WIRELESS LOGIC **WHITEPAPER**

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Innovating Through IoT

Accelerate Secure, Efficient and Clean Energy Systems using Cellular Connectivity

Date

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In the face of challenges to global energy systems, energy providers are increasingly turning to cellular connectivity to enable more resilient and reliable power grids, with widely distributed generation, a focus on clean energy and more secure handling of mission-critical data.

Whether you are an IoT solution provider, a systems integrator, an energy supplier or a business looking to start generating, optimising or storing energy, this guide will demonstrate how cellular IoT is already proving its value in next-generation energy networks.

After reading this guide, you'll have a good understanding of the following:

- The critical role that cellular connectivity plays in enabling advanced and decentralised energy systems
- How cellular can underpin device and network security
- The benefits of cellular IoT in creating flexible, scalable solutions
- How to choose the right connectivity Service Provider

Cellular IoT addresses the concerns of the energy market

Cellular connectivity is emerging as a vital connector between energy generation, distribution and storage, providing a new level of security and scalability that is revolutionising how providers and consumers approach supply and demand.

It responds to the concerns that are gripping the energy market today:

- How governments can achieve energy security and independence?
- How the sector can make the grid more flexible and scalable?
- How the sector can secure diversified data and systems against cyberattacks?
- How the sector can accelerate the integration of renewable energy to respond to the climate crisis?

These concerns are symptomatic of an integral change in society – in every aspect, there is a shift towards environmentally-friendly alternatives, a need for a more individual approach to the consumer and a desire to combat rising costs and the effects of geo-political unrest. Businesses across every industry are now being forced to adapt. In Gartner's 2020 Sustainability Survey, 64% of respondents claimed they were developing new products and services to keep up with changes; and 61% said they were developing entirely new business models [1]. Notably, these Gartner insights suggest that the energy sector is potentially less advanced than other sectors on these metrics.

The world has begun to move rapidly, and the energy industry must keep up. As a result, Gartner predicts that by the end of 2026, 60% of the largest energy companies will focus their capital programmes on low-risk renewable investments [1].

[1] *Urgent Action Needed: Energy Markets are Changing Faster Than Energy Companies | Gartner (June 2021)*

The Energy Trilemma

A trio of pressing challenges for the energy market to overcome.

The problem is that the most prevalent energy generation, storage and distribution systems in use today are facing off against three major industry and society challenges: **energy security**, **sustainability** and **affordability**. We refer to this trio of challenges as the Energy Trilemma. Together, they make up an energy climate that is unpredictable, expensive and difficult to plan for.

Energy security
Balancing energy supply and demand

Environmental sustainability
Managing a rapid transition into renewable energy

Affordability
Ensuring fair access to energy

The Energy Trilemma is becoming an ever-more real problem for the energy industry.

For the general public, geo-political turmoil (and associated economic and trade sanctions or tariffs) and the climate crisis have helped bring the Energy Trilemma into businesses and homes in the form of sky-high energy prices, the prospect of insufficient power, and more common weather extremes. The daunting reality is that these issues could result in environmental, societal and economic damage.

What is causing these challenges across the energy market?

The Energy Trilemma is aggravated by global energy conflict and evolving energy demand.

Decentralisation and decarbonisation

The oil and gas industries still sit at the centre of the global energy market, but this is changing fast. Decentralisation and decarbonisation are working hand-in-hand to reshape the face of our relationship with power, breaking down the familiar power grid into a more heavily distributed system and integrating far more renewable energy sources.

The old regulations that once protected the non-renewable energy market no longer serve their purpose, and demand for power generated from fossil fuels is dwindling. Business and domestic reliance on the grid is decreasing. Communities are turning to EV Charge points, solar panels, and at-home battery storage systems as a climate-friendly energy solution; but these devices often exist 'behind-the-meter,' and are therefore invisible to energy distributors, which poses a challenge when it comes to load-balancing. In response, modern energy providers are offering solutions that cater for a more eco-conscious consumer: decentralised, renewable energy solutions that are more adaptable, incur costs more reflective of demand and allow for diversified energy supply and distribution.

