



OneWeb

**New Space:
LEO satellites enabling
digital era**

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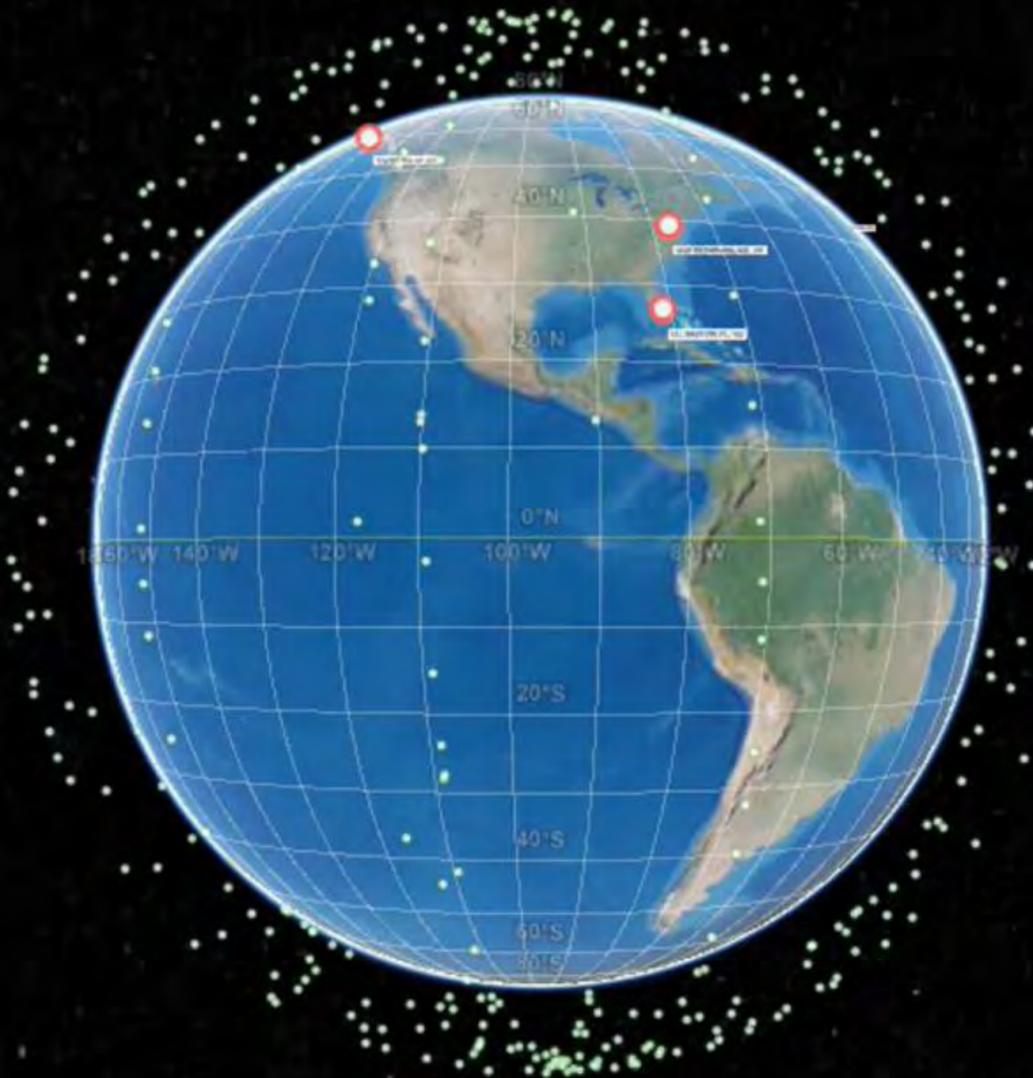
Tashkent, 11 May 2022



- **Total Satellites :** 648
- **Active Satellites:** 588 (5x12 spare)
- **Now Orbiting Satellites:** 428 (~66%)
- **Orbital Planes:** 12 (54 per plane)
- **Orbit (km):** 1219-1175 (~4 km spacing)



