Ericsson and Newmont:

5G and the safer, smarter mine

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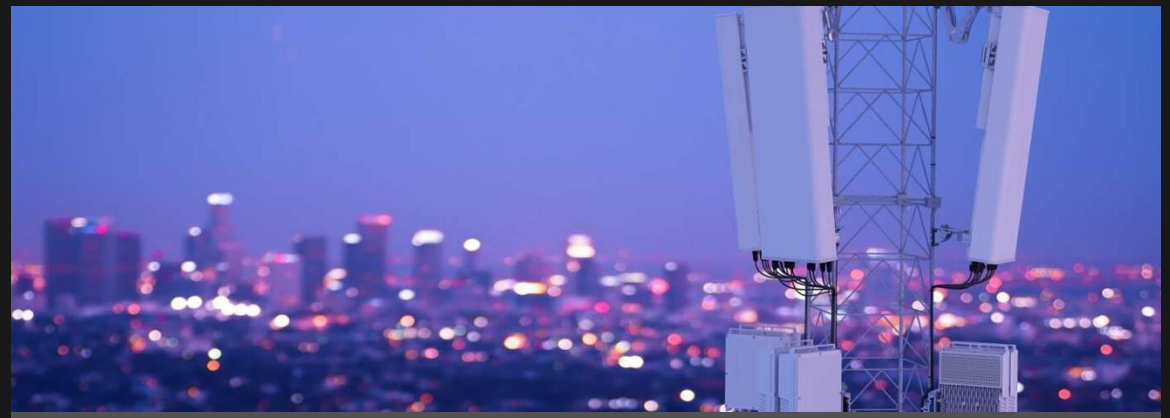
ERICSSON

