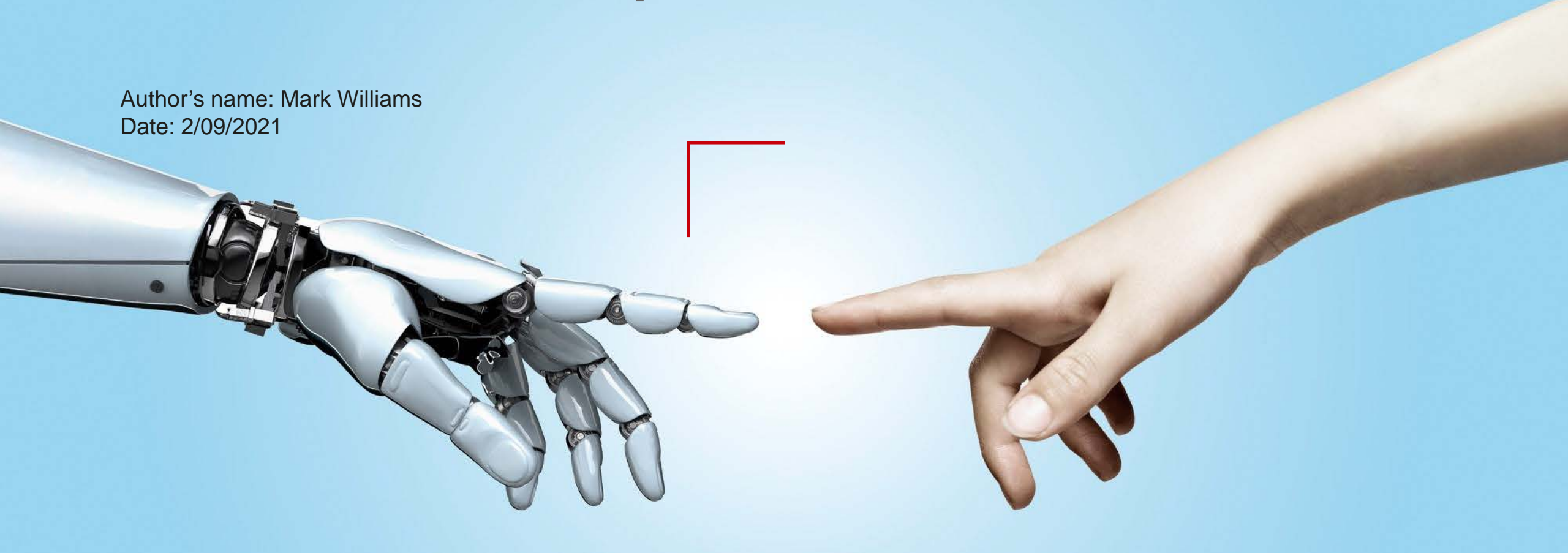


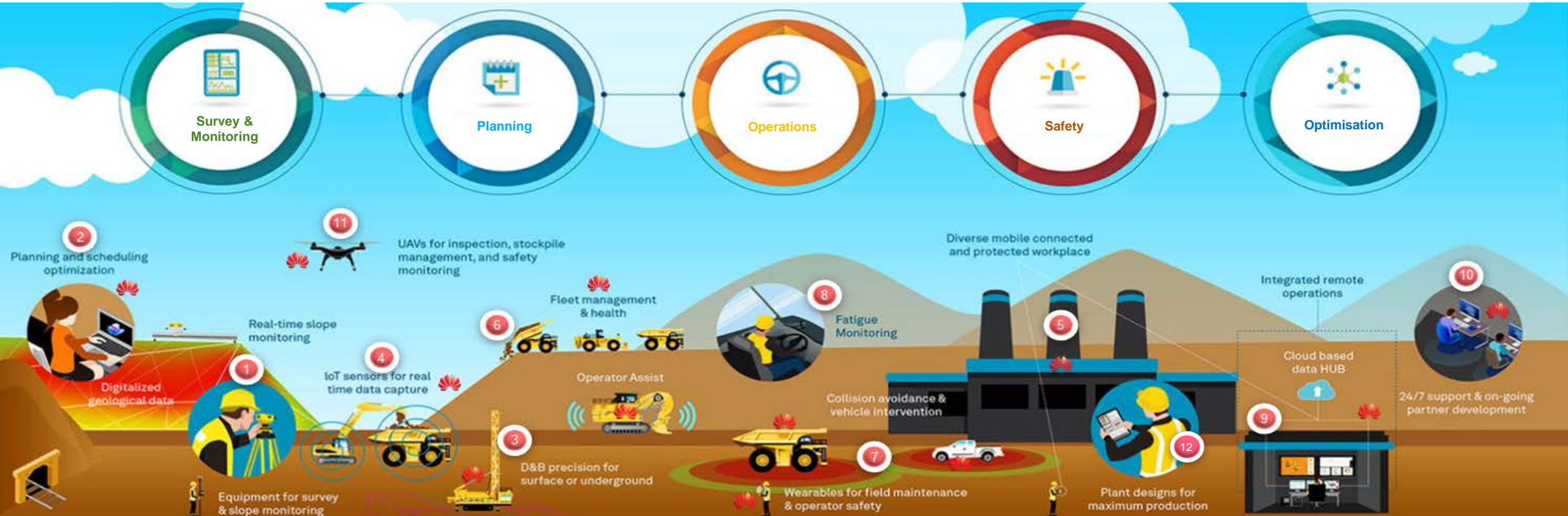
5G2B Smart Mining A South African Perspective

