perhaps the most significant challenge for VR, though, is 'VR sickness'. The perceptual system can be disrupted when receiving visual information of motion without corresponding physical sensations. Exposure to these sensory conflicts can lead to symptoms resembling motion sickness, including dizziness, nausea, eyestrain and disorientation. These effects can be minimised by reducing latency between users' inputs and the virtual world's output, as well as increasing frame rates. Content design also plays a crucial role, more so when it involves intense visual effects or rapid movements.

VR is at the cusp of potentially revolutionising the way we interact, learn and play with the world around us. As we enter a new era of computing, we eagerly await the developer community to design and develop innovative end-use cases to leverage VR headsets. While VR can be a leading player in the workplace, industrial setting and educational environment, we have yet to see this replicated meaningfully in a home environment. Will this be the App Store moment for the iPhone, or will it follow the demise of home 3D TVs? Only time will tell.

## The disruptive forces reshaping China's electric vehicle landscape

Wendy Chen

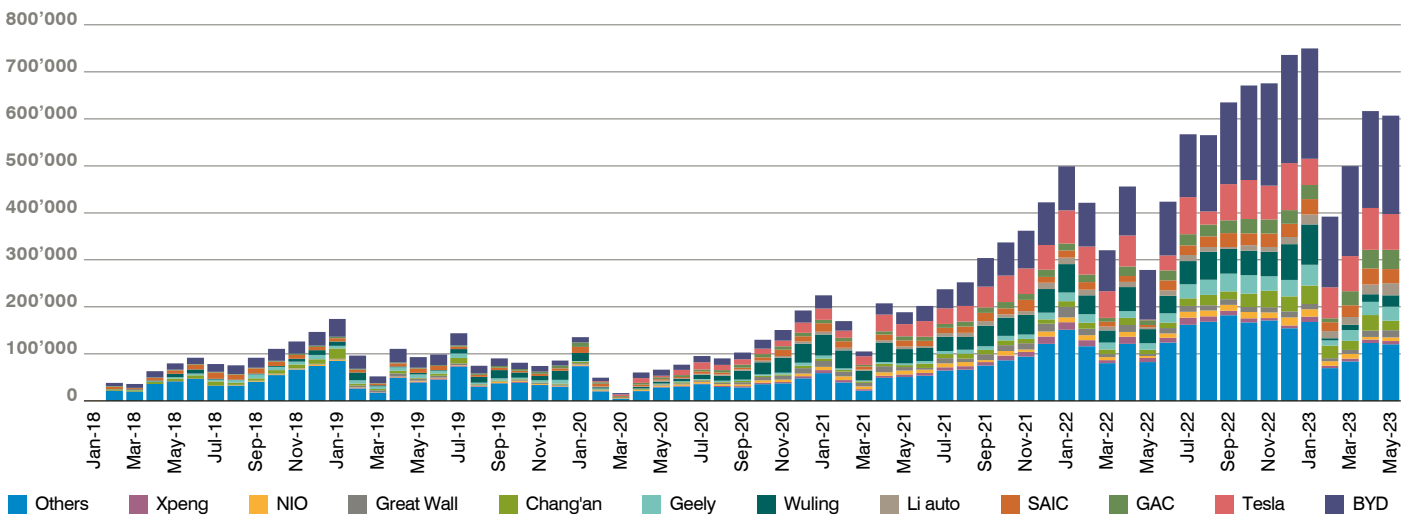


The rapid penetration of electric vehicles (EVs) across the globe has been mind-blowing to even the most conservative automotive producers. Not only have consumers embraced the evolution on account of lower fuel costs and an improved experience, EVs have also been promoted by policy makers to reduce emissions and fuel dependence; the European Union has aimed to end sales of new CO2 emitting cars by 2035, while the US administration set a goal to electrify all new light-duty and federal acquired vehicles by 2027/2035.