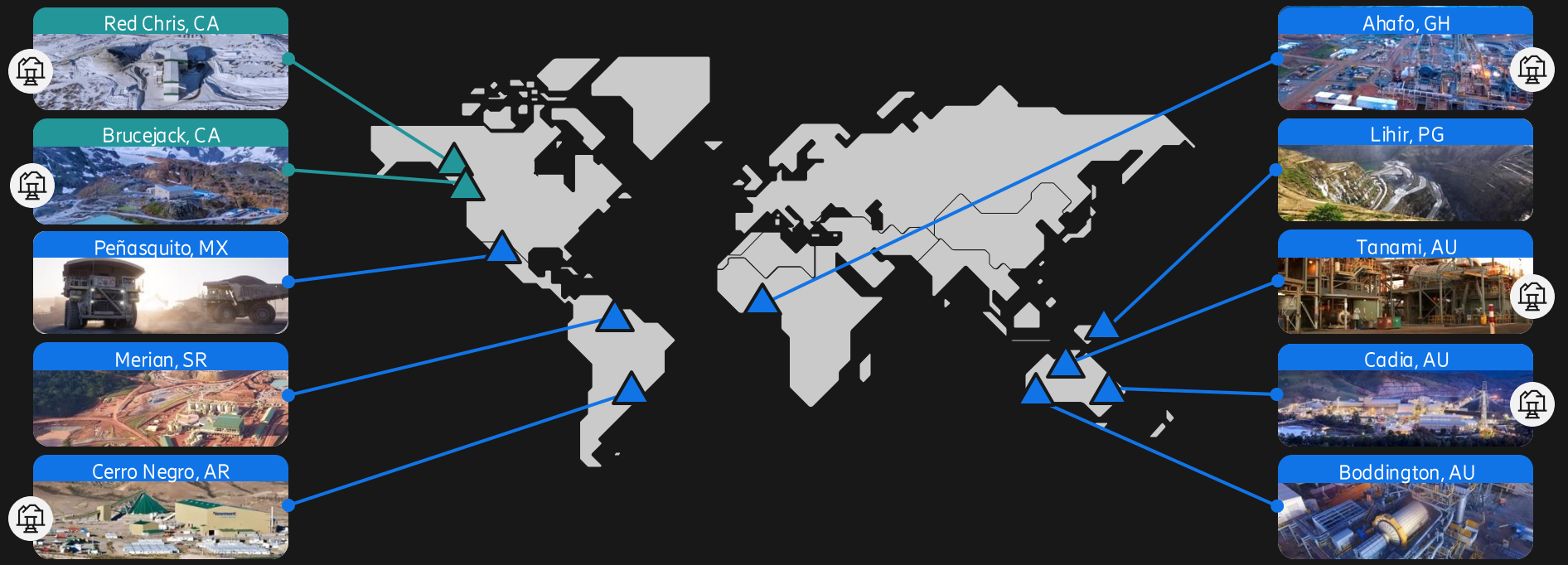


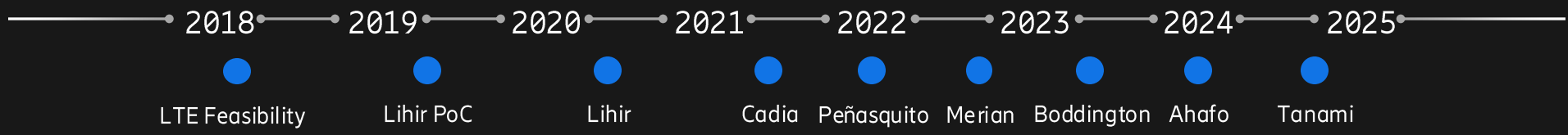
- One of the leading providers of ICT to Service Providers.
- Global leader in 5G networks and systems.

Newmont™

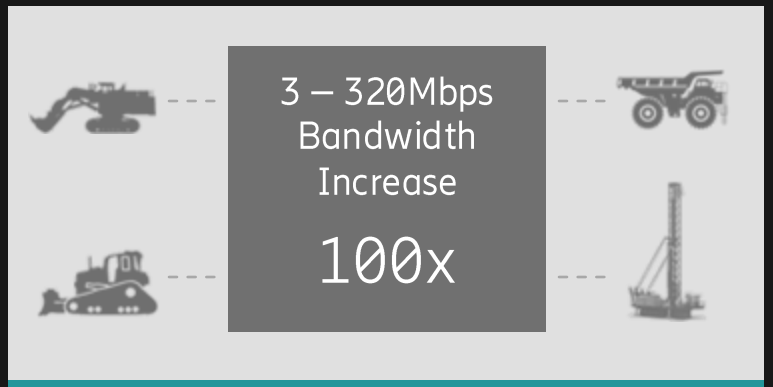
- World's leading gold company. Producer of Cu, Zn, Pb, Mo and Ag.
- World-class portfolio of assets in Australia, Papua New Guinea, Africa, Latin America & Caribbean, and North America.

