Supporting future innovation with AI-ready data centres

以人工智能賦能的數據中心支持未來創新

Boldyn Networks HK Limited

The rise of AI is changing how we work and communicate, opening doors for exciting new developments in areas such as smart buildings and city design.

But a critical factor I find missing from conversations about AI is the future connectivity and infrastructure we need to deal with future AI workloads. To achieve this, we need to invest in data centres that are AI-ready, today.

人工智能的興起正在改變我們的工作和溝通方式,為智慧城市等領域的新發展打開了大門。

然而,我們發現關於人工智能的討論中遺漏了一個關鍵因素,那就是我們需要應對未來人工智能工作負載的連接和基礎設施。為了實現這一目標,我們需要投資於當前支持人工智能的數據中心。

Moving from Data Centres to Connectivity Powerhouses

The challenge is our data centres need to be ready to support edge computing. AI workloads are predicted to move increasingly to the edge; research from Schneider Electric suggests that while only 5% of AI workloads are currently placed at the edge, by 2028 this will rise to 50%.

Some of the rise of edge computing can be attributed to the growth of mobile traffic, particularly driven by the increased use of video. While support for Large Language Models (LLMs) are likely to stay in huge hyper-scaled facilities, the AI workloads associated with smart cites could be hosted more appropriately in regional or local data centres with edge capabilities.

While we can't predict exactly where AI will take us, we're confident that demands on data centres will increase now and in the future.

Near term AI use cases such as computer vision already have stringent latency requirements and future trends such as Autonomous Vehicles are likely to continue to drive demand. Digital Twins and the Industrial Metaverse will also demand edge computing facilities.

AI is also influencing areas such as intelligence in network cognition and optimisation, network and service management, as well as predictive or field force management for self-healing and operational performance decision making. All these use cases require a strong connectivity backbone.

Recognising this future demand for connectivity, Boldyn Networks are ensuring its data centres are 'connectivity powerhouses', housing critical Mobile Network Operator (MNO) equipment, connections back to the MNO Cores, links to the internet and more to enable edge computing.

Supporting Data at the Edge

Our basic architecture comprises of an access network (typically a radio network) which might serve the needs of a transit system or smart city. We lay fibre to link this network back to a series of edge data centres which we call Base Station Hotels. Architecture like this will become important as AI workloads move to the edge.

We're already enabling data centres that support edge-computing in Hong Kong having recently deployed an Integrated Radio Distribution System (IRDS) in a Government Data Centre, providing 5G for edge computing, cloud computing and IoT. Critically the system accommodates up to four MNOs and supports E-UTRAN New Radio Dual Connectivity (ENDC), making it possible for mobile devices to access both 5G and 4G LTE networks at the same time.

從數據中心轉向連接中心

挑戰在於我們的數據中心需要準備好支援邊緣計算。預計人工智能工作負載將越來越多地向邊緣遷移；有研究表明，雖然目前只有 5% 的人工智能工作負載位於邊緣，但到 2028 年，這一比例將上升到 50%。

邊緣計算的興起在一定程度上可以歸因於移動流量的增長，特別是由視頻使用量的增加推動。雖然對大型語ір模型（LLM）的支援可能會保持在巨大的超大規模設施中，但與智慧城市相關的人工智能工作負載可以更適當地託管在具有邊緣功能的區域或本地數據中心。

雖然我們無法準確預測人工智能將把我們帶向何方，但我們相信，現在和未來對數據中心的需求都會增加。

電腦視覺等近期人工的智能用例已經有嚴格的時延要求，自動駕駛汽車等未來趨勢可能會繼續推動需求。Digital Twins 和 Industrial Metaverse 也將需要邊緣計算設施。

人工智能也影響網路認知和優化中的智慧、網路和服務管理，以及用於自我修復和營運績效決策的預測或現場人員管理等領域。所有這些用例都需要強大的連接主幹網。

認識到這種未來對連接的需求，Boldyn Networks 正在確保其數據中心成為「連接巨頭」，容納關鍵的移動網絡運營商設備，連接回移動網絡運營商的核心網，連結到互聯網等，以實現邊緣計算。

在邊緣支援數據

我們的基本架構包括接取網路（通常是無線網路），可以滿足智慧城市的需求。我們鋪設光纖將該網路連接回一系列邊緣資料中心，我們稱之為基帶酒店。隨著人工智能工作負載向邊緣遷移，此類架構將變得非常重要。