Historically, just a handful of energy companies in each country supplied energy for that country's needs. Today, the energy market is a lot more complex, with regular surges in demand and many more energy-reliant devices in our homes and businesses. Matching demand with capacity is increasingly challenging. It requires a more flexible and efficient approach in order to accelerate the benefits of energy trading, Energy-as-a-Service models, renewables, and energy storage technology – as we will explore.

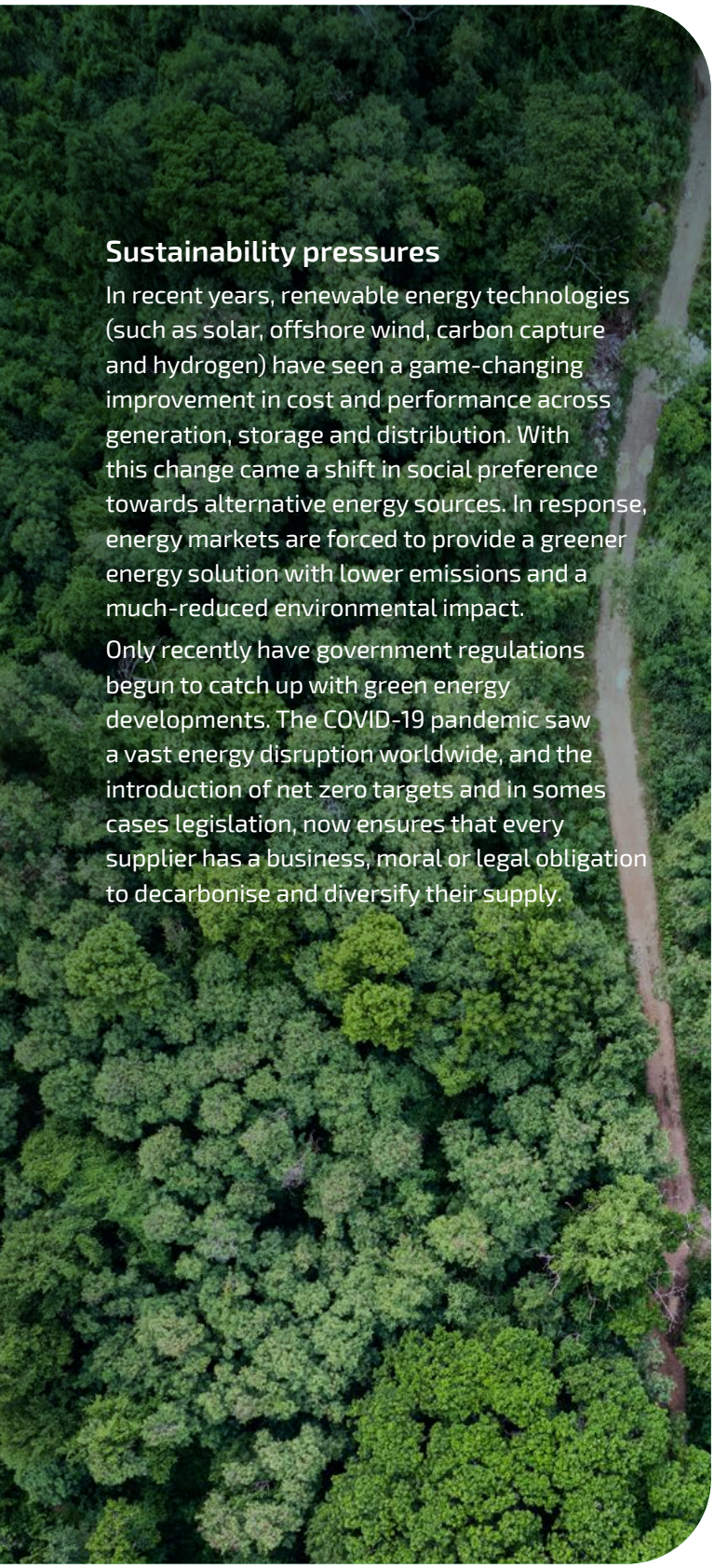
Rising energy prices

Decarbonisation, in the form of renewable energy sources, is creating fierce competition between large oil and gas companies. As more consumers turn towards renewable (and sometimes self-sufficient) options and new energy technologies seize their market share, our global non-renewable power consumption stops rising. To compensate for slowed growth, prices go up.