Newmont's cellular wireless journey



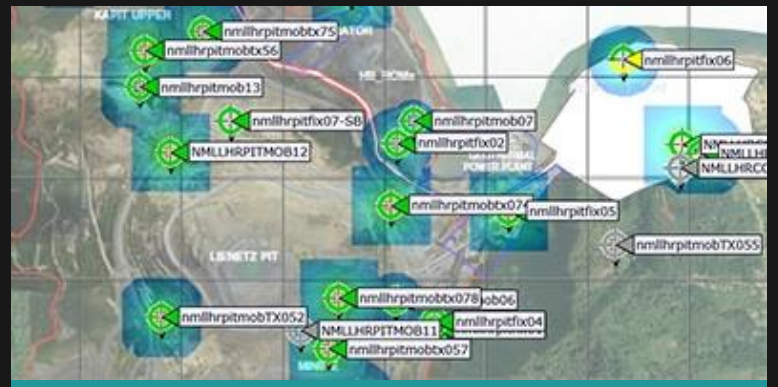


Moving beyond Wi-Fi at Lihir



Future mining technology roadmap; key for safety and productivity

Teleremote, Semi-autonomous, DSS



Wi-Fi Mesh operating limits

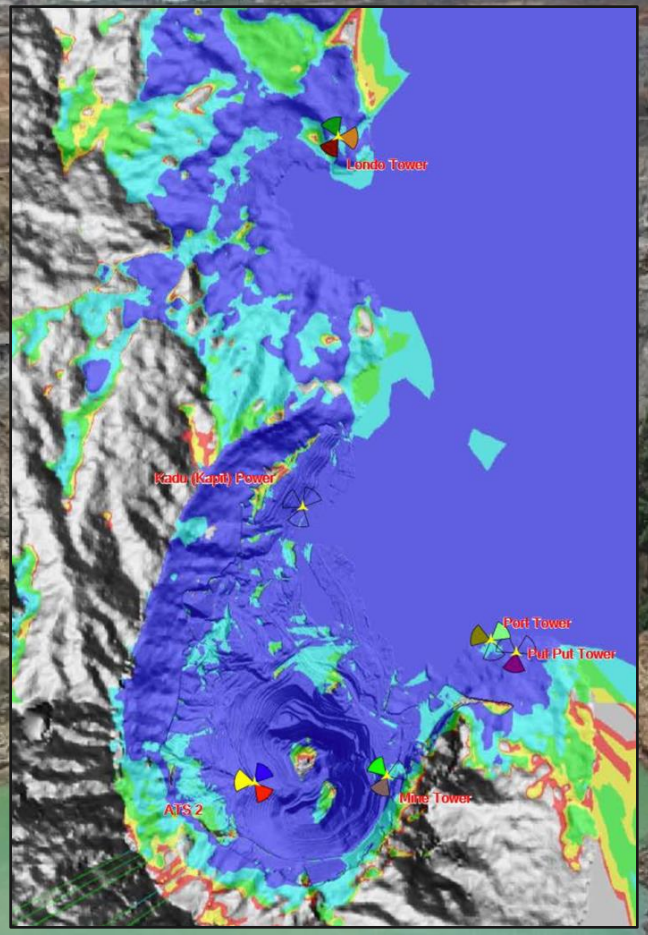
Coverage, Short lifecycles
Performance, Operations

Communications issues for critical apps

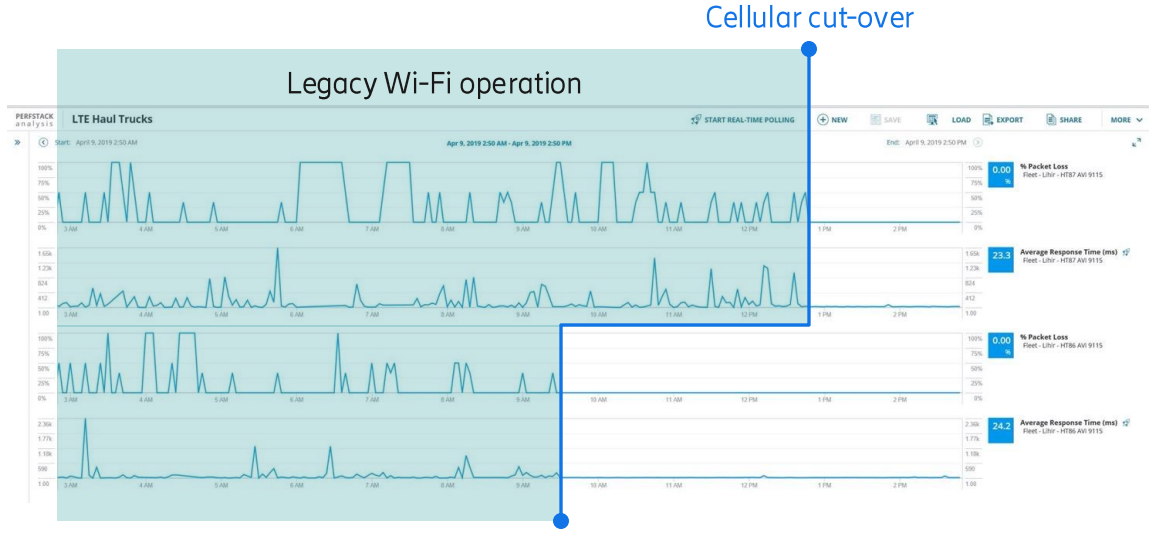
No-talks & missed beacons reduce visibility.
Latency & jitter affecting safety

Greater data scale • Performance predictability • Coverage throughout operation
Connectivity control • Longer operational life

Private 4G's dramatic impact



Latency & Packet Loss Elimination



x10+

increase in throughput

New mining systems became operable

82%

reduction in "no talks"