Author's name: Mark Williams
Date: 2/09/2021



Security Level:

Smart Mining to Maximize Profits and Reduce Risks



Value Chain Contribution				
Planning	1	2		
Operations	3	4	5	6
Safety / Maintain	7	8	9	10, 11
Optimisation	9	10	12	

5G Connectivity is the key enabler to **Digital Transformation** improving

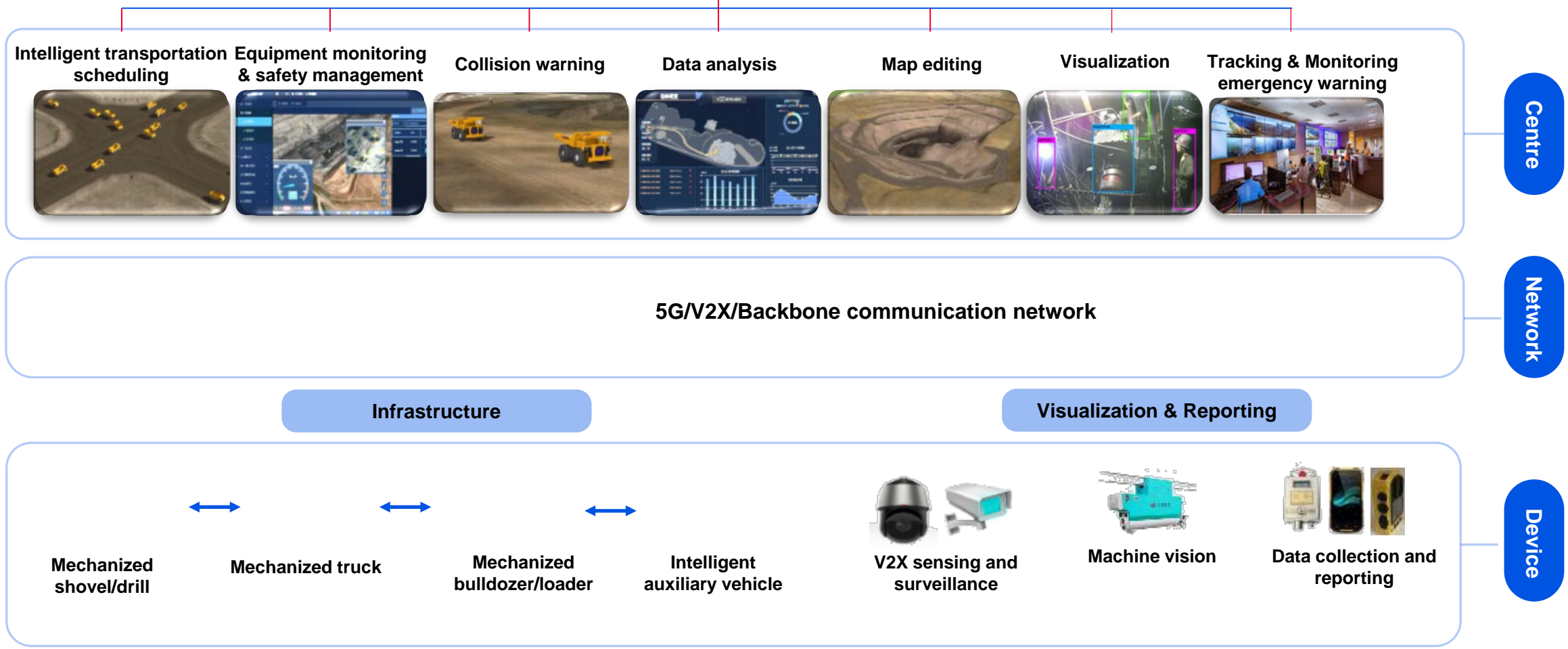
Operational Efficiency and **Reduce Fatalities**

