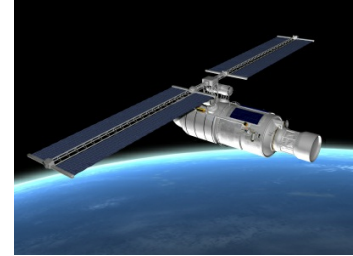


Bridging the Broadband Digital Divide with Satellite

By: Thomas Van den Driessche

As the world undergoes a digital transformation, broadband is the enabler. Today, we are connected in ways that we would never have dreamed of just ten years ago. Broadband has literally changed the way we live and work, taking communications to a completely new level. Whether fixed or mobile, broadband has had a profound effect on every region of the world that it has touched and is bringing about socioeconomic development that can actually be measured. While Information and Communications Technologies (ICTs) are changing lives and accelerating positive changes, these services are more easily accessed in towns and cities, where the population density is higher and investment is more readily available. For many people, broadband access is not easily—if at all—accessible.



In fact, in 2018, only [55.1 percent of the world's population](#) had access to the Internet. And although many of us consider the Internet to be a part of our daily lives, just under half of us do not have access and therefore cannot reap the benefits it brings. There is, however, a solution that can deliver broadband to even the most remote places on Earth, yet it is often overlooked: satellite connectivity.

An advertisement for 'Hyperinteractive Ad Placements' featuring a woman in a business suit. The ad lists several benefits: Targeted Industry Visibility, Largest Ad Sizes, Distribute Marketing Assets, Capture Sales Opportunities, Target Key Issues & Topics, Web & Newsletter Placements, and Extend to LinkedIn, Twitter & Google. It includes a 'Pipeline' logo and a 'CHOOSE YOUR PLACEMENTS' button. At the bottom, it says 'Click this ad for more information'.

Why satellite?

Simply put, the answer is that satellite can be deployed anywhere. As long as the satellite terminal has a clear line of sight with the satellite it is communicating with, it can be installed anywhere, providing rapid access to connectivity. But satellite has been misunderstood in the past. It has been dismissed or passed over as a solution for many reasons: for being too expensive, because signal latency is too much of an issue, and because it is not a sustainable solution for the delivery of high-speed connectivity. These reasons, however, could not be further from the truth. Satellite is proving itself to be an indispensable part of any communications technology. Its ability to reach literally anywhere, regardless of geographic barriers, renders it unique—and now this technology is taking another leap forward.

The emergence of High Throughput Satellites (HTS) is changing the capabilities of the satellite industry, offering more power and more throughput at a lower price-per-bit. HTS also offer flexibility and reliability for a host of markets and services. HTS manage this by utilizing spot beam

technology that operates in Ka and Ku-band, where there is more available capacity. HTS are now offered by most satellite operators—or most have them planned—and they are transforming the economics of satellite-based connectivity.

The other significant development occurring in the satellite industry at the moment is the inexorable rise of the small satellite. Formerly associated solely with the scientific and academic community, small satellites are now becoming part of the mainstream satellite industry. The last five years in particular have seen huge strides forward in small satellite technology and capabilities. Today, satellites with a mass of less than 500kg (known as smallsats) can achieve missions that were previously the domain of heavier satellites. The developments in sensor technology and the fact that smallsats can meet the requirements of a wide range of applications, including broadband communications, mean that operators can now have much smaller satellites built, which brings down manufacturing and launch costs. This development also opens up the opportunity to refresh technology regularly, thus enabling them to remain more competitive. These smallsats are moving into commercial deployment and some will become operational as soon as next year in the form of 'mega' constellations. Hundreds or even thousands of smallsats will rapidly orbit the earth in Low Earth Orbit (LEO) and Medium Earth Orbit (MEO), providing high-throughput connectivity and therefore mobile broadband applications in more locations globally. Due to their closer proximity to the earth, these satellites will be unaffected by latency and will deliver cost-effective broadband services for a plethora of applications.

When satellite's ubiquitous nature is combined with these exciting new developments, it becomes easy to see why satellite technology is a key enabler for a range of applications that will push connectivity access out to more people than ever before.

Cellular Backhaul and 5G

In many areas of the world, the main means of accessing any kind of broadband connection is on a mobile device, such as a smartphone or tablet. Mobile devices offer a low-cost way of accessing the Internet and applications for banking, social media, and even educational and health services. For those living in more remote regions, however, a mobile broadband connection is frequently not available, as the infrastructure required is often too expensive to construct or the area is simply too remote. Cellular backhaul services enable operations to extend their coverage to these outlying areas—and to deliver important data services.

5G will ultimately transform many aspects of our lives, connecting us in a way we could never have dreamed of. It will push network boundaries to enable new applications and services across every industry. It will bring about a radical transformation of our towns and cities, our work lives, our homes, and our services, including health, transport and security. To enable this, changes in communications architecture will be required to offer increased power and scalability and reduced operational costs. Satellite will be pivotal to this change in both rural and urban areas.

Humanitarian Networks

With the frequency of natural disasters on the rise and the increasing impact of man on the displacement of communities around the world, the role of humanitarian organizations is becoming increasingly critical to quickly and effectively help those affected. During and immediately after a crisis, urgent action is required to save lives. At the same time, from the start of a humanitarian response, time-critical interventions which lay the foundations for sustainable recovery and a speedy return to longer-term development are also imperative. Moving from responding to emergencies to rebuilding countries, the focus shifts to long-term finance, capacity-building for national governments and the empowerment of local communities to meet their own needs. During all these stages, telecommunications in general and satellite communications in particular are key contributors to the success of the humanitarian intervention and development activities.

Satcom is the only reliable method to exchange critical logistic, medical and situational awareness information with mission headquarters after a manmade or natural disaster. In such events, telecom

landlines and terrestrial wireless systems are lacking, destroyed, or overloaded by people sourcing help, information, or trying to contact relatives.

Consumer & Enterprise

With underdeveloped, fixed line infrastructure making it almost impossible to reach remote communities, satellite-based VSAT networks can fill these considerable gaps in communications and provide rich services for the communities that need them, from basic voice connectivity to Internet access. These applications help from the ground up, improving the socioeconomic situation in underdeveloped and developing regions of the world, informing individuals and communities with a vast array of knowledge—from how they may improve their farming techniques to maximize crop yields or more effectively use fertilizers, to access to financial services or education healthcare. It is this kind of information that can enable people to improve their overall quality of life. VSAT technology also presents a means of connectivity for rural businesses, enabling them to better access their customers and partners or to enable established businesses to grow out to more rural regions.

The importance of connecting people over satellite

In 2019, we still face a significant digital divide. We still need to do more to close this divide and make broadband more accessible and more affordable to more people to improve quality of life, business and opportunity prospects, and local, regional, and national economies. Satellite forms a critical part of the connectivity jigsaw that will see communities, businesses, governments, non-governmental organizations (NGOs), educational institutions, hospitals and more, all over the world, benefit from broadband connectivity and the transformational qualities it brings.