Increased dispatch efficiency

x10-100

Improvement in proximity response times

Increased driver safety

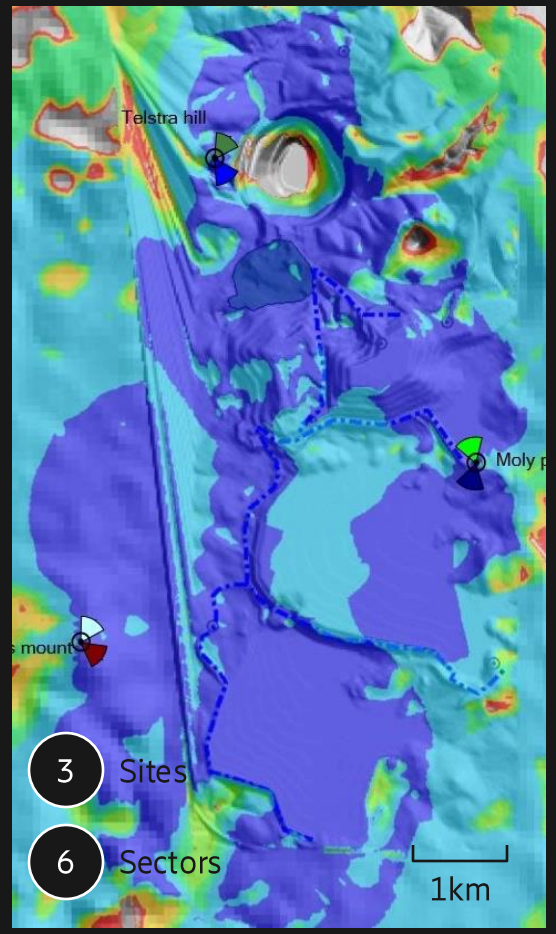
Replicating successes at Cadia

And into other operations

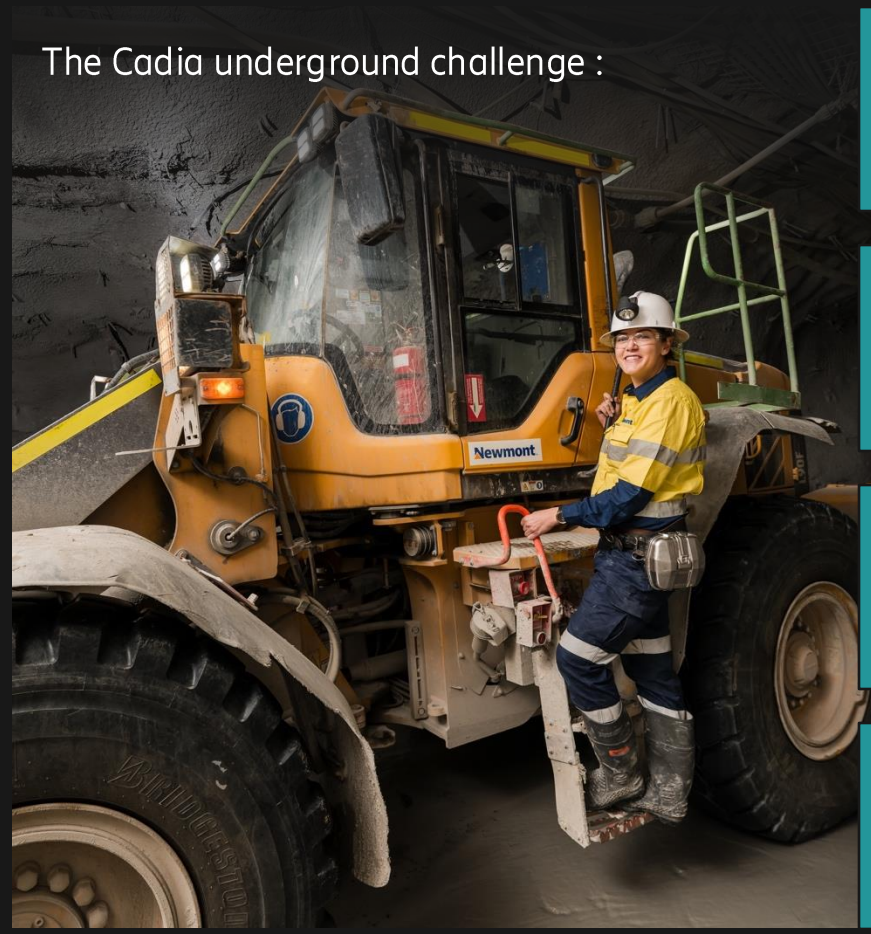
Invest and build for the future:
10-year platform view