Leading to **AI based real-time analytics** enabling **Data Driven Decision** making

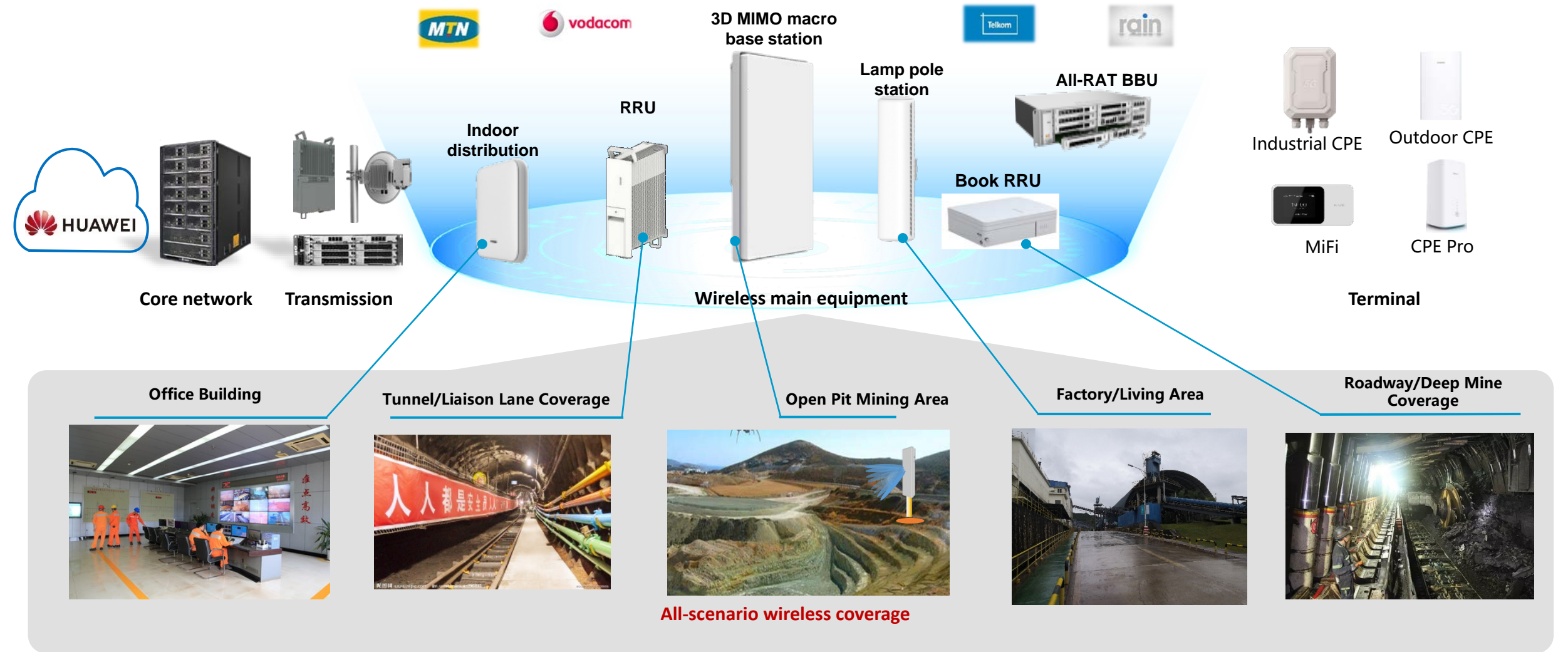
in the critical mining environment

Application Scenarios Overview

Intelligent scheduling and management system



Huawei E2E Full Series Solutions Facilitate Mine Informatization Upgrade



Fully self-developed chips
(chip-level security)

No.1 in patents in the world
(Leading Innovation)

No.1 in network performance
(optimal network)

Ecosystem leading in the world
(closed-loop business)

The most mature industry chain
(Risk-free delivery)

Belarus Belaz Case: Success Remote Driving in a 5G NSA Network

About Belaz: the major global manufacturer of mining dump trucks and transport equipment for mining and construction. Operation in **80+ countries**, with 30% global market share of heavy mining dump truck.

