IFM Investors

Sebastian Domenech
Executive Director,
Asset Management

AI at a crossroads

How AI is reshaping infrastructure investment

The AI revolution is expected to profoundly impact the infrastructure space, creating significant opportunities for investment and enhancing value of existing infrastructure. Like any revolution, it will also bring about relevant challenges.

Key takeaways

1. AI is expected to drive growth in demand for key infrastructure, which we believe will create significant opportunity for investment.

2. Implementation of AI is expected to power relevant improvements in financial and operational performance of infrastructure assets.

3. A holistic risk management framework needs to be in place to identify and address emerging risks and ensure sustainable positive outcomes for all stakeholders.

Artificial Intelligence (AI) is a near-overnight business success, about 80 years in the making. While AI has been present and integrated in businesses for decades in one form or another, the most recent breakthroughs in generative AI have opened up an entire new world of possibilities. AI, like electricity and the internet, is a general-purpose technology that can impact many aspects of human civilisation, and the infrastructure space is no exception.

The rapid adoption of generative AI is creating a surge in demand for key infrastructure to support deployment, thus creating an immense opportunity for investment in new projects. In addition, existing infrastructure assets are expected to derive relevant operational upside from AI adoption, thus increasing the value of these assets to society and their owners.

At the same time, AI poses a host of novel challenges that could have profound implications for human civilisation. This article focuses more specifically on challenges that we believe will directly affect the infrastructure space—including increased cybersecurity risks, algorithmic issues (errors, biases), data issues (privacy, intellectual property), and labour challenges. Infrastructure investors and asset operators alike must ensure that AI systems are deployed thoughtfully and in consideration of all stakeholders.

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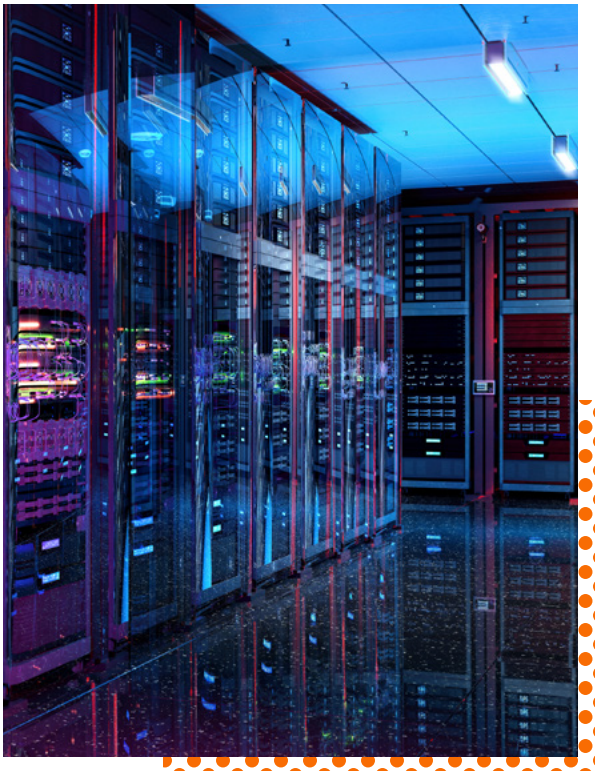
New investment opportunities in infrastructure

The recent breakthroughs in AI were made possible by substantial increases in computing power, algorithm development, and the massive accumulation of data humankind has built up over decades.

AI experts agree that the momentum for AI development is unstoppable. While there is an element of hype at some levels of the "AI value chain", the total potential business value AI can create is so significant, that the fundamentals for continued strong growth in demand for data storage and computer processing power are undeniable[1].

This calls for massive investment in the complex infrastructure network that is required to run AI. This network is composed primarily of 1) data centres, 2) the electricity that is required to power them, and 3) the fibre network to connect them to users.



Opportunities

Data centres – Global demand for storage and computing power in third party data centres has grown rapidly in the last decade, on the back of global corporate trends that include digitisation of processes and migration of data storage and computing power to the cloud. Global professional services company McKinsey estimates that global demand for data centres could reach 219 GW by 2030 (approximately quadrupling demand in 2023 and requiring investment of over $250 billion.[1])

Electricity – According to the US Department of Energy, electricity demand from US data centres has grown dramatically in the last decade, climbing from 58 TWh in 2014 to 176 TWh in 2023, and is expected to climb to levels between 325 to 580 TWh by 2028[2]. At the same time, many aspects of civilisation are being electrified, which we believe will create an enormous opportunity for investment in energy generation and grid enhancement.