China has emerged as a global leader both in the manufacturing and consumption of EVs. Not only did China produce 35% of exported electric cars globally in 2022, but China's domestic market also accounted for 62% of global EV sales in 2022. With EVs taking up circa 30% of all new auto sales in H1 2023, China has delivered its 2025 EV target in advance and is leading the world in terms of EV penetration.

Yet unlike China’s auto adoption process 30 years ago, which was dominated by imported brands, domestic carmakers are stealing the show. EV sales in China have expanded 10x over the past five years and among bestselling EV brands in China, of the Western carmakers, only Tesla made it into the top ranks. Moreover, the volume gap between domestic and international brands is expanding with local carmakers taking even more market share across time (see chart below).

**Chart 1: Monthly sales volume of electronic vehicles in China by brands**



Source: China Association of Auto Manufacturers. Past performance is not an indicator of future performance and current or future trends.

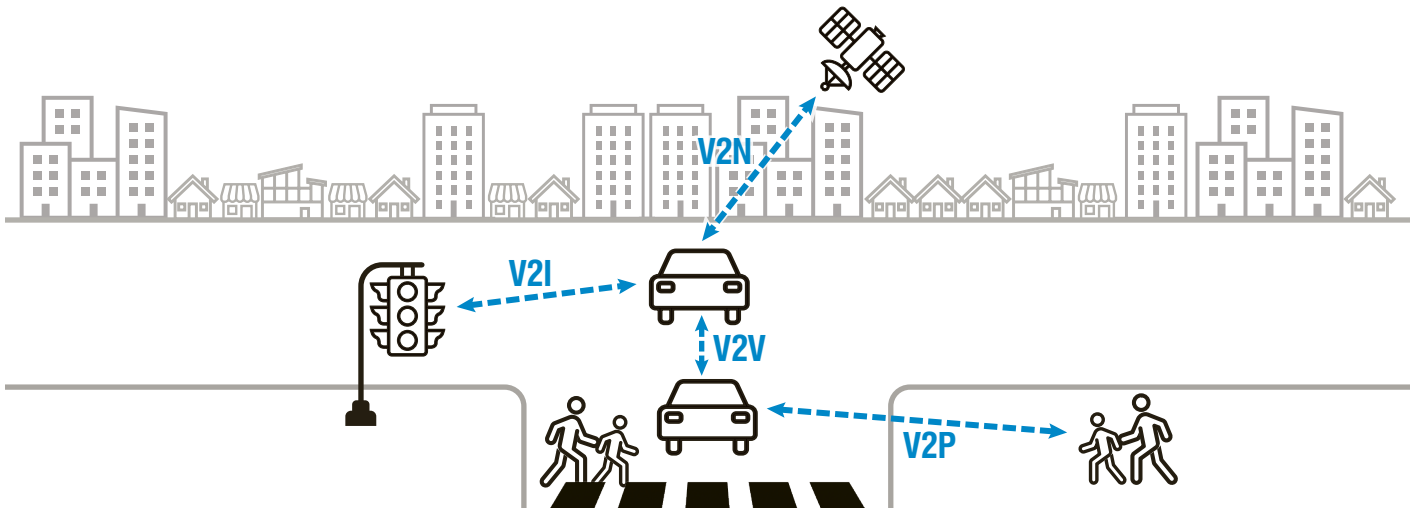
**Beyond hardware: brainy is the new sexy**

While having superior hardware and legacy design capacity, many traditional original equipment manufacturers (OEMs) have been lagging in the EV transition. While most carmakers have moved past any initial reluctance and tried to catch up in recent years, the EV arena has already been flooded with new entrants. To differentiate from multiple competitors, OEMs have been searching for new technological barriers in the EV era, as hardware (especially engines) that defined winners in the era of internal combustion engines are no longer a key differentiator in the EV era.

