A network on wheels

Chris Mason, director of sales EMEA at **Rajant Corporation** says you 'shouldn't miss a beat'; explaining that mobility in the IIoT can be solved with a secure network on wheels.

No longer just a buzzword, but a way of life for an increasing number of companies, the Industrial Internet of Things (IIoT) is now a part of modern operations today. Changing how we work, produce and function, IoT is not only revolutionising user interaction with machines in the forms of smart appliances and wearable devices, but the way in which machines engage with other machines.

Across mining, healthcare, utilities, agriculture and other sectors, industries are finally seeing the advantages of venturing into the IIoT enabled world; where constituent components work with each other to boost productivity and ease of use.

In industrial organisations, operators experience unique interference challenges and vulnerabilities due to constantly changing ground elevations, landscapes and weather conditions with personnel, vehicles and equipment crossing wide expanses of terrain. Interference can halt productivity, reduce reliability of data, and block mission-critical communication, challenging the key purposes of autonomy.
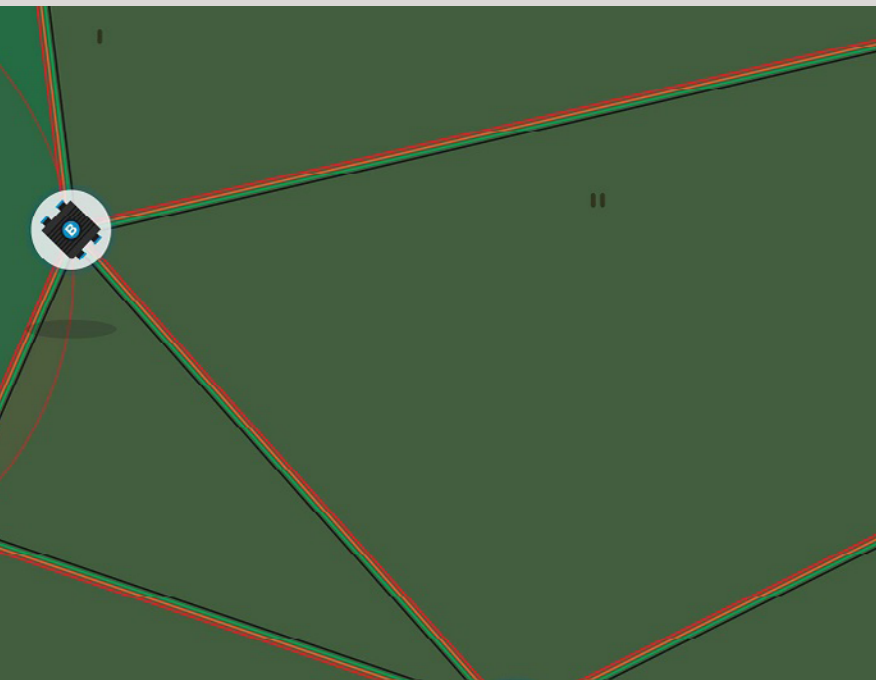
Wheeling to the next level of productivity

With the speed towards automation and the unrelenting need for enhanced productivity, a universal mobile coverage network is non-negotiable. Many of the world's major industrial environments are also in rural environments, which come with a string of challenges related to static legacy cell towers.

The number of interconnected devices, cameras and sensors is fast-growing and inevitably this also increases the need to secure and authenticate the communication traffic moving in, out and around the network. Today's expansive industrial operations require robust connectivity everywhere. Cell towers, motionless and time-consuming to install, are no longer enough to support the requirement for ubiquitous coverage.

Operators need a complete mobile network overhaul, in effect emulating a 'cell tower on wheels'. Currently when you move out of the range of a cell tower, you've lost the critical connection. By putting that communications tower on wheels, the connection moves with the operator wherever they go. Providing ubiquitous coverage over widespread areas, the 'network on wheels' can be deployed anywhere, anytime, with ease, simply integrating into existing infrastructure to rapidly extend coverage to communicate with and control roaming assets, anywhere

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organisations need to take into account the security of its roaming devices, as well as, the safety of its remote employees working in field. If a device misses critical communication due to a lag, interference or a drop-in data, the consequences could be disastrous.

Opportunities of a fully mobile network

A 'network on wheels' facilitated by a kinetic mesh network topology, creates a game-changing paradigm for mobile communications in mission critical environments. Generating a more resilient and secure capability, significant operational advantages are gained due to increased mobility and scalability, as well as, offering the ability to intelligently select the best path of transfer; automatically routing around interference or obstructions without skipping a beat.

A day doesn't go by that we don't see a new automation innovation that promises to make organisations more productive, however machine-to-machine (M2M) communication can only thrive, when given the right connectivity environment. There are, of course, threats and challenges that come with this new way of working; we are seeing more and more reports in the media on data breaches, ransomware and database hackings. It is important for organisations making their digital transformation in this age, to ensure its network is up to the challenge and to make these challenges tomorrow's opportunities. Static, legacy infrastructure and cell towers can no longer provide the connectivity and security capabilities needed by the 21st century business – kinetic mesh networking is the future.

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they move across widespread and/or remote operations.

As the need to extend communications beyond existing boundaries occurs, new mobile network nodes are deployed, providing organisations with the network support which was previously unavailable to them. Through the implementation of nodes across the company's moving assets, connectivity is continuous and unbreakable.

Around the clock security

In almost all Wi-Fi and standard mesh networks, mobile nodes continually break and re-establish connectivity as they move between access points, and each break results in a temporary loss of communication. In applications like the IIoT, this break in communications could carry huge and potentially life-threatening risks.

Traditional networks must break connectivity to make handoffs or need to access data on a switch or routing controller, creating opportunity for data loss. A 'network on wheels' deployed using kinetic mesh technology operates on a 'make-make-make-never-break' design; meaning several simultaneous connections can be maintained at the same time, and multiple

connections are sustained while new ones are made.

With IIoT devices being mobile and traversing different locations, there is growing concern that wireless networks could be a major target for potential hackers. Kinetic mesh networks – unlike any other offering on the market today – provide always-on connectivity allied with military-grade security. With no single point of failure and enviable self-healing capabilities, kinetic mesh ensures complete uptime of mission-critical applications, as well as the potential to work dynamically across frequencies to ensure the best possible route of transfer.

Kinetic mesh, as opposed to other network designs, communicates peer-to-peer seamlessly, via numerous instantaneous connections. By using ruggedized radio nodes – all equipped with peer-to-peer networking software with its associated security – kinetic mesh can be used to transform virtually any asset, whether fixed or moving, into network infrastructure; and, data can be routed across a site in the most efficient way possible at any given moment.

With the IIoT, 'safety in the workplace' takes on a whole new definition. In oil, gas and mining environments especially,

The IIoT has created a whole new meaning to 'safety in the workplace'.