我們已經在多個城市啟用支援邊緣運算的資料中心，最近在資料中心部署了整合式無線電分配系統（IRDS），為邊緣運算、雲端運算和物聯網提供 5G。

關鍵的是，該系統最多可容納四個 MNO，並支持 E-UTRAN 新無線電雙連接（ENDC），使移動設備可以同時訪問 5G 和 4G LTE 網絡。
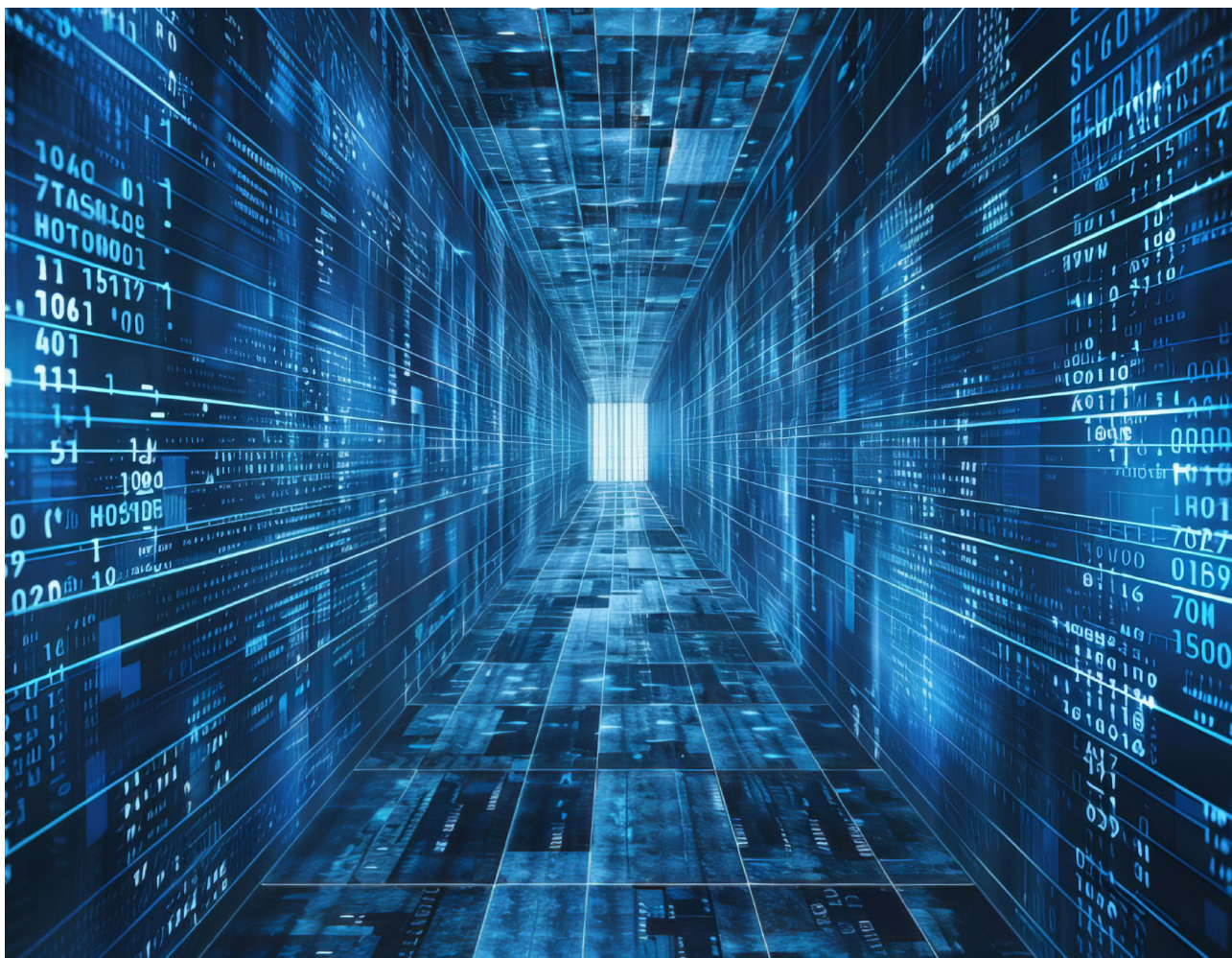
The Importance of the Neutral Host Model

For Hong Kong to succeed in AI innovation and be a leading smart city, more work is needed to transform our data centres. With multiple parties involved, all with different perspectives, interests, constraints and budgets, it's not straightforward. AI is moving quickly, MNOs and developers can't afford to wait months or years to access the right infrastructure.

We need to work together, ensuring data centre innovation can be shared across MNOs. Putting us in the best possible position and delivering infrastructure quickly and on budget.

A way to achieve this is the neutral host model – a company that is in a strong position to invest build the critical digital infrastructure (like fibre and datacentres) and then leases it to MNOs and other communication service providers. A model already working in global cities like Rome, New York and London.