To enable energy providers to rebalance prices, the answer is to stay ahead of the change. Their business models and technology must now evolve to match the movement in the market – by responding to the following:

- Increased accessibility of renewable energy generation
- Social influence
- The potential of cellular IoT

What is causing these challenges across the energy market?



Sustainability pressures

In recent years, renewable energy technologies (such as solar, offshore wind, carbon capture and hydrogen) have seen a game-changing improvement in cost and performance across generation, storage and distribution. With this change came a shift in social preference towards alternative energy sources. In response, energy markets are forced to provide a greener energy solution with lower emissions and a much-reduced environmental impact.

Only recently have government regulations begun to catch up with green energy developments. The COVID-19 pandemic saw a vast energy disruption worldwide, and the introduction of net zero targets and in somes cases legislation, now ensures that every supplier has a business, moral or legal obligation to decarbonise and diversify their supply.

Political instability

Recent geo-political power plays around energy including military action, sanctions and trade tariffs have illuminated energy security issues on a global scale. As such, the final major influencing factor on the current situation is the instability of international energy relationships. Countries reliant on other countries for the production and distribution of energy are in an unstable place – particularly if the relationship is unfriendly or they have conflicting political outlooks. If these relationships break down, the risks of cyber energy threats, insecure energy supply and rising energy costs become formidable.

The world cannot decarbonise overnight, but the motivation has never been stronger for industries and governments to accelerate the creation of an energy system for the future that removes reliance on others.

IoT and the energy industry

The Internet of Things is a key accelerator for energy suppliers.

The Internet of Things is a network of technology and devices that are able to communicate with one another and the cloud. They collect and communicate real-time data, affording businesses an unprecedented level of visibility.

This real-time performance data can then inform business processes and decision-making. In the context of the energy market, this could be in monitoring assets, maintenance of equipment, managing the demand and distribution of energy, overcoming capacity challenges and understanding opportunities for cost-saving.

In the context of commercial, public buildings and domestic properties, these devices might take the form of electric vehicle (EV) charging points, smart meters, solar panels and battery storage. They allow for a much more individualised attitude towards energy systems, for businesses and homes, with greater integration of renewable energy generation and smarter energy usage.

Together, devices have the power to enable what is referred to as the 'smart grid.' Compared to the traditional grid, the smart grid is far more intelligent and innovative, establishing new opportunities for energy businesses to capitalise on revolutionary visibility, replacing the limitations of traditional technology with new, flexible, dynamic solutions.

However, this is only truly possible with some form of connectivity in place.

Embracing IoT connectivity within energy solutions allows the industry to develop a data-first approach. Data collected from energy generation, storage and distribution will drive innovations in the sector and more responsive energy supplies and trading, helping to improve revenue, save energy and provide customers with a more competitive energy rate.

In the energy industry, IoT connectivity is useful for the following purposes:

- Asset monitoring
- Metering measurement
- Predictive maintenance
- Performance optimisation
- Fault isolation
- Demand supply load balancing and scheduling
- Personal safety on-site at energy generation, storage and distribution sites

To achieve these ends, a combination of four types of IoT connectivity systems can be employed...

IoT and the energy industry

Monitoring

One of the simplest uses of IoT connectivity is environment and device monitoring. Real-time data transmitted from devices in the field paints an accurate picture of energy consumption at various end-points, including at device level in customer premises. This allows energy companies to distribute power more efficiently in response to actual demand rather than estimates. Device monitoring can also reveal faults and damage as they occur, allowing for timely repairs and minimal downtime.

Alerts and Rules-based response

As well as providing real-time visibilty, system data can be used to identify particular events and trigger pre-defined protocols. In this way, urgent maintenance can be requested automatically (or, in some cases, devices can self-heal), reports on recognised faults can be drawn up, and alerts can be issued (when power demand and supply changes, for example).

Command and control

Devices with connectivity can be controlled from a remote location. If, for example, a fault or security breach is detected, the energy company can disconnect the compromised device. This can help contain dangerous cybersecurity risks and prevent further damage to the network. Device charging can be scheduled to help with load balancing.

