15 November 2022 | Stephen Farrugia

Truly neutral host: benefits for all

bai communications

BAI delivers – scale, reach & experience

Key figures

- +100 years in communications

- Presence on 4 continents

- Over 900 full-time employees and access to +2,000 partner staff

- Communications networks in
    o 400+ subway stations
    o and tunnels

- Over 750 transmission sites (including towers) in Australia

- 13 MNO partners globally

- Majority-owned by Canada Pension Plan Investment Board (CPP Investments) since 2009

Our footprint and solution portfolio

HONG KONG

| Small cells, DAS and towers | Transit connectivity | Venue connectivity | Fibre | IOT and smart cities | Private networks | Broadcast services | Emergency services |

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What we do | Our customers

Smart infrastructure to support the communities of the future

Broadcast (TV & radio)

Deliver television and radio services nationally on behalf of the public broadcasters ABC, SBS & commercial broadcasters.

Tower infrastructure & network solutions

Provision of active sharing of infrastructure (locations / access rights) and edge compute (routing data from fibre networks to the internet) to expand mobile connectivity in complex environments. Key focus on blackspot programs.

Public wireless solutions

Own, design, build and operate services for road and rail corridors, and dense public spaces/venues to provide ubiquitous high quality service for operators and customers alike.

Private wireless solutions

Own, design, build and operate services for private wireless networks for large site facilities, venues, campuses, major events.

Smart precinct solutions

Bespoke build and operate smart precinct solutions combining multiple technologies.

Public safety networks

Design, build and operate critical communication services, state radio and comms networks to provide high quality, reliable and responsive service for participating agencies and users.

Customers include:

• The Department of Infrastructure, Transport, Regional Development, Communications and the Arts • Australian Broadcasting Corporation (ABC) • Special Broadcasting Service (SBS)	• Optus • Telstra • Vodafone • Australian Communications and Media Authority • Department of Regional NSW	• Sydney Metro • Toronto Transit Commission • Transport for London • Metropolitan Transportation Authority • Crypto.com	• Australian Meat Processing Corporation • Moray East Offshore Windfarm	• Sunderland City Council • Transport for London	• NSW Telco Authority • Transport for London • Metropolitan Transportation Authority

What is a neutral host and what are the benefits?

95% Delivering reliable connectivity across the organisation

93% Enabling network coverage in venues with limited space

93% Increasing network coverage at lower cost

90% Increasing network capacity

Source: BAI Communications Smart communities report 2022

Redefining the connected 5G experience at Crypto.com Arena and L.A. Live

Crypto.com Arena, Los Angeles

Located in the heart of Los Angeles, the 20,000 seat Crypto.com Arena and its 4 million square foot sports arena and entertainment district L.A Live, required a major overhaul of its communications network across the entire campus to provide a compelling connected experience for both guests and employees.

Mobilitie, a BAI communications company, was approached to deliver a state-of-the-art 5G network that delivered both ubiquitous connectivity and coverage across multiple properties.

Flexibility in delivery
Operations
Restricted areas – close working relationship with venue operators to minimise disruption.

Guests
20 million
A year enjoying a connected experience.

Ahead of schedule
Complexities
From design through to successful deployment.

New technology
Experience
Drive a compelling fan and guest experience along with efficiency in day-to-day operations.

> "Together with Mobilitie, we are paving the way for the arrival of 5G technology and upgrading our world-class facilities with a high-performing network that will revolutionize connectivity for our guests and allow us to help shape the future of sports and live entertainment as we know it.
> **Lee Zeidman**
> President, Crypto.com Arena & L.A. LIVE

