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The real space race: Connecting businesses to satellite constellations ●●

Satellite connectivity has the potential to change the way we do business across the globe, with those operating in remote and rural locations particularly expected to benefit. Right now, potential consumers await the up-and-coming small satellite constellations in order to take advantage of high-speed, low latency, affordable connectivity.

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The UK's space strategy lays out the multiple ways that the government wants the UK to become a space powerhouse. Amid the details of spaceports and manufacturing centres, there was also the news that it would build on the UK's strengths in satellite communications and its investment in OneWeb.

While this new medium of connectivity will bring huge opportunity to industry and consumers, we must be thinking about the best way to ensure that it can provide the speed and operations needed in the long term to make it a worthwhile investment. This means building a system that can process data at the edge, and optimize it to ensure

speeds are kept at a high enough level to be productive and worthwhile for businesses to invest in.

WHY SHOULD BUSINESSES CARE ABOUT SATELLITE INTERNET?

To a person living in the UK, or any other similarly developed nation, the concept of satellite Internet can seem confusing when they already have access to wired broadband that works perfectly well. However, this is because that infrastructure is well established, especially in towns and cities. For a business based in a remote location, such as a mine based in the Arctic, it might be too costly, or just impossible to lay the fibre cables to reach the site and connect it to the rest of the world. This can be seen the most with the likes of oil and gas companies, which often have drilling stations in remote areas, or ships at sea, which need to rely on wireless connectivity to communicate effectively with the rest of the world.

For these industries, satellite constellations can provide a significant financial saving compared to the alternatives. With the cost of launching satellites continuing to decrease as technology improves and more can be included on each launch, these options will only get more affordable. This will allow important data and information from remote IoT sensors to be shared at a faster rate than now. For example, buoys in the middle of the ocean can share water levels and weather readings directly via satellite, enabling more accurate weather forecasting and live route planning. Alternatively, these networks can give real-time information on the status of oil pipelines, and whether

repairs need to be made, reducing the risk of a leak. Ultimately, using satellite Internet can give organizations greater insight into how their assets are performing, and avoid unnecessary dangers and costs.

THE WIDER IMPACT OF SATELLITE INTERNET

As well as enabling businesses to bring their remote assets online, satellite Internet can have other impacts throughout the world. These include providing a back-up system for emergency responders to communicate through, as well as offering greater insight into what is happening on Earth by looking from space.

These benefits are already being explored. The UK government is investing £2.6 million into space-enabled technology and services designed to support the NHS's response to the current COVID-19 pandemic, as well as any future pandemics and health crises. This scheme has included the use of drone deliveries to help ease pressure on supply chains.

By supporting this with satellite connectivity, it can allow these deliveries to reach the right place, no matter how remotely its location.

HOW DO WE CREATE A SYSTEM FIT FOR THE FUTURE?

As businesses begin to make more use of satellite Internet, the amount of traffic it will need to handle will increase, potentially reducing its efficiency. For example, going from only a handful of IoT sensors sending information to



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thousands spread out over the globe will require more bandwidth. This could affect the speed of the overall system, potentially erasing the gains of the initial switch as companies end up waiting hours for data to arrive.

To prepare for this, it is essential that providers like Starlink, OneWeb and others build a system that can handle this level of traffic. This can be done by ensuring data is optimized at the source for backhaul through LoRaWAN networks, and by keeping data size as small as possible, transmitting only when necessary. Similarly, prioritizing processing at local edge centres across the globe will ensure that speed does not drop significantly as more devices are added to the network. This will ensure that the benefits brought by satellite internet can still be felt many years into the future.

Satellite Internet has the potential to open the door for many industries to embark on their digital transformation initiatives. However, for it to be a success, providers must plan for the future. If they get it right early, they will be able to reap the rewards and beat out the rest of the competition. ●



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