Predicting performance failure

As current energy generation, storage and distribution systems age, they require more maintenance, upgrades and repairs. In short, they become more expensive to use. Integrating advanced SIM technology into every piece of equipment along the chain can help to do two things: report on faults in real-time and, more significantly, allow for accurate maintenance predictions. Downtime can be significantly reduced by scheduling preemptive maintenance and equipment lifecycles extended.

Cellular IoT can accelerate renewable energy sources, improved storage solutions, and efficient energy distribution systems

A key player in energy system transformation.

Energy suppliers and the grid need to ensure they can meet business and consumer demand and deliver energy to where it is needed – through renewable energy generation, improved storage and efficient distribution.

Generation, storage and distribution typically rely on SCADA (supervisory control and data acquisition), and are dependent on automation driven by resilient IT. As Distributed Energy Resources (DER) become increasingly critical to the national energy networks around the world, energy suppliers now need to find a more dynamic way of monitoring assets, load balancing and capacity challenges on the grid.

The combination of renewable energy sources, improved storage and efficient distribution to form DERs requires a new approach. With the help of cellular IoT, new energy systems can overcome global energy challenges and encourage more independent energy management.

The move towards energy independence

A recent Aggreko report, 'Power Struggle in Manufacturing,' highlighted the problems that manufacturing companies are now facing: power outages due to a lack of supply and energy prices rising at an unsustainable rate [2]. Over 60% of manufacturers are now thinking about generating their own electricity to offset power outages, and only 6% said that reducing their energy consumption was not a top priority. Implementation of new lighting and heating systems is helping to lower bills and energy dependencies, but there are limits to what manufacturing companies can cut back on.

Finding a stable, resilient solution is an ongoing challenge; contingency equipment is proven to be

[2] *The Power Struggle in Manufacturing | Aggreko (June 2022)*

Cellular IoT can accelerate renewable energy sources, improved storage solutions, and efficient energy distribution systems

insufficient. New business models, such as Energy-as-a-Service, have increased Aggreko's manufacturing contracts by 57% by enabling large energy consumers to manage their own on-site generation with no upfront investment or long pay-back periods.

Energy trading is also on the rise and has great potential to transform the sector[2]. Cellular IoT is a key enabler in enabling these type of solutions within the manufacturing industry and beyond.

Business Sustainability

Aggreko highlighted in their report that sustainability is a key factor in guiding manufacturers in finding an energy solution. The report states that the cost of manufacturing solar panels has declined by 89% over the last ten years, and 'soft' costs for installations (such as permitting, siting, inspections and grid connections) will continue to decrease with the introduction of more software and automation[2]. As a result, renewables are becoming a more attractive solution for energy suppliers. In addition, businesses looking to generate their own power benefit from better access to the equipment they need to achieve self-sufficiency. However, with more renewable energy comes more IoT devices on the grid – we now need an effective means of managing them.

Improved energy storage solutions

Renewable energy has historically come with one particular concern: storing electricity. Solar panels and wind turbines can only provide power when the primary resource (e.g. sunshine or wind) is available. While this would have once been a setback that would necessitate at least a partial reliance on non-renewable energy provided by the grid, energy storage solutions are now able to overcome this.

Large-scale battery storage facilities are becoming a widespread solution to energy storage concerns. They offer a less expensive means of storing energy than smaller solutions and safeguard against the intermittent output concerns surrounding renewables. While technology is improving over time, batteries on their own are still not as effective as they could be. However, digitalised battery storage solutions facilitated by IoT connectivity can store and dynamically distribute energy exactly as it is needed, either locally or from a central distribution hub. This is a game changer for the energy industry.

Energy-as-a-Service (EaaS)

Businesses like manufacturers have been turning to EaaS solutions in order to be more independent from the grid and create more resilient energy supply solutions with some protection against large price increases. EaaS enables large energy consumers to deploy and manage their own on-site generation using wind and battery storage (for example), without large upfront investment or long pay-back periods.

The approach can work in public and private sector organisations however, EaaS fixed energy costs may not offer the kind of up-side flexibility that some businesses might need and may result in commercial penalties if a business' demand skyrockets. As a result, the model needs to be redeveloped to offer a compromise between EaaS, complete departure from the grid, and traditional energy supply and demand models. As an example, Aggreko's Hired Energy-as-a-Service solution brings a new level of flexibility to the model.