OneWeb



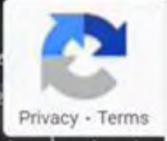
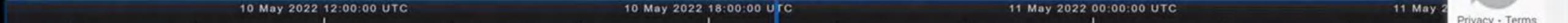
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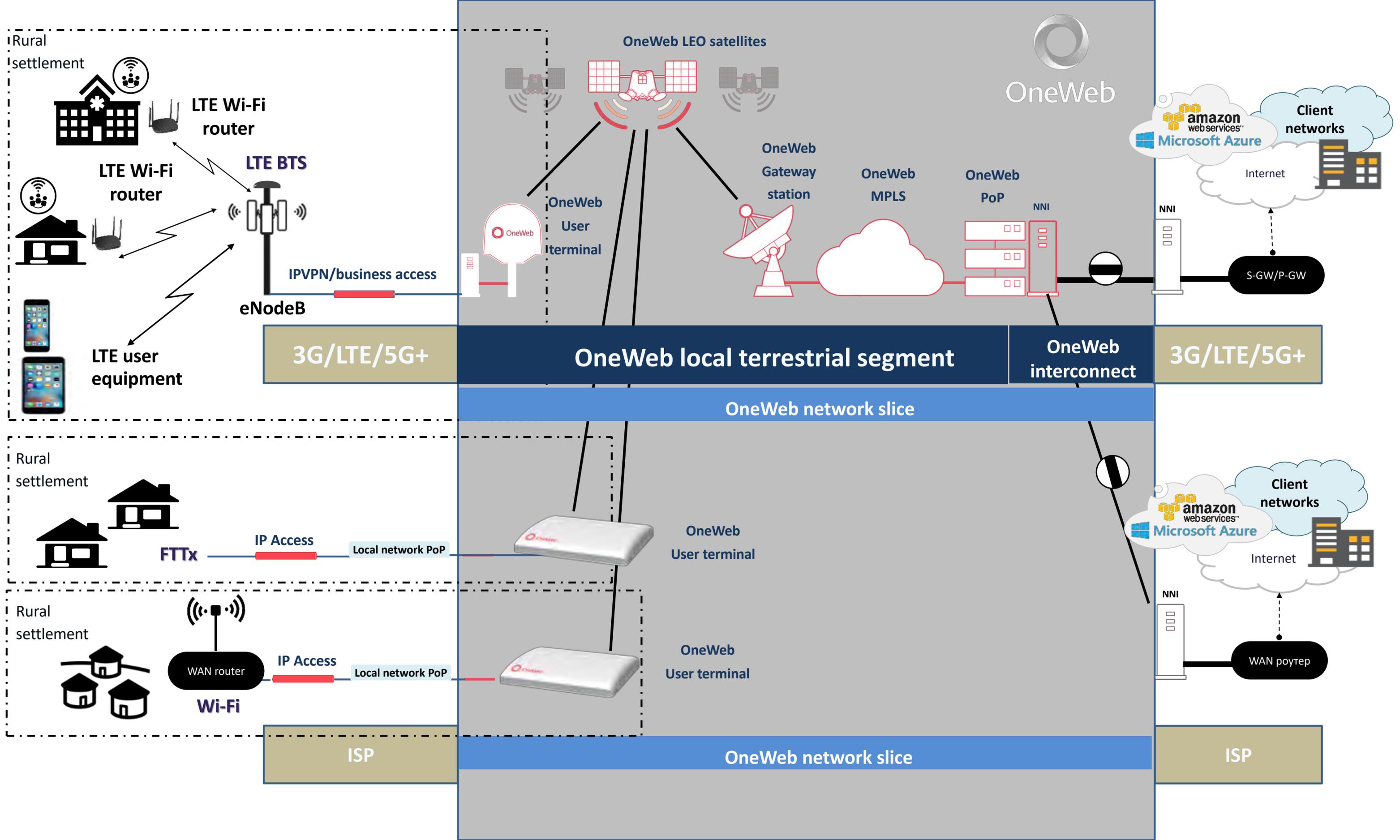
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CESIUM



