

MARKET Briefs

Executive Summaries of Market Trends and Opportunities in Key Market Segments and Regions Worldwide

Comms on the Move Market

by Virgil Labrador

Communications On The Move or COTM is one of the key applications of satellite technology that provides key services for various sectors. COTM refers to vehicles and other moving conveyances such as ships, trains, etc. equipped with a satellite dish able to establish communication with a satellite net-

work and maintain communications while the vehicle is moving. COTM has vital applications for first responders, disaster recovery, emergency preparedness, remote access, Satellite News Gathering (SNG) in key verticals such as enterprise, broadcast, government/military, maritime, utilities, oil & gas, mining, among others.

The basic principle of COTM is that equipment is fitted with an antenna that can establish communication without the need to stop or pause. COTM and Satcom-on-the-Move (SOTM) are sometimes used interchangeably in the satellite industry. COTM is not to be confused with Communication on the Pause (COTP)

which requires that the satellite equipment be stationary to function.

COTM on the move historical started with L-Band satellite providers such as Inmarsat, Globalstar and Iridium providing voice and low bandwidth data (128 Kbps up to 1 Mbps) connectivity worldwide. Today, new innovative technologies are coming to market that will dramatically change COTM and COTP services.

Innovation Solutions

In the last ten years the development of high-powered Ku- and Ka-band satellites flat panel antenna (FPA) solutions initially for the security and defense market has significantly enhanced the effectiveness of COTM solutions by providing higher bandwidth and greater flexibility.

FPA's are now in the commercial market with the with various companies providing or developing FPA's for COTM and COTP solutions such as Kymeta™, C-COM Satellite Systems, ThinKom Solutions, NXCOTM, Isotropic Systems, AvL Technologies among others.

"FPA's is probably one of the most significant breakthroughs in the satellite industry in the past decade. It is exciting to see this technology originating as far back as 1950s finally coming to fruition in our time. These electronically steered antennas pave the way towards commercial non-geostationary satellite orbit (NGSO) constellations, which is another exciting development," said Maxim Usatov, Chief Technical Officer and Founder of BusinessCom.

Kymeta™ launched in the 4th quarter of 2020 its second generation FPA, the Kymeta™ u8 electronically steered satellite antenna platform and Kymeta Connect™, a unique offering that makes satellite and cellular hybrid connectivity as easy to purchase as a mobile plan. The u8 is a comprehensive connectivity solution that enables trusted, secure communications on the go with a host of new innovative features. The new terminal provides a complete connectivity solution for on-the-go communications when and where you need it. The Kymeta™ u8 covers the full Ku-band and it designed to be LEO upgradeable. It also supports MEO and GEO satellite constellations.

"The Kymeta™ u8 portfolio is the only land-based solution of its kind that fully supports always-on broadband communications over both satellite and cellular while mobile. This core feature which allows you to connect to a satellite while on the move, combined with our back-end support suite of services, Kymeta Connect, results in a seamless customer experience and a product that no other satellite antenna company offers today," said Bill Marks, Chief Strategy Officer (CSO) of Kymeta™.

Key Drivers

One of the key drivers for COTM and COTP solutions is the increasing demand for mobile broadband connectivity, which has accelerated as a result of the global COVID-19 pandemic. "The global demand for mobile broadband connectivity continues to grow, driven by the insatiable consumption of data as well as the growth in new Internet of Things (IoT) ap-

plications. Cellular networks alone will not provide the seamless coverage needed to satisfy always-on communications on the move. The combination of satellite and cellular technologies deployed across a variety of different uses cases will be a solution to that growing demand in only a matter of time. There remains a growing demand for mobile connectivity that cannot be met by the cellular industry alone. This demand creates a market for new satellite products and services that can only be met through innovation," said Kymeta's Bill Marks.

A recent report by NSR entitled "Land Mobile via Satellite, 8th Edition" revealed that the satcom land mobile market continues to have a strong future, with over 750,000 new in-service units coming over the next decade, across nine distinct applications. Many of these units will trend towards higher ARPU levels with enhanced revenue prospects, despite a near-term COVID-19 revenue dip. Connected vehicles play a major role in long term growth, as broadband overtakes narrowband demand across all land mobile applications, according to NSR.

The report found that total revenues in the Land Mobile market will increase from US\$ 1.39 billion in 2019 to US\$ 2.98 billion in 2029, a growth rate of 7.9% across the decade, despite moderate COVID-19 impacts in the short term.