Fibre networks – Fibre network investment has experienced headwinds in recent years due to a combination of rising interest rates, increasing development costs and the saturation of the most economically attractive urban markets. The development of large-scale data centres that need to be connected to users—especially those that are being developed in secondary and emerging data centre markets (further away from large urban centres)—is creating more attractive conditions for investment in new fibre network deployment.

[1] McKinsey - AI power: Expanding data center capacity to meet growing demand
[2] Berkeley Lab – Supported by the US Department of Energy - 2024 United States Data Center Energy Usage Report

CASE STUDY

Switch – data centre platform[3]

Funds managed or advised by IFM Investors made their first investment in a data centre platform in 2022. IFM partnered with DigitalBridge and acquired all outstanding shares of common stock in Switch, Inc. (NYSE: SWCH) in a take-private transaction with an enterprise value of ~$11 billion (as of 6 December 2022). At the time, Switch operated 16 top-tier data centre facilities located across five strategically located campuses in the US, and has since opened three new facilities and has expansion plans for nearly 20 more in the next decade.

We believe Switch is not only a strategic asset providing the proverbial 'picks and shovels' to large customers with significant demand for data centre services, but it also has advantages and distinct market positioning amongst data centre providers.

Switch was founded in 2000 and has built a tremendous business, team, and know-how that is valuable during a high-growth period that the business has now entered.

This is evidenced by Switch's profitability, renewable energy utilisation, large landbank within its operating campuses, and its dedicated construction and procurement teams, which can accelerate its ability to grow its platform. Further, we believe Switch's proprietary data centre designs and diversification in customers, regional markets, and physical data centre locations, effectively mitigate downside risk.

IFM views Switch as a data centre builder and operator finely-tuned by decades of experience that is well positioned to capitalise on the many tailwinds for storage and computing.

Switch LAS VEGAS 12 Data Center

[3] Case studies are provided for illustrative purposes only and should not be relied on to make an investment decision.

Operational upside for infrastructure assets

Generative AI is expected to create sizeable economic benefits, given its potential to transform work and to accelerate technological development across industries. Global professional services company Accenture estimates that Generative AI can create up to $19.9 trillion in economic value by 2038, with a people-centric approach that maximises productivity growth.[4]

Infrastructure assets are expected to benefit from this positive trend in multiple ways. First, IFM anticipates that the ensuing economic growth will bring increased demand for all types of infrastructure assets, including transportation, utilities and energy-related infrastructure, positively impacting the top line.

Second, a broad deployment of AI is enabling material improvements in efficiency through increases in productivity and optimisation of operations across the value chain of infrastructure assets. Together with increased demand, these efficiency gains will have the potential to translate into enhanced returns for infrastructure investors.

Finally, infrastructure assets are positioned to achieve tangible improvement in the quality of services they provide, including safety and customer service, significantly enhancing the value of these assets to end users and society at large.

[4] Accenture - Work, workforce, workers - Reinvented in the age of generative AI
[5] World Health Organization – December 2023
[6] International Labour Organization – November 2023

AI in practice

Safety first – Despite being well into the 21st century, humanity still faces an unacceptable toll from accidents, with nearly 1.2 million transit-related fatalities[5] and almost three million work-related deaths annually[6] worldwide. The wide adoption of new technologies powered by AI, including autonomous vehicles, robotics, and human enhancement technologies, will enable infrastructure companies to dramatically reduce, and, hopefully, eventually eliminate such tragic events.

Customer experience – Users of infrastructure assets can anticipate enhanced services driven by a broad range of AI-powered applications. For example, road users will enjoy lower rates of congestion due to improved traffic prediction and incident management technologies. Airport users will enjoy better experiences through improved safety and security technologies, such as biometric screening, while utility users are expected to enjoy increasingly agile and effective customer support interactions due to enhanced customer service technologies.

Efficiency – Like most industries, infrastructure stands to benefit from AI solutions that boost labour productivity (see discussion below on AI's impact on labour) and enhance the efficiency of both administrative and operational processes. In particular, infrastructure assets will benefit from improved asset maintenance processes and energy efficiency. All of these efficiency enhancements are expected to contribute to the bottom line and to the sustainability of infrastructure operations, thereby increasing risk adjusted returns for investors.

Revenue optimisation – Infrastructure assets will benefit from improved capabilities to predict usage volumes and reduce congestion. AI powered models will increasingly benefit from growth in the deployment of sensors, and the increasing ability of AI to make sense of new and massive amounts of data. In turn, these developments will improve assets' ability to stimulate volume, increase utilisation, and assist in better timing capex expansion programmes.