- Cover the full mining lease, economically
- Support emerging use-cases
  - Automation & robotics
  - High-res computer vision (AI)
  - Sensors, feeding digital twins
  - XR-enabled work practices
  - Micro-climate monitoring

Coverage and capability	Future-Ready	⅕ the cost of upgrading Wi-Fi



The Cadia underground challenge :



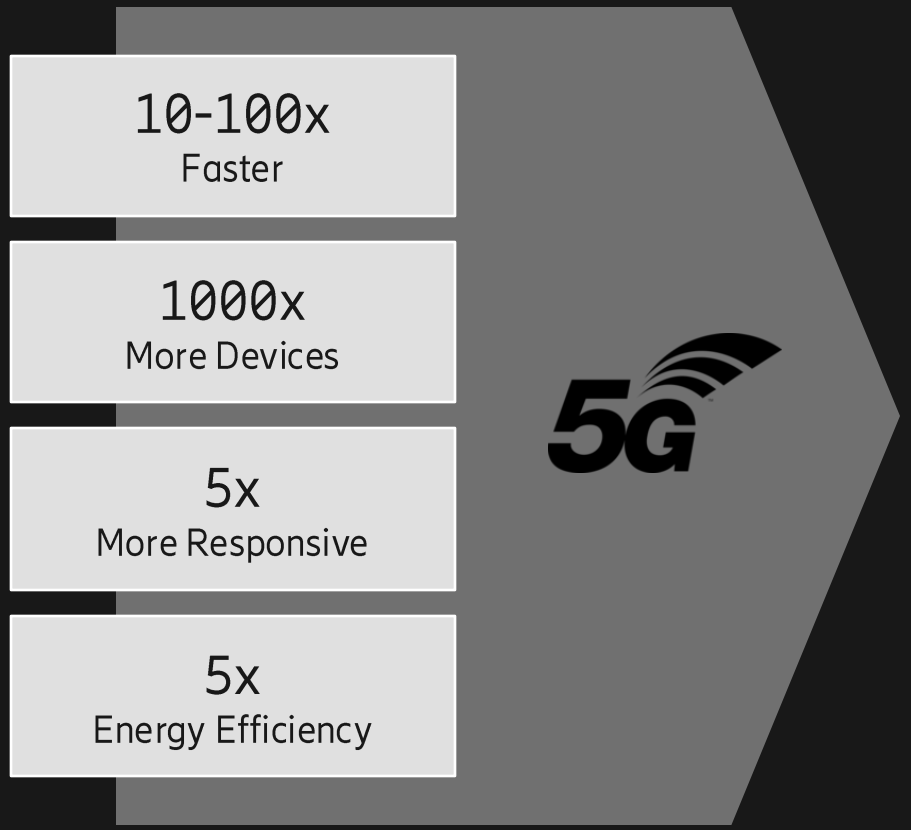
At the forefront of underground automation