In London, Boldyn Networks acting as a neutral host is bringing mobile connectivity to the London Underground network, but also enabling connectivity in new developments and other properties above ground. We're enabling connectivity for all four MNOs, as well as allowing developers and venue owners to deliver connectivity in their properties at less cost than if they were driving these projects themselves.

共享通信基礎設施的重要性

要讓香港在人工智能創新方面取得成功,並成為領先的智慧城市,我們需要做更多的工作來改造數據中心。由於涉及多方,各方都有不同的觀點、利益、限制和預算,這並不簡單。人工智能正在快速發展,移動網絡營運商和開發人員不能等待數月或數年才能存取正確的基礎設施。

我們需要共同努力,確保數據中心的創新可以在移動網絡運營商之間共享。這樣我們才能處於最佳位置,並在預算範圍內快速交付基礎設施。

實現這一目標的一種方法是「共享通信基礎設施」,一家有優勢的公司,可以投資建設關鍵的數位基礎設施(如光纖和數據中心),然後將其出租給移動網絡運營商和其他通訊服務提供者。這種模式已經在羅馬、紐約和倫敦等全球城市發揮作用。

在倫敦,Boldyn Networks 作為共享通信基礎設施提供商,為倫敦地鐵網絡帶來移動連接,同時也為新開發項目和其他地上物業提供連接。我們正在為所有四個移動網絡運營商實現連接,並允許開發商和場地擁有者以比他們自己推動這些專案更低的成本在他們的物業中提供連接。

The Value of the Neutral Host Model

At a high level, it's a more cost-effective approach when deployment and maintenance costs are shared. Individual MNOs and developers can avoid the huge initial outlay that would come with building their own data centre or fibre projects. From a practical perspective it also makes network expansion and connectivity enablement quicker. And when it comes to AI, we need that speed.

But it's not just about costs. An MNO can avoid the potential effort and headache associated with making a data centre AI ready. They can count on the technical expertise and knowledge of the neutral host, who is also taking a long-term investment view and avoiding short-term decisions.

Overall, individual MNOs and other providers can contribute to a more sustainable approach. Reducing their carbon footprint and avoiding the need for multiple infrastructure projects.

The neutral host model is already popular among industry executives for tackling key challenges. Indeed, in our research, 92% told us they were likely to use a neutral host model to remove headaches associated with 5G densification. I strongly suspect we would see similar numbers for tackling future challenges around AI workloads both here in Hong Kong and in other world cities.

In a Position of Strength

Neutral Hosts such as Boldyn are playing a key role supporting deployments in urban environments, leveraging 'Base Station Hotel' data centres to provide more services like edge computing, cloud connectivity and AI processing resources – as well as providing that much needed streetscape and in-building wireless connectivity.

Of course, AI isn't the only future trend impacting the need for connectivity. Our technology strategy unit tracks industry trends around areas including being energy efficient, providing in-building solutions and driving smarter cities.

Ultimately adopting a natural host model would mean we're in a position of strength to support AI innovation here in Hong Kong, delivering exciting potential in the city every day.

共享通信基礎設施的價值

從更高層面來看，當部署和維護成本分攤時，這是一種更具成本效益的方法。個人移動網絡運營商和開發人員可以避免建造自己的資料中心或光纖專案所需的巨額初始支出。
從實用的角度來看，它還使網路擴展和連接啟用更快。而在人工智能方面，我們需要這種速度。

但這不僅僅是關於成本。移動網絡運營商還可以避免為數據中心的人工智能做好準備所帶來的潛在問題。他們可以依賴共享通信基礎設施的技術專長和知識，後者也從長期投資的角度出發，避免短期決策。

總體而言，個別移動網絡運營商和其他提供商可以為更可持續的方法做出貢獻。減少碳足跡，避免對多個基礎設施專案的需求。

共享通信基礎設施模式已經在行業高管中流行起來，用於應對關鍵挑戰。事實上，在我們的研究中，92% 的受訪者告訴我們，他們可能會使用共享通信基礎設施模型來消除與 5G 緻密化相關的問題。我強烈懷疑，在香港和世界其他城市，在應對人工智能工作負載的未來挑戰時，我們會看到類似的問題。

處於強勢地位

像 Boldyn 這樣的共享通信基礎設施提供商在支援城市環境中的部署方面發揮著關鍵作用，利用"基站酒店"數據中心提供更多服務，如邊緣計算、雲連接和人工智能處理資源，並提供室內無線連接。

當然，人工智能並不是影響連接需求的唯一未來趨勢。我們的技術戰略部門跟蹤各個領域的行業趨勢，包括提高能源效率、提供建築內解決方案和推動更智慧的城市。

最終，採用自然宿主模式將意味著我們有能力支援香港的人工智能創新，每天為香港帶來令人興奮的潛力。