Cellular IoT can accelerate renewable energy sources, improved storage solutions, and efficient energy distribution systems

On-site generation and storage

More commercial users are turning to renewable energy generation on-site as a means of overcoming rising energy prices, but it is perhaps rare to use all of the energy produced. Any excess energy from wind or solar panels could once be sold back to the grid for a reasonable rate. As these rates have since dropped significantly, it is increasingly attractive to have a battery on site to store excess energy for use at night or on days when it is not sunny enough for the panels to produce. This means more devices on the grid and, depending on the regulatory environment, more competition and a management challenge for energy providers. The domestic market will provide the same opportunities but create a larger scale challenge. As the power grid evolves and decentralises, energy companies need a cost-effective way of managing devices connecting at the edge of the grid, scheduling customer energy consumption or injection into the national power supply.

More devices at the edge of the grid

Third-party devices on the grid make it harder for energy companies to understand where the demand exists. It is impossible to say whether a new device (e.g. an EV) will become a load or feed power back into the grid. Sometimes, it is impossible for energy companies even to identify the device type – all they see is a change in consumption 'behind the meter.' These anonymous devices cannot be controlled and often use power at unpredictable times. Connectivity provides energy suppliers with the ability to identify devices behind the meter and visualise consumption data, asset type, condition and much more. Understanding the role of new devices on the grid will be crucial for long-term grid security and load-balancing.

Balancing the grid:

Electric vehicle charging at scale

- EV Chargepoint networks are being built out to support EV adoption – in fact, the network grew by 35% from September 2021 to September 2022 [4].
- Massive EV adoption represents a significant load-balancing challenge for energy service providers.
- Resilient and secure OCPP-compliant cellular connectivity will enable service providers to monitor operational performance and control these remote assets to schedule charging cycles or determine when EVs are charging or discharging to help address the imbalance in the grid [3]. EVs can be discharged remotely, and their power fed back into the grid, to compensate for imbalances on the grid, which reduces the likelihood of power outages.

[3] *Tests Show How EVs Could be Used to Balance Grid | Transport + Energy (October 2022)*

[4] *EV Charging Statistics 2022*

What makes cellular connectivity the best solution for a decentralised power grid?

Cellular is the missing piece that connects businesses and consumers to more flexible energy frameworks.

Cellular connectivity is a key enabler to solving the challenges posed in the Energy Trilemma. It can provide a secure and highly available connectivity solution which can be consistent across all elements in a decentralised renewable energy grid. It simplifies the integration of new types of devices and makes a more responsive energy supply accessible to all who need it.

What does the grid look like without cellular?

Without cellular connectivity, the increased integration of new devices into the power grid simply brings additional challenges. As consumers and businesses invest further in electric vehicles, charging points, batteries and renewable energy generation equipment (such as solar panels), it becomes harder and harder to track whether devices are a load or a source of power on the network. As we have already discussed, energy suppliers can only see whether demand has gone up or down for each home or premises. Managing fluctuations and preventing power surges from turning into outages has been a long-term challenge for the energy sector, and without the visibility and control which cellular connectivity can provide, this will only get more difficult.

Managed cellular connectivity services also help protect devices and data against cyber threats and help reduce the cyber attack surface. Cellular capabilities, such as secure encryption tunnels, identity establishment, and private authentication help prevent unauthorised access to devices, prevent fraudulent usage and block unauthorised devices from energy networks. Without cellular, energy distributors lack the visibility and control to manage features like these effectively.

Is WiFi a viable alternative?

In home and office environments, wireless connectivity solutions like WiFi, Zigbee, or Bluetooth are commonplace. These technologies work well for pure consumer applications that offer entertainment, lifestyle or convenience benefits. In contrast, most consumers adopt a "not my problem" attitude when it comes to connecting devices in their homes for other business reasons like remote maintenance of hot water boilers or whitegoods. This prevailing attitude is a real problem for WiFi since it relies on the consumer pairing the devices with their WiFi hub and maintaining that over time. Building any non-consumer business solution on this foundation is a non-starter. Even if incentives can help, the next business challenge is navigating the security, speed and reliability variables in the Wifi hub and fixed-line broadband networks.