In the eighth movie of the Fast & Furious franchise, the wild scene of thousands of hacked cars raining down from carparks was clearly haunting, though it did showcase how smart autos are becoming akin to cloud-connected robots on wheels. Nowadays, a competitive EV does not only require high-end electrical architecture, but also the latest software built upon hundreds of millions of miles of driving data, as well as regular over-the-air (OTA) software updates that keep refreshing user experience.

User experience has been a winning point for the new entrants of China EV OEMs. High level autopilot has become more of a standard facility rather than an add-on service; interlinked multi-screen and interactive cameras are also becoming common accessories for new models. As the auto IoT (internet of things) technology proliferates and urban traffic management upgrades, V2X (vehicle-to-everything), which allows coordination and data exchange between vehicles and other vehicles/pedestrians/infrastructure/networks, is also becoming more tangible. This could massively reduce the risk of traffic accidents and enhance autopilot to the next level (Indicated in chart on the next page).

## Chart 2: How V2X technology can transform driving safety and efficiency



Source: : <https://www.iwavesystems.com/news/how-v2x-technology-can-transform-your-driving-experience/>

### Resolving range anxiety: recharge or auxiliary

In the past decade, EV battery life has notably extended from less than 100km to 500-600km for one charge. However, the age-old problem of range anxiety still hovers above further adoption of electric vehicles, especially when it comes to long-distant trips out of urban areas where charging stations become scarce.

As of 2022, China has increased the number of charging poles by 100% year-on-year to reach nearly 5 million, yet even that volume seems insufficient with 13 million EVs in the country. Apart from waiting for developments on charging infrastructure and battery technologies (such as sodium-ion batteries), EV OEMs have also come up with their own solutions to deal with consumer demand.

- **Battery swap:** due to the relative scarcity of high-voltage fast-charging facilities, the charging convenience for EVs is still far from that of replenishing fuel for internal combustion engines (ICEs). While Tesla has been laying out groundwork on superchargers, other carmakers like Nio are trying other measures to smooth the charging experience, such as spreading out fully-automatic battery swapping stations that take circa three minutes to swap a fully charged battery.
- **Extended-range EV (EREV):** another method to solve the age-old range anxiety is to utilise EREV technology, which is fully run by an electric motor but equipped with a generator on board to recharge the battery when it is depleted. Not only can it utilise fuel facilities in times of need, the EREV battery is also smaller in size and more stable in extreme weather. Both Chinese auto makers BYD and Li Auto, are growing their focus on EREVs. In our view, the significantly longer range between charges adds to their relative appeal for many buyers as the rollout of charging point infrastructure remains behind schedule and has so far been concentrated in and around higher tier cities.