DIGITAL ARSENAL





OneWeb Satellite Network Portal
Svalbard, Norway



MINING IN A
CONNECTED
WORLD
POWERED
FROM
SPACE





Challenges

- Massive and growing data flows due to digitalization of all processes.
- Need to exercise real time decision-making leveraging upon data.
- Need to ubiquitously utilize uniform enterprise cloud-based applications.
- Long periods of separation from homes for employees.
- Poor or no access to terrestrial networks at the remote locations.
- Long roll-out times for connectivity solutions at green-field sites.
- High signal latency barrier of legacy satellite networks.
- High cost of satellite services unsuitable for staff welfare.

Solutions

- LEO broadband access network with global service coverage.
- Fixed and Land Mobility satellite user terminals. Flexible, scalable, cost-effective bandwidth options.
- Signal latency of <70 **milliseconds (~32 msec 'earth-space' roundtrip)**. Downloads speeds of 150 Mbps.
- OneWeb services will enable ubiquitous use of cloud and IoT apps.
- Satellite connectivity integrated into SD-WAN networks will provide a complete network solution for both remote sites and headquarters.
- Mining companies will centralise ERP across all sites improving operations, including procurement, health and safety, resourcing, and accounting.
- HQ will be able to instantaneously draw up reporting variations from all systems integrated and to exercise timely decision-making.
- Remote workers will enjoy connected lifestyle in their leisure time, including video conferencing and cloud collaboration systems such as Microsoft Teams.



Enhanced and new applications

Employee health and welfare

Improved access to internet for personal use, health, and medical care.

Community support

Support local communities with online learning and education facilities.

Optimized use of resources

Integrate corporate applications across the organization to improve operations.

Collaboration

Deploy video collaboration tools such as Microsoft Teams across remote sites.

Compliance with environmental, health and safety regulations

Monitor and analyse site and environmental conditions in real-time to identify any issues.

Asset management

Continuously monitor equipment for maintenance, safety, location, and utilisation.

Real-time data analytics

Improve results in exploration and production by analysing data in real-time.

Predictive maintenance

Identify failures in mining equipment before they happen and fix them remotely where possible.

Security

Video management systems for improved equipment and perimeter security.

Cloud-based mining software

Cloud and IoT applications for new thinking in mechanisation and extraction.

TRANSFORMING RETAIL INDUSTRY BY SPACE- BASED CONNECTIVITY





Challenges

- Innovation require fast and reliable connectivity
- Cloud apps require reliable networks, retail stores need to be integrated into the corporate network to have visibility across the entire estate.
- Retailers need portable broadband for pop-up stores and new branches.
- Connectivity must be continuously available, with sufficient bandwidth to minimize lag, keep systems running smoothly, and ensure seamless operations. If connectivity is lost, downtime means potentially lost money, unhappy customers, and damage to the brand.
- Retail outlets far from HQ can suffer outages that take time to repair.
- Latency **can mean certain services don't work as well as they should.**
- Network resilience is vital, and retailers should consider fully-redundant infrastructure to ensure uninterrupted coverage.

Solutions

- OneWeb is quick to deploy and easy to manage ideal for connecting pop-up stores or new retail branches on demand.
- The global reach of LEO services keeps even remote retail outlets, from gas stations to general stores, always connected.
- LEO satellite connectivity provides either primary connectivity or back-up to fixed broadband to keep retail stores online, no matter how remote they are.
- It ensures retailers can deliver services to customers without worrying that the network dropping will cause lost sales.
- OneWeb connectivity ensures retail outlets can always take payments through PoS systems and online.
- OneWeb can support a digital supply chain, giving retail companies real-time data analytics that allows to enhance demand planning, asset and warehouse, transportation and logistics management, procurement, and order fulfilment.
- OneWeb connectivity can be integrated into an SD-WAN infrastructure to provide flexibility and resilience.



Enhanced and new applications

Business continuity

Added resilience to existing networks in case of disruption.

Supply chain transformation

Support specialist software, including dedicated retail supply chain management solutions.