Cellular connectivity negates this reliance on the customer. IoT devices with cellular service can be connected, authenticated and synchronised with the grid straight out of the box. The customer doesn't need to worry about it and can still garner the benefits of having an energy service that more proactively caters to their needs. More importantly, these benefits are also extended to the energy suppliers, as we will explore next.

What are the operational advantages of cellular connectivity?

As we have just discussed, cellular connectivity is vital in offering a more scalable and manageable energy network, but the advantages go further than this, particularly when we look at the benefits to the energy supplier.

Cellular connectivity is already massively adopted in a broad range of industrial and commercial applications, including tracking and monitoring, but also in safety and business applications and in banking. These industries use cellular for reasons which typically include scalability, reliability, security, lower cost of ownership and ability to deploy quickly.

Scalability

Cellular devices with eSIMs or iSIMs can be provisioned to connect to multiple mobile network operator networks in the country of deployment. This can scale for pan-regional or global deployments.

Fast deployment

Cellular-enabled devices will connect straight out of the box without the need for installer or user configuration. The eSIM profile can be localised or optimised over-the-air if required.

Reliability

Cellular networks are designed for high availability. Advanced SIM and network services can provide an additional layer of reliability and redundancy for increased resilience.

Ultra-high availability

Wireless Logic's advanced eSIM technology can be configured to proactively detect and counter cellular network downtime should it happen. A combination of on-SIM software and network intelligence enables devices to take advantage of network redundancy to maintain connectivity and mitigate the business impact of outages.

Low cost of ownership

Compared to technologies like WiFi or LoRa, cellular has fewer hidden costs. No additional network hardware is needed, and all network maintenance is handled by your connectivity provider.

Remote Management

Connectivity and Device Management services enable device troubleshooting and remedial action to be taken if device performance, behaviour or security has been compromised.

Cellular connectivity & cybersecurity

Cellular IoT provides robust data and network security against cyberattacks.

As suppliers need to meet the demand for diversified, distributed energy, the pressure is on for them to deliver and manage a range of new devices; however, this requires a deeper and more up-to-date consideration of how to protect production, transmission and distribution from cyberattacks and hackers.

With thousands more devices in use, there is a much greater attack surface for commercially-motivated ransomware attacks. In fact, IBM found that 24% of all cybersecurity incidents in the year following February 2021 were directed at the energy industry [5]. Any device is potentially at risk at any given time, and the increase in devices is reflected in the increase in attacks. Cyberattacks could result in potential revenue and reputational damage for the energy company from power cuts or data leakage.

The EU recently announced that it would be imposing tougher cybersecurity measures for smart devices as part of its Cyber Resilience Act, including heavy fines for software developers and manufacturers who do not adhere to the new regulations. The implementation of this act will provide protection for mobile networks and, indeed, energy networks. Device manufacturers will ultimately have to comply and perhaps pre-certify before launching products to market.

[5] *UK energy sector top target for cyberattacks, IBM finds | Current News (February 2022)*

Don't make security an afterthought

Security doesn't have to be an add-on.

Device OEMs need to build in security by design. Opting for the right cellular connectivity partner and working with them from the design stage onwards will make the design and certification process more manageable and shorten the time to market.

IoT Security Tips for Device OEMs:

- *Follow standards*
- *Design hardware that allows sensitive security details to be stored securely*
- *Give your devices unique identities*
- *Ensure device software integrity*
- *Communicate securely with other devices and servers*
- *Keep device software up to date*
- *Renew Security Certificates*
- *Make system resilient to outages*
- *Monitor your system*

Cellular connectivity and cybersecurity

Protect

In order to manage the cyber attack surface, safeguards that restrict unauthorised access to devices, to networks, management platforms and to cloud infrastructure must be adopted. These safeguards come in various forms, such as role-based permissions for platform access, fraud prevention, secure private networking methods for device identity, device management, and data transmissions to ISO-accredited data management systems (ISO 27001).