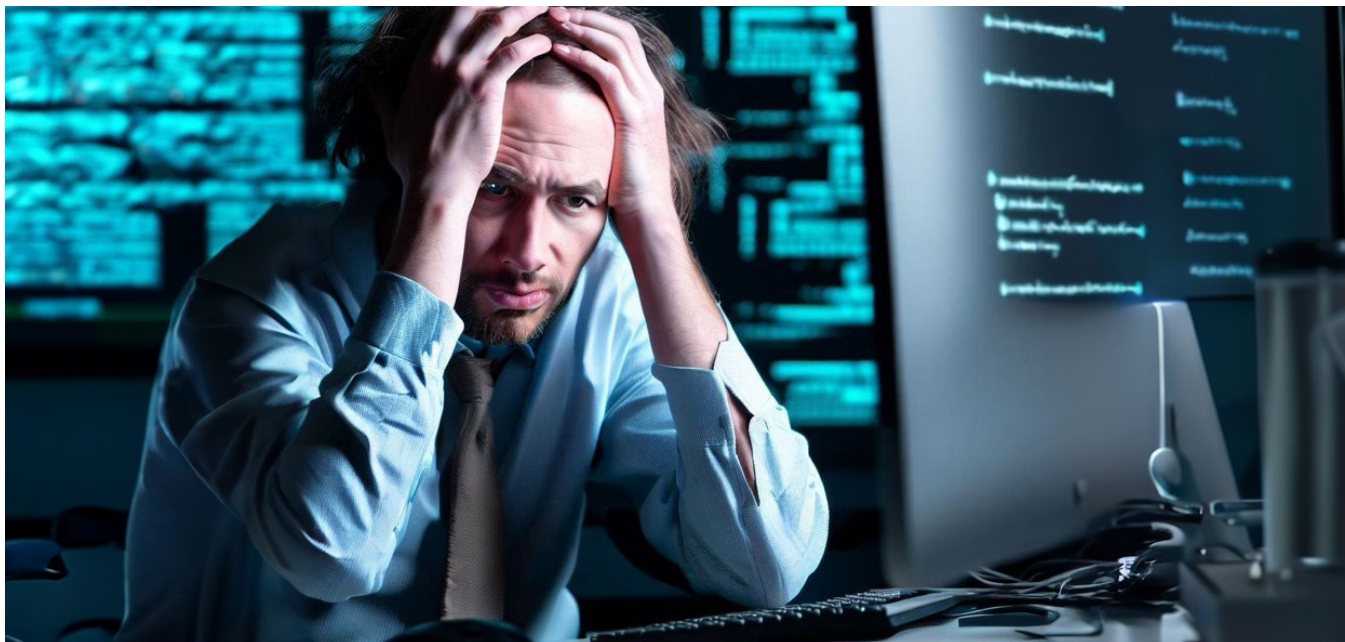
### Overseas expansion: quality and affordability in play

While China has experienced notable hurdles over the years in taking market share from incumbent ICE carmakers, the upscaling EV adoption has shed new light on a Chinese auto brand export story. As the world moves towards a new phase of climate change urgency, the demand for mass market affordable EVs is rising across the globe, giving made-in-China EVs another leg of growth for global expansion. During Q1 2023, China surpassed Japan to become the largest automobile exporter globally, thanks to the ramp-up of the EV revolution and global adoption.

Thanks to its superior affordability and variety, China-made EVs have been a perfect fit for a mass market EV adoption in emerging markets. As the sales volume continue to climb, scale benefits will likely further widen the cost advantage. Meanwhile, thanks to a mature EV supply chain and the premiumisation effort in their domestic market, the interior design and reliability of made-in-China EVs have also advanced to the top rank, making developed markets the next frontier for the export of Chinese EVs. Morgan Stanley expects China-made EVs to account for 30% of the global EV market share, indicating 38% annual offshore sales growth through to 2030.

## Technical debt in a digital world: The Darwinian imperative

David Goodman



### Technical debt is a problem that all businesses face in the digital world, but what is it?

In a nutshell, it is the accumulation of shortcuts and compromises that are made in the development of software. Shortcuts which seemed like a good idea at the time might well hijack businesses in the long run.

In the digital world, businesses burdened with technical debt are likely to be disadvantaged, vulnerable to being disrupted by new entrants deploying the latest technologies. But it does not have to spell disaster; businesses that can manage technical debt can reap the benefits of enhanced efficiencies and new opportunities.

### What are the risks of not managing technical debt?

The Darwinian imperative, ie evolve or die, is a good metaphor to explain the issue businesses face. In the natural world, organisms that are not able to adapt to their environment are eventually replaced by those that can. The same is true for businesses in the digital world, with only those able to keep up with an ever-evolving technological landscape surviving.

For those burdened with technical debt, this can prove challenging. For example, a business that chose to build on existing legacy software as it was cheaper and easier to implement may find it unscalable in the long term and future growth could therefore be compromised. In addition, technical debt can hinder innovation, with new features and functionality difficult to add to legacy software systems, preventing businesses from keeping pace with competitors. Both situations can make disruption a major risk.



Having highlighted the risks, let us look at how technical debt can be managed to the point where it can become an opportunity, with businesses reaping the benefits of enhanced efficiencies.