Point-of-sale

A modern PoS system is the heartbeat of a retail operation and enables much more than just transactions at the checkout.

Cloud-based analytics

Support in-store IT tools and tailor new, innovative business models.

Optimised management of staff

Monitor and analyse staff performance using connected devices.

Connected CCTV

Ensure safety and security in retail outlets, no matter how remote.

Digital displays

Enhance the in-store experience for customers via offers shown on connected digital displays.

Product popularity

Better manage inventory and supply chain, with footfall analysis in stores to evaluate what products are most popular.

Enhanced customer experience

Gather and analyse customer data in real time to improve satisfaction.

Internet of Things

Connect more devices in more stores in more locations to improve inventory and stock management.

DIGITAL
OIL FIELD
ENABLED
FROM
LOW EARTH
ORBIT





Connectivity challenges

- A typical digitally-enabled offshore platform generates ~2TB per day.
- As the oil & gas industry pushes into more remote areas to find new resources, it becomes more difficult to find adequate connectivity.
- Data related to production and drilling safety is time-sensitive and requires fast and low-latency networks for real-time analysis in the cloud.
- Reliability is essential to avoid costly downtime in production.
- A further strain on connectivity is the increasing use of video in training, telemedicine, and collaboration.
- Digital tools and connectivity are also essential in ensuring worker safety and reducing environmental impact.
- Traffic needs to be carefully managed to ensure that connectivity provided **to staff for leisure doesn't disrupt business**-critical coms or apps.

Connectivity solutions

- OneWeb connectivity is quick to deploy and easy to manage. It integrates seamlessly with LTE/5G campus networks, to ensure that oil rigs, ships, sensors, and crew all remain well connected.
- Any location either on land or the high seas will be able to connect to corporate applications and the cloud.
- OneWeb connectivity can enable advanced applications, including automation, big data analysis, predictive maintenance, and environmental monitoring - to minimize unplanned downtime and optimise production.
- The low latency services enable remote operation of equipment such as surveying drones or remotely operated vehicles (ROV) for underwater work.
- Digital technology such as geofencing, video analytics, and gas detection plays a key part in mitigating dangerous working conditions.
- In addition, LEO connectivity can be integrated into an SD-WAN infrastructure for additional flexibility and resilience.

Connection everywhere changes everything



Enhanced and new applications

Realtime data analytics

To manage the exploration and production of oil and gas on and offshore.

Security and asset management

Sensor-based data, CCTV, and security management systems, that prevent downtime and maintain equipment.

Proactive risk management

Improve safety on site with increased automation, sensors and geofencing.

Tracked safety training

Meet licensing and certification requirements to fulfil workplace obligation.

Digital media

Improved latency-sensitive digital experience for work and leisure, including streaming and videoconferencing.

Business continuity

Shutdown, turnaround, and outages (STO) management, hybrid and back-up solutions, specialist software, and environment, health and safety (EHS) systems for compliance.