CASE STUDY

Manchester Airports Group[7]

At Manchester Airports Group (MAG), which encompasses Manchester, East Midlands and Stansted airports, IFM is driving transformation by harnessing the power of AI. MAG partners with service providers that help enhance the company's digital and AI capability across all areas of the organisation, allowing for operational optimisations and enhanced customer experience.

MAG's AI models can predict how many passengers will be present at security during different times of the day. The forecasting module, which is benefiting from technological breakthroughs in AI algorithms, has now become accurate enough to drive meaningful operational benefits. With such accurate predictions, the manual effort required to produce end-to-end operational plans is significantly reduced, allowing enhanced planning, supply and resourcing, and ultimately better service.

The results of these AI deployments speak for themselves. Indeed, during a six-month span across MAG's airports tracked from March to August 2024, 98% of passengers passed through security in less than 15 minutes, while at Manchester Airport seven million more passengers pass through security in less than five minutes than before the technology was used.

Further, MAG co-developed an innovative, industry-first solution, which combines flight data, weather conditions, and historical trends to more accurately calculate flight arrival and departure times. During its first months in operation, the model was 5-10% more accurate at predicting actual airfield movements versus the scheduled timing. If accuracy can be maintained and increased, the opportunity lies in maximising aircraft movements during peak times.

We believe that MAG demonstrates the potential improvements AI can bring to existing operations, and IFM aims to apply similar strategies across our portfolio of airports.

[7] Case studies are provided for illustrative purposes only and should not be relied on to make an investment decision.

AI challenges

While AI will have a broad and profound impact in the long run, we are focusing on its more immediate impact on infrastructure assets.

Similar to other industries, the infrastructure sector faces an intensification of existing challenges, such as cybersecurity threats and the impact of automation on the workforce. It must also contend with new risks, including algorithmic issues stemming from generative AI solutions. These challenges can have potentially harmful effects on the numerous stakeholders connected to infrastructure assets.

Compounding the challenge, the fast-moving evolution of the technology leads to a growing gap in the development of regulation that will be necessary to manage and mitigate these risks in a consistent and system-wide fashion.

This situation calls for a proactive approach by companies in developing robust frameworks that allow owners and managers to identify, understand, and address the emerging risks brought about by the technology. Below is a non-comprehensive list of challenges posed by AI, which are relevant to infrastructure assets.

Key AI challenges

Cybersecurity – AI is arming bad actors with increasingly powerful tools that allow them to produce more sophisticated attacks, at a significantly lower cost. Generative AI generated code, deep fakes and automated phishing agents are only some of the resources that are being used to increase the volume and effectiveness of well-known threats. In this context, infrastructure assets—most of which provide essential services to society—need to increase their efforts to ensure that the protections they have in place are adequate for the increased levels of risk.

Algorithmic issues – Unlike traditional code that produces deterministic outputs based on the inputs it receives, generative AI models produce outputs that are based on probabilistic parameters. These parameters are set internally through exposing the model to vast amounts of data that allow "training" of the model. The implication is that these models, despite showing increasingly impressive human-like abilities, are not free of errors, biases and even hallucinations. They also potentially expose companies to data privacy and intellectual property issues. This means that any application of these algorithms needs to consider a broad set of risks in order to ensure that potential risk events are within the tolerance thresholds, and that appropriate mitigations are in place.

Labour impact – Generative AI marks a major breakthrough by displaying abilities previously limited to humans, including the proficient use of natural language and creativity. This is enabling the technology to take on complex tasks such as coding, designing, painting, and even composing music. This has enormous implications for human labour, as the technology can perform a relevant portion of tasks that only humans could do until now. Accenture estimates that over 40% of human working hours are in scope for automation or augmentation in the US[8].

[8] Accenture - Work, workforce, workers - Reinvented in the age of generative AI

Conclusion

Generative AI is arguably one of the greatest advancements in human history, with the potential to reshape industries, improve lives, and solve complex challenges. Its ability to enhance decision-making and drive innovation makes it a powerful tool across sectors, not only for infrastructure.

To fully harness its benefits, it must be developed and implemented in ways that maximise its positive impact while proactively addressing potential risks, such as cybersecurity and misinformation. With thoughtful integration and responsible adoption, generative AI can unlock new efficiencies, fuel economic growth, and create investment opportunities that drive progress and improve quality of life across society.

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