React

When a fault or security compromise has been detected, it might be necessary to quarantine devices and take remedial action on individual devices or across large groups of devices. Rules-based automation can also be used to apply counter-measures ranging from email alerts, suspending or blocking connectivity, and enforcement of list policies against individual or groups of devices. A Device Management service can be used to push new device firwmare or restore factory settings on infected devices.

Detect

System wide monitoring is key to detecting and reacting to cyber threats. The monitoring platform must provide remote management, usage insights and detailed analysis of device behaviour and performance. Your network operation centre should use rules-based automation and inspection techniques to monitor traffic and data, searching for anomalies that might indicate security breaches. Anomalies might include irregular traffic patterns or usage attempts from unauthorised devices or in unauthorised countries. These types of issues can result in bill shock or lead to compromises in your data and reputation.

Cellular connectivity success

What energy use cases have seen success with cellular IoT?

In summary...

A managed cellular IoT solution provides an array of benefits that will help energy service providers keep pace with the rate of change around EV adoption and the adoption of renewable energy devices in the home. Cellular also has a key role to play in monitoring and controlling remote assets and devices on the generation and distribution networks.

The condition of the grid, sensors and controlled devices need to be monitored and managed constantly to give energy suppliers the durability and reliability they need while also alerting them to any issues. This might be performed by sensors constantly monitoring grid assets or by drones performing periodic inspections.

Secure and reliable connectivity provides consistency of data flow to and from the IoT energy application in a secure way through real-time data insights. It can create operational efficiency through remote asset monitoring, fault isolation, load balancing, EaaS and energy trading.

Key points to remember:

- Nations and businesses must adapt to incorporate renewable energy sources and decentralise energy grids
- Energy networks must be scalable and responsive to new devices being added and changes in demand
- Cyber-security must be prioritised at every level
- Cellular IoT is a key way to accelerate innovation, adoption and integration into the energy systems
- Cellular IoT solutions are resilient, highly available and scalable

Why choose Wireless Logic?

As global leaders in IoT connectivity, with over 20 years of experience and 10 million devices connected, we put reliability and security at the heart of our connectivity solutions.

Coverage
Our 'built-for-IoT' network services and partnerships provide global coverage and local access into 50 major networks.

Flexible Solutions
Operator and technology-agnostic, with flexible, scalable pricing

SIMPro Platform
Connectivity managed through a single, smart window

Expert Local Support
Access to our network of design, deployment and management experts

Secure and Resilient
Private infrastructure for data transmission between device and end-point

At Wireless Logic, we've built cloud security into our solutions. We understand that many applications today (outside and within the energy sector), especially those where cyberattacks are high-risk, are transmitting mission-critical data that must be protected.

We believe that the demand for countries to address the Energy Trilemma has never been greater. As a result, the availability of secure and resilient cellular connectivity solutions will become prevalent in any design for connected energy devices.

Energy companies cannot take any risks regarding data loss, misinterpretation of data usage (leading to sky-high energy bills for both consumers and businesses) and connectivity downtime. This is because mission-critical data supports multiple infrastructures and the overall management and distribution of energy.

Therefore, OEMs, enterprises and solution providers must consider partnering with a Managed Service Provider that offers an intuitive, flexible and reliable service that speaks to your needs. This is what Wireless Logic can do.

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What can we offer you?

Design, Development and Certification
We can help you with cellular component and technology selection, assist with device connectivity testing and guide you through the certification processes. Making the right choices at the design stage will have a direct impact on device deployment and provisioning processes, security and remote manageability.

Cybersecurity
We will handle your data in accordance with ISO 27001 and our solutions will help to ensure that data is transmitted securely and that only authorised devices can connect to enterprise servers and cloud infrastructure.

Fraud detection
Unauthorised usage of devices can be detected and blocked which helps preserve system integrity and prevent unexpected data costs.