At the limits of 2.4GHz Wi-Fi

Lack of reliability limits use and scale

Full automation requires substantial increases in network capacity

Moving into the 5G era

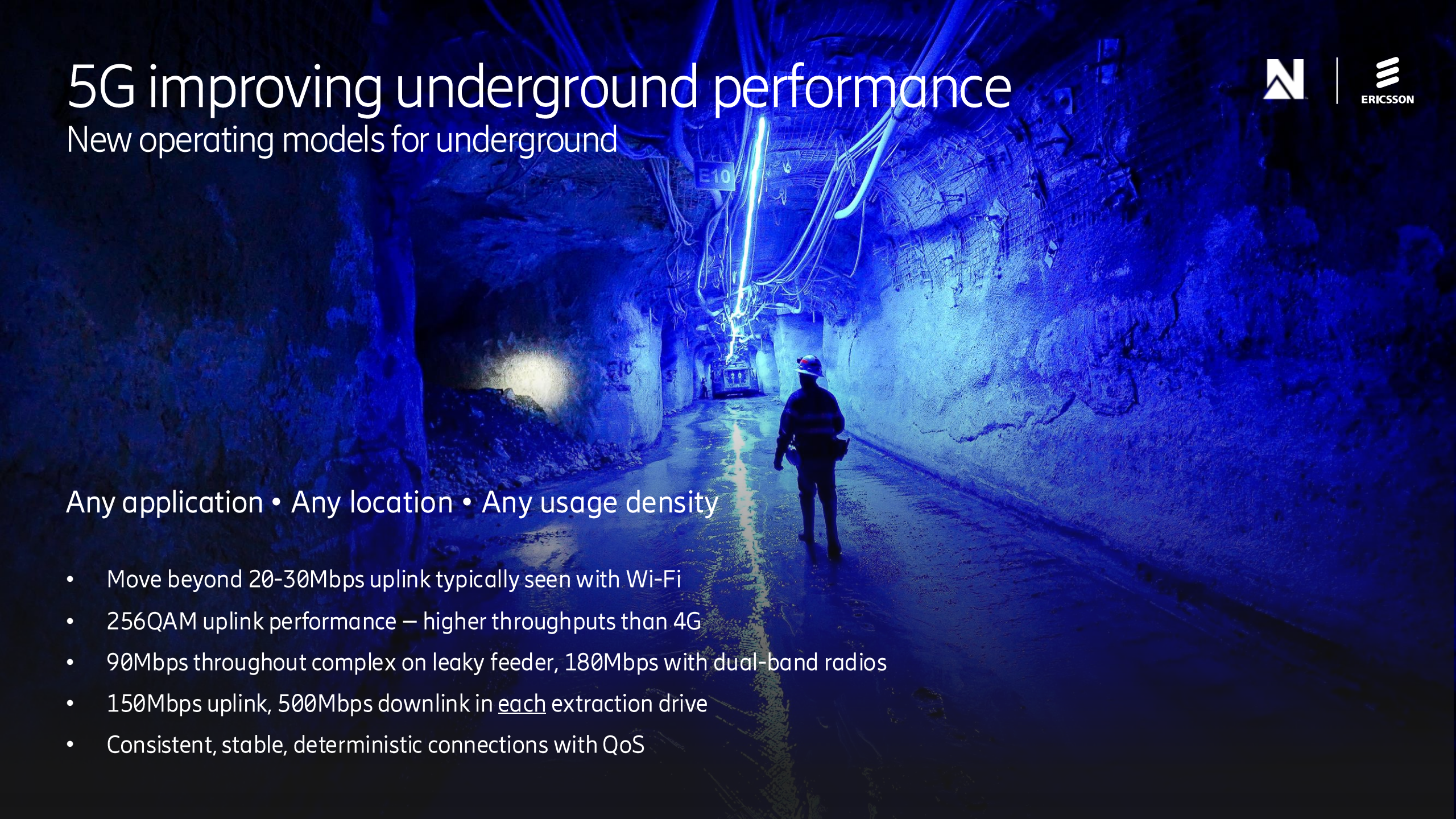


Private 5G for Mining

Access to more radio spectrum	Greater uplink efficiency
Viability and capacity	Upload speed
New radio technologies	Lower latencies
Extended range & capacity	Better HMI, better sensors

5G improving underground performance

New operating models for underground



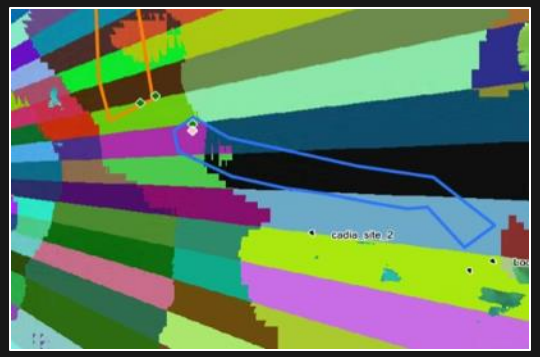
Any application • Any location • Any usage density

- Move beyond 20-30Mbps uplink typically seen with Wi-Fi
- 256QAM uplink performance – higher throughputs than 4G
- 90Mbps throughout complex on leaky feeder, 180Mbps with dual-band radios
- 150Mbps uplink, 500Mbps downlink in each extraction drive
- Consistent, stable, deterministic connections with QoS