Employee morale, health and safety

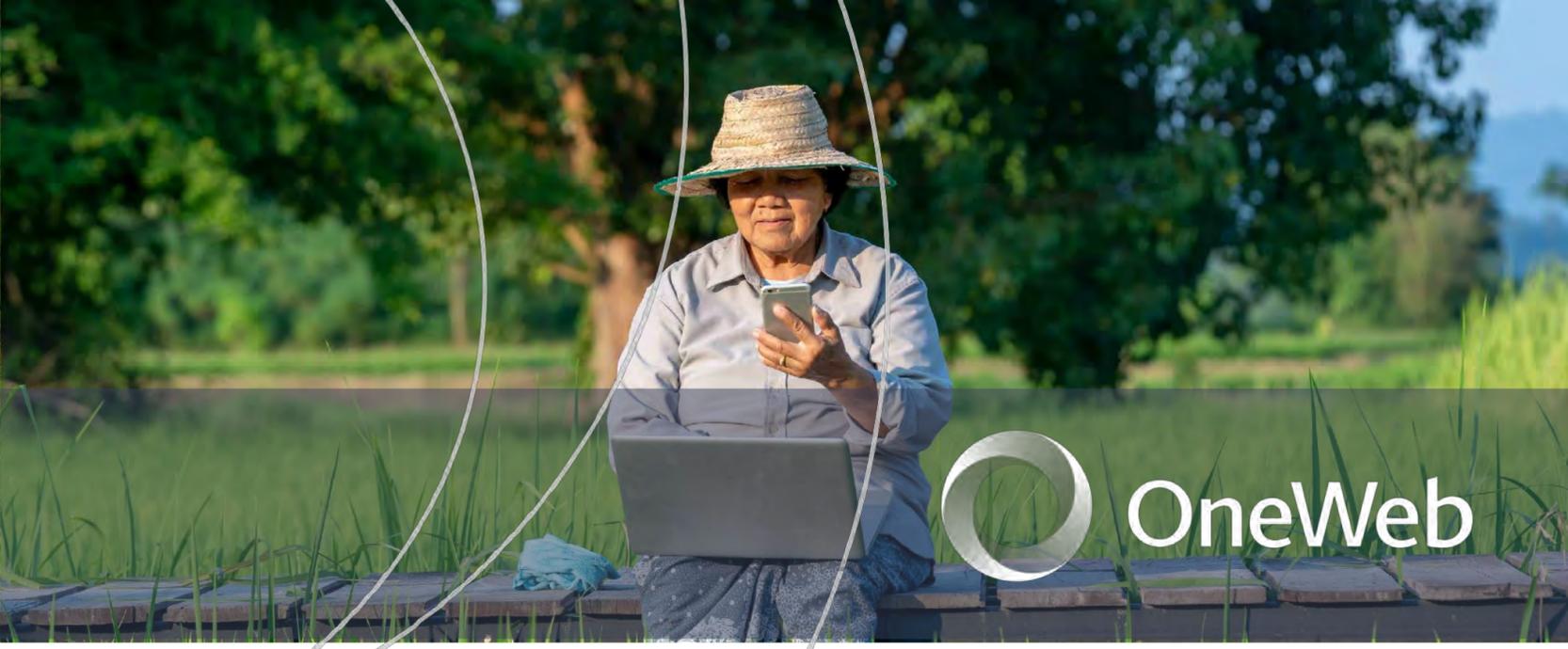
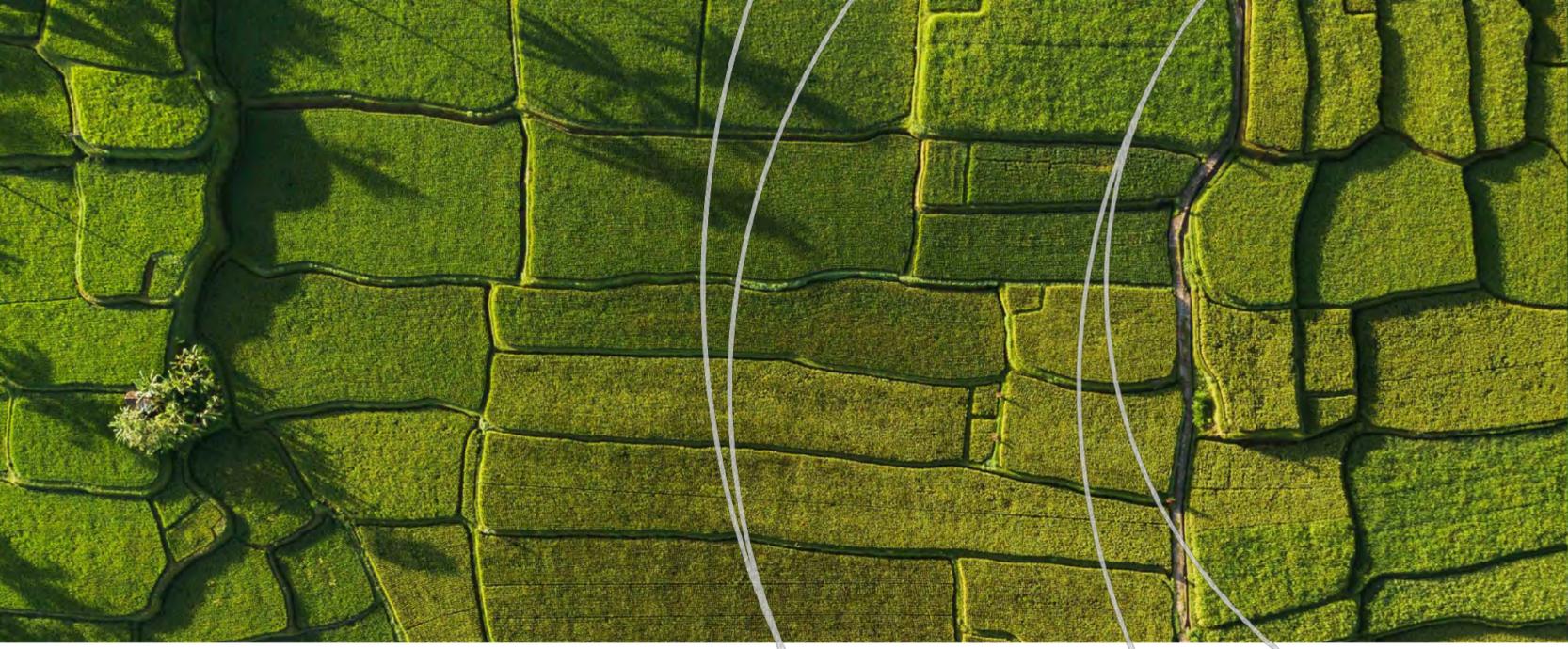
Greater access to online communities, medical care, video calling and large file sharing.