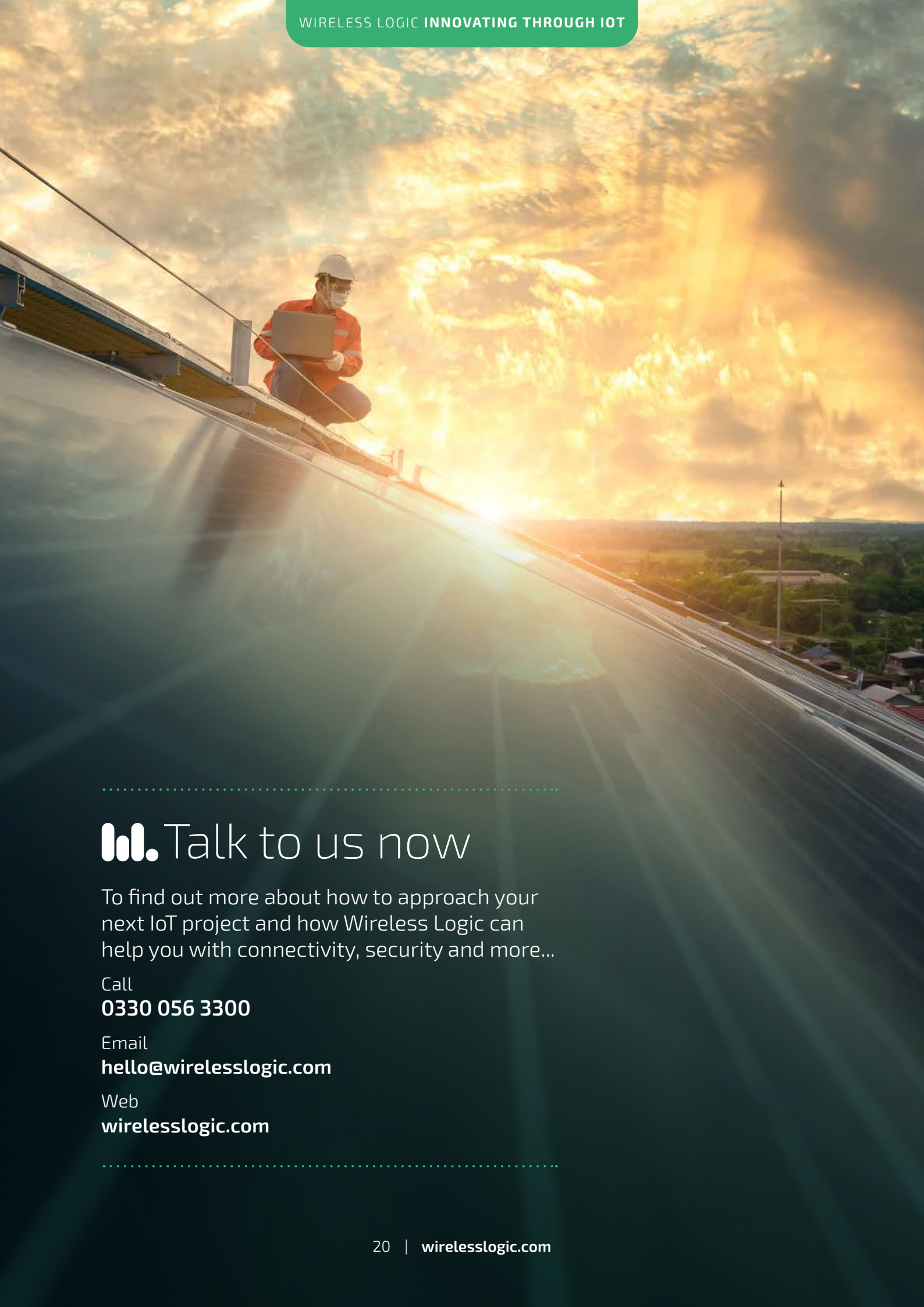
Protecting your data and reputation
Private Network Infrastructure and features such as IMEI locking, white or blacklisting, VPNs and private APNs, protect your devices and data.

Cloud security and scalability
Advanced on-SIM security automates device authentication and secure cloud registration, enabling dynamic, contact-free, scalable deployments.

SIM and Device Management
SIMPro and DevicePro provide remote manageability, insights and detailed analysis of device behaviours and performance.

Advanced on-SIM technology
SIM applets, multi-IMSI and eSIM technology enhance security, resilience and flexibility, which facilitates fast entry to new markets.

Secure chain of trust
Keeping device identities unique and secure helps prevent ransomware, malware and spoofing attacks.



Talk to us now

To find out more about how to approach your next IoT project and how Wireless Logic can help you with connectivity, security and more...

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