**The case of Delta Airlines**

Delta was using a legacy software system so outdated that it could not be integrated with the company’s new customer relationship management (CRM) system. Consequently, customer data had to be manually entered into two systems – an unsatisfactory fix which eventually led to millions of dollars being spent on replacing the outmoded software.

The case shows how technical debt can be a barrier to innovation, with the legacy system acting as a roadblock preventing Delta from integrating with its CRM system and making it difficult for the airline to track customer interactions and provide personalised service.

By replacing the legacy system, Delta swiftly improved its customer service and increased customer satisfaction. In addition, the dramatic reduction in manual data entry brought welcome cost savings.

This case study is a classic example of how technical debt can be a costly problem to resolve, but life threatening to ignore. By taking the hit and spending on a new system, Delta overcame the problem, embraced the increased productivity and quite possibly saved itself from extinction.

**Disruption by new entrants**

It is clear that technical debt creates opportunities for new entrants to disrupt established businesses. Think Uber and Airbnb; without the hindrance of a legacy system, startups can develop new products and services that are not possible with older systems and enables a competitive edge.

For example, Uber entered the taxi industry and was able to disrupt by using a mobile app to connect riders with drivers. Conventional taxi companies with legacy systems were unable to catch up, giving Uber a significant advantage.

**Disruptive technologies**

No surprise, disruptive technologies benefit from technical debt, with new technologies displacing existing systems. For example, the rise of cloud computing has disrupted the traditional IT industry, with its innovative technology delivering more efficient IT services, allowing businesses to reduce their IT costs and improve agility.

Technical debt is a real problem for incumbents, but it can also be an opportunity. Businesses that manage their technical debt by investing in new systems help ensure their longevity by keeping pace with the competition; they facilitate growth and can enjoy greater efficiencies and new opportunities that the latest technologies usually bring.

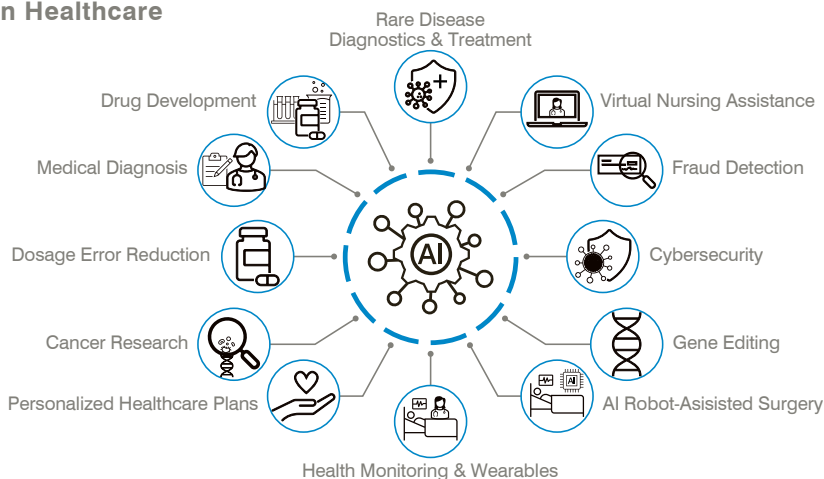
On the contrary, businesses that ignore technical debt are at risk of being disrupted by new entrants or disruptive technologies.

**Remember the Darwinian imperative: adapt or die.** Businesses that are able to adapt to the changing technological landscape will survive and thrive. Those that are not will eventually be replaced by those that are.

**Revolutionising healthcare: The transformative impact of artificial intelligence**

**Kevin Kruczynski**

**Applications of AI in Healthcare**



Source: Delveinsight <https://www.delveinsight.com/blog/top-applications-of-artificial-intelligence-in-healthcare>.