Skills and training

Improved access to online skills and learning facilities.

CELLULAR
BACKHAUL
VIA
SATELLITE
'FIBRE-LIKE'
CONNECTIVITY





Connectivity challenges

- Bringing terrestrial links to remote and rural areas to extend mobile network coverage can often be cost-prohibitive.
- Compared to urban and suburban locations, remote and rural connectivity faces barriers in the form of large geographical distances between coverage area, and nearest service PoPs, complex terrain, and obstacles like forests, mountains or lakes.
- The low population density of rural locations, and socio-economic factors potentially imply that the average revenue per mobile cell site will be much lower.
- Backhaul becomes more expensive when it comes to operating rural base stations often ~x2 amounting to 20% of TCO.

Connectivity solutions

- LEO satellite connectivity can lower the financial hurdles of providing rural coverage, by overcoming the geographical, and distance factors through the availability of ubiquitous connectivity at a cost-effective price.
- LEO satellite broadband can play a vital role in increasing the reach and resilience of connectivity to improve online access for people in the most far-flung places and drive universal connectivity goals.
- LEO satellite connectivity now presents a credible alternative for demanding customers, both business and consumer.
- It can also improve overall capacity and reliability for places already connected.
- **OneWeb's satellite backhaul offers the possibility for network sharing, where two or more operators locate their RAN equipment on a single mast, meaning third-party tower companies can spread costs out over multiple operator tenants. This presents significant CAPEX reduction opportunities.**
- Whether as a primary or backup connection, LEO satellite offers big possibilities.



OneWeb

Enhanced and new applications

Enhancing user experience

Making access easier to global coverage and low latency from the most remote locations

Connecting the unconnected

Bringing the internet and a wealth of opportunities to citizens, companies and governments in the most remote locations. Enabling national rural community broadband access programs.

Protecting business and revenues

Gives the power and control to keep businesses operating should primary networks fail.

Supporting remote operations

Remote operations far from corporate HQs need backup connectivity to support operations in an emergency.

Augmenting connectivity

Ensure company sites, no matter how remote, can offer a complete range of services to customers.

Enabling digital transformation

Providing the connectivity needed to support access to applications hosted in distributed cloud environments. Enabling Industry 4.0.



OneWeb

global space-based connectivity

Connection everywhere
changes everything

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