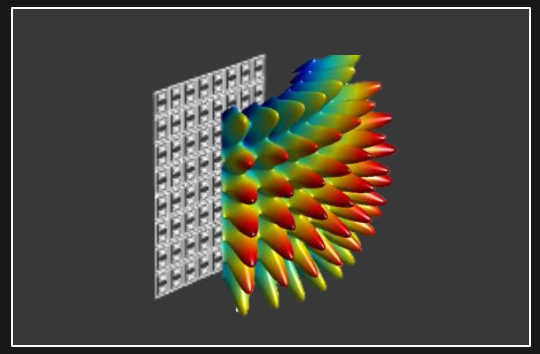
5G driving new surface capability

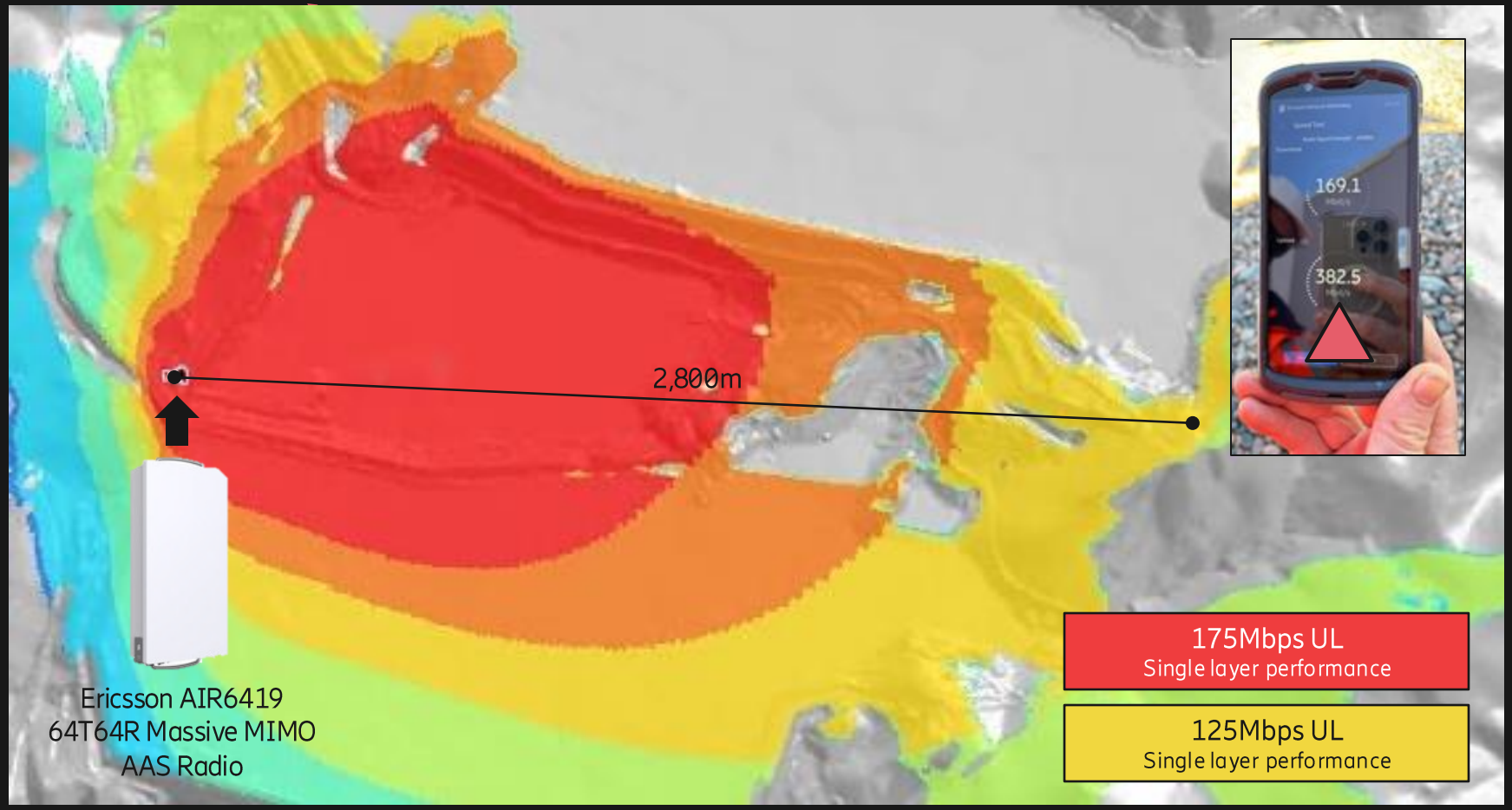
64T64R Massive MIMO a watershed for mining system potential