It is not a novel observation that technological evolutions often appear to take more time than initially anticipated, but when they do materialise, they seem to occur rapidly. This is attributable to the way technological advancements tend to compound, with each new development enabling even grander achievements. Over the last year or so, several stars aligned as advancements in algorithms, GPU technology and data accessibility enabled the launch of Chat-GPT. This propelled artificial intelligence (AI) into the limelight, sparking intense debate among investors, businesses and the broader public. While this appears to be an overnight phenomenon, many organisations have been labouring behind the scenes for decades to cultivate and harness potential applications.

### **Healthcare – an area for early AI adoption**

This takes us to the healthcare sector, which has long been a promising area for early AI adoption, as it offers the promise to enhance the quality, effectiveness and availability of care. It is a setting that creates a tremendous volume of data, which can be employed to train AI systems to improve diagnosis, treatments and prevention. Healthcare professionals regularly make complex decisions based on incomplete information; AI models can analyse extensive data sets and offer valuable insights to assist the decision-making process. Rudimentary forms of AI have actually existed for decades, such as Stanford's MYCIN, an early AI tool developed in 1972 for diagnosing blood infections. Computer assisted detection systems using AI algorithms to scrutinise medical images for potential irregularities emerged during the 1980s and 1990s, leading to significant changes in the field of radiography. AI has also been developed to plan and guide radiotherapy treatment, with the aim of minimising damage to healthy tissue and improving patient outcomes.

Given this context, it is no surprise that we find the disruptive healthcare companies within our portfolio are using AI to improve their product offering while helping to widen their technological moats.

Intuitive Surgical, the leading provider of robotic surgical systems, has been embedding AI to improve the accuracy and efficiency of its da Vinci systems for many years. For example, AI-powered image guidance can help surgeons see more clearly during surgery, with data overlaid across the field of view, and AI-powered decision support tools helping make better decisions. Its smart staplers can measure tissue compression and make automatic adjustments to the stapling process to ensure optimal placement, reducing the risk of complications. The system can monitor the patient during a procedure and update the operating plan to pre-empt any problems. With two decades of usage data, and over 12 million procedures already performed and recorded on its systems, Intuitive has a significant lead over any emerging peers in terms of data gathering and AI model training capability.

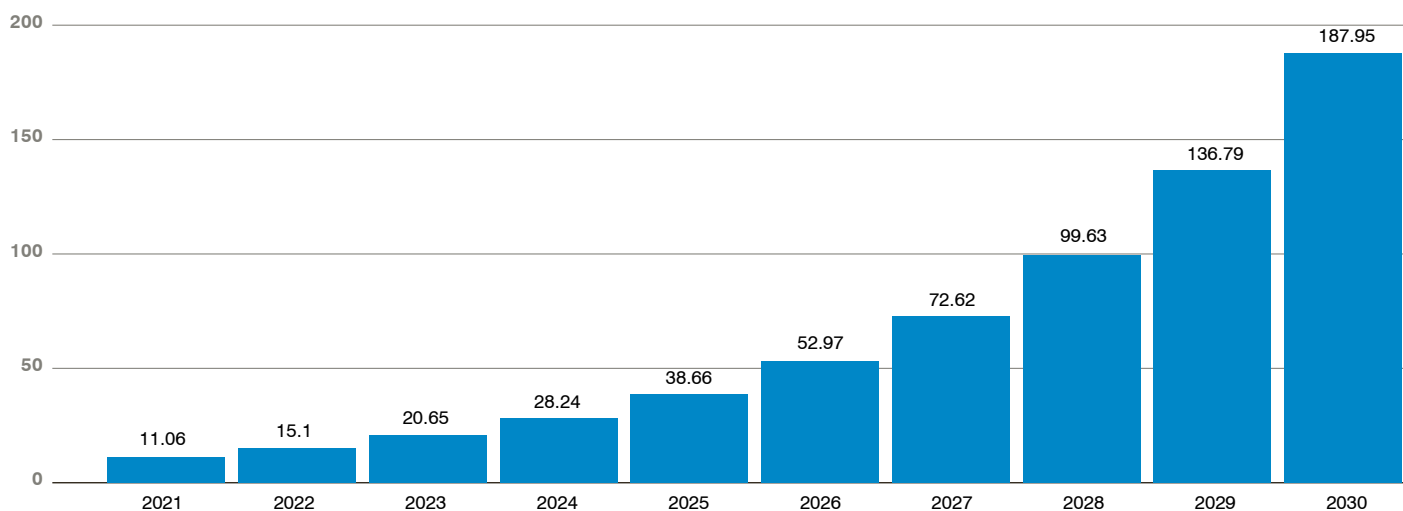
Omniceil is a market-leading provider of medication management solutions. The company is using AI to improve the accuracy and efficiency of its medication dispensing systems. For example, analytics tools can help hospitals to track medication inventory levels, identify potential drug shortages and support reducing the \$600bn medical mal-adherence problem. This is important as a considerable amount of time is spent managing medication shortages.