Transport for London – 20 year contract

BAI investing > GBP 1 billion to support the Connected London vision

Creating the next generation connected city

Mobile coverage in stations and tunnels
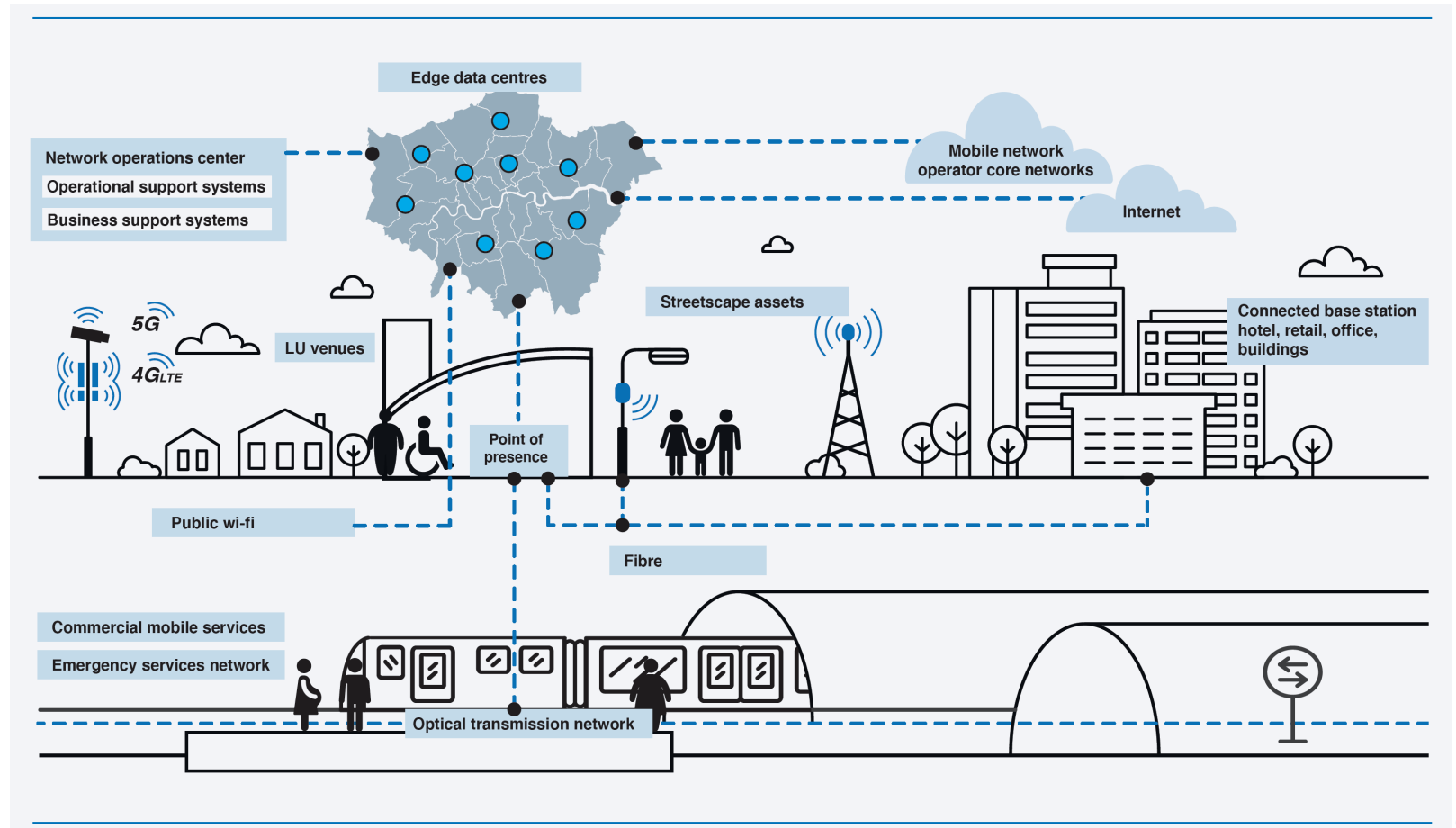Neutral host services through 137 stations, platforms and 400kms tunnel pairs.

80k small cell and IoT sensor locations
Located on never used before TfL assets including LU stations, lampposts, CCTV poles, traffic signals and bus shelters.

Over 200kms of dense underground fibre
Running through the London Underground providing a critical backbone of connectivity throughout the city.

Edge data centres

Network operations center
Operational support systems
Business support systems

Mobile network operator core networks

Internet

Streetscape assets

5G

4G LTE

LU venues

Connected base station hotel, retail, office, buildings

Point of presence

Public wi-fi

Fibre

Commercial mobile services

Emergency services network

Optical transmission network

[SEC=PROTECTED]

Sunderland awarded a 20-year strategic partnership to BAI Communications to design, build & operate the next generation digital infrastructure

— Sunderland has identified digital transformation as a key enabler for the future growth of this key region.

— The digital transformation will be a city-wide partnership across all areas such as health, education and the private sector.

— The key objective is to deliver improvements across health, care, education and enterprise for all.

— Having a state-of-the-art connectivity infrastructure is critical to deliver value across all stakeholders.

The vision – by 2030 Sunderland will be a connected, international city for residents, businesses & visitors

Sunderland smart city model

Data analysis & visualization

Smart city operations centre

Smart city sensor network

Delivering ubiquitous connectivity

Sunderland smart city solution key highlights

5G small cells Riverside and City Centre:

– City centre small cell grid, connected via fibre and high-speed microwave.

– Offering council assets for future MNO small cell deployments.

– Central 5G Core Network.

Wi-Fi Takeover and expansion downtown:

– Existing high quality outdoor Wi-Fi network.

– Expand footprint of Wi-Fi network downtown.

LoRaWAN Regional radio bearer network:

– Region wide, low speed radio bearer network for sensor connectivity.
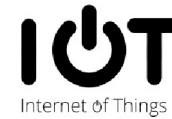
IoT use cases:

– Using LoRaWAN network and other access technologies for outdoor sensors (traffic, footfall, air quality) and indoor sensor (assistive care, housing) connectivity, providing simple analytics.

5G private network use cases:

– 5G Private Network opportunities – Nissan, Port, Culture House.

How does the neutral host approach contrast with other approaches?

Single entity owned and controlled	Shared passive assets between MNOs	Active sharing controlled by an MNO
This is the most familiar traditional MNO approach where each operator deploys their own poles and antenna systems.	There has been some examples of sharing of passive infrastructure for macro cells over the years, but in every case each MNO has controlled their Radio Access Network (RAN). With in-building solutions, an MNO is nominated as the 'lead carrier' and they co-ordinate with the landlord and the other MNOs who are interested in a shared solution. The system is then owned and operated by the lead carrier.	More recently, two of the MNOs have proposed that an active sharing model is possible for macro cells in some regional and remote parts of the country.

What are the incentives for each model?

	Single entity owned and controlled	Shared passive assets between MNOs	Active sharing controlled by an MNO	Neutral host
Differentiated coverage	Optimum	Almost there	Least positive	Least positive
Reduced cost to MNO	Least positive	Partially positive	Optimum	Optimum
Minimising duplication of assets	Least positive	Partially positive	Optimum	Optimum
Maximising competition	Least positive	Partially positive	Partially positive	Optimum
Maximising number of sharees	Least positive	Partially positive	Partially positive	Optimum

Legend: ⬤ Optimum　◔ Almost there　◑ Partially positive　◷ Least positive

Thank you!

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