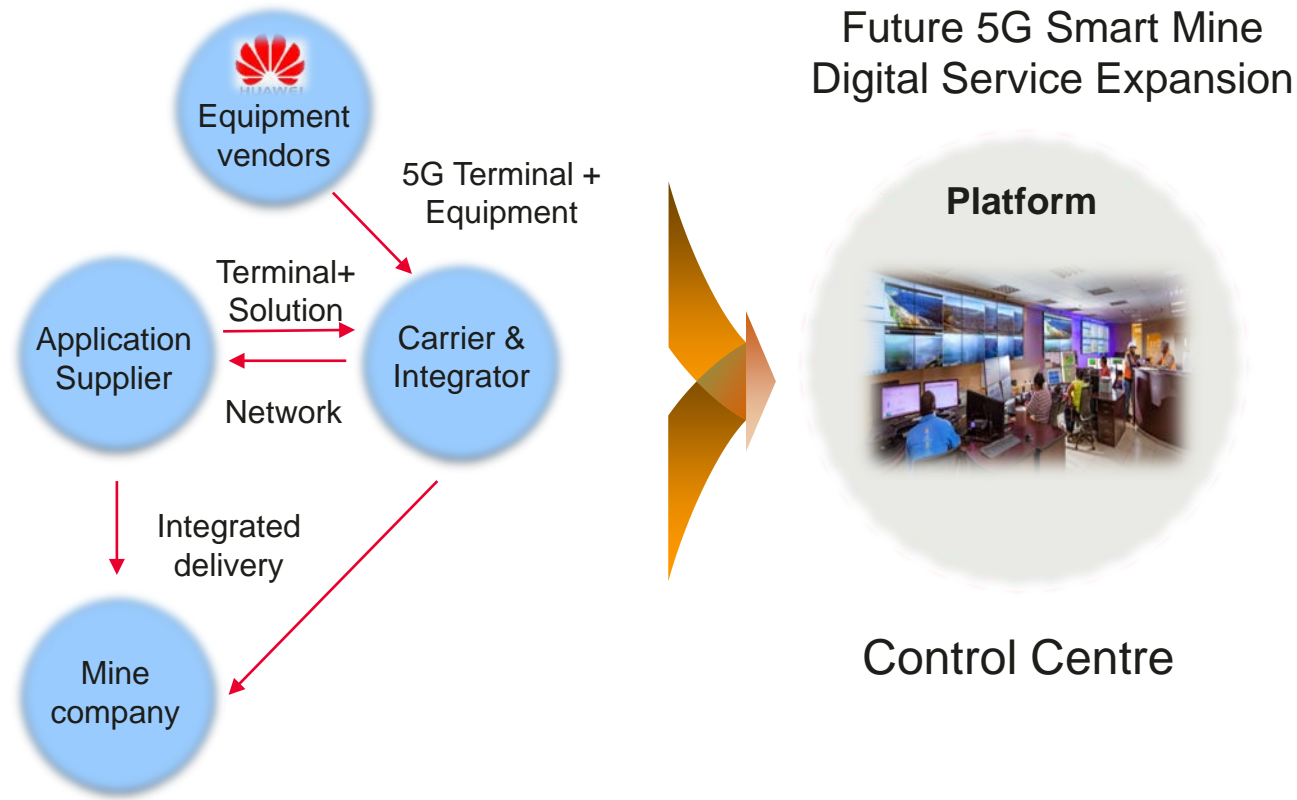
Belaz in charge of Truck remote driving upgrade

About 5G network: Becloud together with Huawei build 5G NSA network of 4 Massive MIMO AAU on C-band with 1800MHz as anchor band

About System Integrator: on-vehicle camera, vehicle information exchange, and control system;



Role-player: HUAWEI Provide Equipment and Operator Integrated Delivery and Network to Expand to Platforms and Services



Business Model

5G Benefits to the Mining Sector

Current

Coverage at the mine to improve operational

After

- **Limited coverage** at the mine, especially open pit area

- **5G connectivity covering improve** the coverage across the mine and eliminate blind spots

Real time uploading of data from vehicles to reduce the risk of accidents

- **Data is uploaded every 30 seconds**, travel 120m between uploads making accurate assessment very difficult and increases the risk of accidents at the mine

- **Upload data every 10ms** from each vehicle, significantly reducing risk at mine

Real time tracking of vehicles

- **Difficult to track and schedule trucks accurately** as data is uploaded every 30 seconds

- **Real time data uploads** and extensive coverage at mining area, schedule vehicles to **avoid bottlenecks** at load and off load points

Real time monitoring of the vehicles

- **Inability to upload data in real time**, low bandwidth speed and high data charges

- **Improve the vehicle utilisation**, reduce idle time and reduce the cost per Mt transported.

Warning of hazardous situations / obstacles

- **Very high dust rate factor** presents a significant risk at the mine due to a lack of visibility

- **Control Centre operator to proactively warn** other vehicle drivers of the obstacle and thus reduce the risk of accidents/fatalities

Thank you.

把数字世界带入每个人、每个家庭、
每个组织，构建万物互联的智能世界。

Bring digital to every person, home, and
organization for a fully connected,
intelligent world.

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