Dexcom, the leading maker of continuous glucose monitoring devices, uses AI to improve the accuracy of glucose readings and to personalise alerts and alarms to help patients understand and make better informed decisions to manage diabetes risks.

Oxford Nanopore develops nanopore sequencing technology that is faster, cheaper, and more portable than traditional DNA sequencing methods. It uses AI to make its technology more accurate, efficient, and powerful. Thanks in part to its AI data analysis algorithms, it has improved its system accuracy from 85% back in 2015 to above 98%. This improvement has made nanopore sequencing a more powerful and versatile tool for a variety of applications; for example, it is now being used to diagnose diseases, monitor environmental changes and develop new drugs.



## AI in Healthcare – Estimated Market Size 2021 to 2030 (\$Bn)



Source: Precedence Research ( <https://www.precedenceresearch.com/artificial-intelligence-in-healthcare-market>).

We often emphasise the assertion that “data is the new oil” and that the further along a business is in its digital transformation, the more data it generates. This abundance of data will make it easier to transition into the AI age, in our view. Our healthcare companies are among the digital leaders in their respective fields and are therefore well placed to thrive in this era.

### Outlook

We look forward into a critical quarter for growth equities. Not only will the reporting season carry more significance than usual with elevated expectations following the surge in share prices so far this year, but the markets will look for clear confirmation that the rates upcycle is essentially complete. If that is confirmed, then we think growth equities should continue their re-rating.

The evidence needs to continue to show that disruptive growing companies can successfully navigate downturns with growth broadly untouched. While this is not a 2000 dotcom type era, there are parallels in terms of the money that has been freely available and thrown at many startups. In 2013, according to Barrons, there were about 30 private Unicorns (companies with a valuation in excess of USD 1 billion). This number has since multiplied 30-fold to about 1350. This represents trillions of dollars of market value that needs to prove itself. As an aside, we think this is a strong supporting argument for the quoted disruptive space. The write down of private companies has been slow and only represents a fraction of the revaluation downwards seen by quoted growth companies. Valuations are therefore much more compelling in the quoted world, in our view, even before taking into account the liquidity premium that should be attached to freely traded shares.

These, often large and more established, quoted enterprises also benefit from profile and market positioning at a time when cash is unavailable to start ups and younger companies. Growth equity has become almost impossible to secure; the demise of Silicon Valley Bank has added further pressure to that dynamic.

We continue to believe that disruptive companies were overly penalised in price action terms during 2022 and that there is still significant upside in the duration end of the market. This has begun to play out over the last three months, and we expect that to continue. The powerful move from the biggest companies will likely abate in relative terms, further enhancing the opportunity further down the market cap scale. The problem of size and influence has also been reflected in a rare decision by the Nasdaq to reweight the Nasdaq 100, reducing the Magnificent 7 weights and raising the weighting of other names to better reflect the cross section of growth opportunity. All these factors point to a continued period of outperformance for growth equities.

See “Important disclosures and information” on the following page.

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