Beamforming



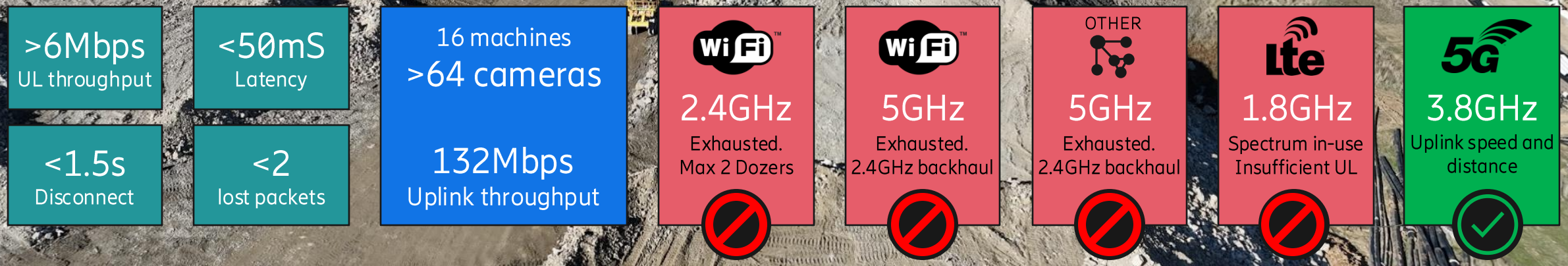
Beamsteering



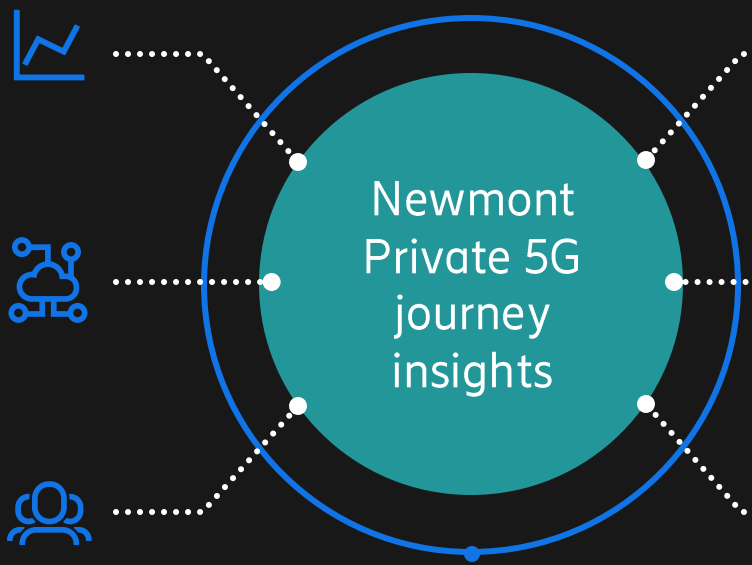


Cadia 5G Teleremote Dozer Push

- Immediate 50% increase in dozer capacity
- 25% increase in material moved per shift
- Operational predictability in rain, wind and when cornering
- Elimination of half-shift downtimes from troubleshooting Wi-Fi
- Range extended from 100m to 3,000 metres
- Solution model extended to Boddington for remote and autonomous drill fleet



Operational cellular reflections



Huge potential for operations

Massive leap forward over Wi-Fi

Technology isn't an obstacle

Latest solutions are easy to deploy and manage

Early engagement with the business

Develop the art of the possible together

Embed confidence

Starts low, builds over time. Education essential

Trusted partners are key

Understand the realities of mining operations

Simplicity of operation is a must

Establish local operational competence
Automation & orchestration decreases risk

Entrenched in global solution blueprints for surface and underground

Safer, smarter and more connected mines

Enabled and powered by 5G

- Delivers connectivity attributes demanded by modern mining
  - Pervasive coverage
  - Uplink performance
  - Extended range for reduced in-pit infrastructure
  - ‘Quality of Service’ for prioritisation
  - Stability for dependability
- Improve worker health and safety
- More unmanned machines across larger areas
- Keeping Newmont’s people out of harm’s way

Learn more at ericsson.com/mining

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