"As the connectivity marketplace becomes more competitive, the operators are becoming increasingly demanding. Commercial and military customers alike are looking for higher speeds and more competitive rates for bandwidth. The way to consume this

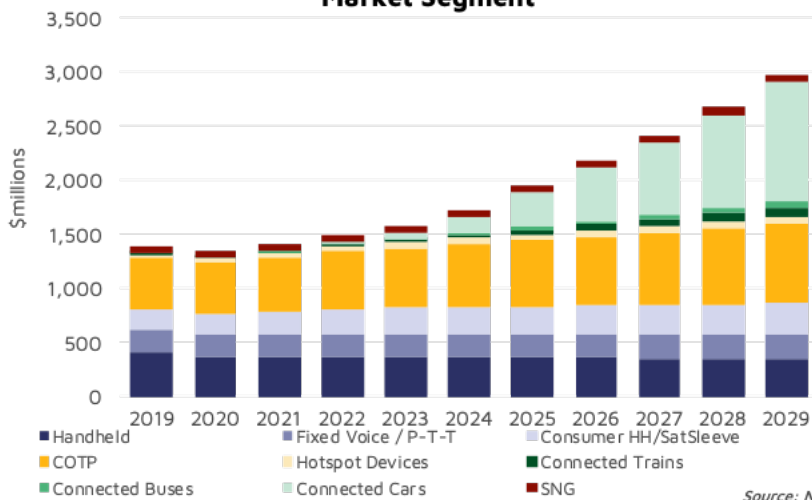
data is changing as well and that puts constraints on the operators' networks, as different platforms require new antenna types or ways to purchase connectivity. Some can evolve their networks and expand their capabilities, looking ahead to 5G, and some are going to struggle, requiring even more innovation on the ground segment. Much of this evolution will drive Research and Development and innovation over the next five years. Another expected demand is standardization in the industry which is long overdue. The cellular industry went through this a decade ago and it is time for Satcom to make real strides in that direction as well," said Kymeta's CSO Bill Marks.

"Longer-term, NSR sees accelerated revenue growth driven by a fundamental shift from narrow-band applications and towards broadband as a share of revenues" said Alan Crisp, NSR senior analyst and report author. "Greater COTP usage, and the growth of connected vehicle markets, all point to additional life being injected into land mobile. Inmarsat Land Xpress, Iridium Certus, LEO-HTS constellations and more all contribute to new revenue opportunities over MSS narrowband data and voice usage," he added.

Another key driver for COTM and COTP is the influx of the new Low Earth Orbit (LEO) and Medium Earth Orbit (MEO) constellations that are deploying at full speed in this decade. Thousands of LEO and MEOs are coming online in the next few years from the likes of SpaceX's Starlink, Amazon's Kuiper and OneWeb, among others. The Non-GEO satellite systems has the potential to bring the COTM to the mass market.

Although not without its chal-

Land-Mobile via Satellite Total Retail Revenues by Market Segment



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lenges, the Non-CEO constellations provide a unique advantage over GEO for COTM applications. Non-GEO systems are far closer to earth than GEOs meaning they require less distance to travel, reducing latency and enabling higher data rates.

BusinessCom COTM Solution

One company that is at the forefront of providing innovative COTM service is BusinessCom. With offices and facilities worldwide, BusinessCom's goal is to make satellite connectivity available to the broadest range of users. The company attributes its success to constant market research and continued investment in new technologies. This knowledge and expertise creates a strong understanding of international and local markets and creates a rich corporate environment that is ideal for creative thinking and innovative solutions.

BusinessCom was one of the

first satellite service providers to deliver Deterministic TDMA technology to the Eastern Hemisphere markets which is now a globally accepted reference for business satellite Internet access service.

More recently, BusinessCom has partnered Kymeta™ to work together on programs featuring their advanced FPAs and developing services specifically designed to support this type of platform. FPAs provide low-profile solutions for public transport vehicles like buses, coaches, and trains. Mobile solutions supporting on the move communications are attractive to civilian armored vehicles, recreational vehicles, and truck fleets. Government and Defense clients are interested in COTM services for military vehicles, patrol ships and first responders. FPAs are also of interest to the maritime industry, where environmental conditions are hard on the mechanical parabolic antennas normally used. FPAs are showing up on superyachts, fishing fleets, ferry services and even smaller pleasure craft. Where-

Maxim Usatov, CTO and Founder, BusinessCom

What are the key services that your company provides?

Since 2003 we have been dedicated to providing high-performance satellite services and solutions to enterprise clients. We see ourselves as a satellite solution provider. We leverage our technical expertise in various IT fields to deliver complex solutions to our business clients and partners worldwide. We offer a wide range of VSAT services for a variety of markets, such as SME, oil and gas, utilities, mining, defense and government, education, and others. We have a strong portfolio of SCPC and TDMA services on both geostationary and inclined orbit satellites for cellular backhaul and IP trunking for national and regional ISPs, offering exceptional value and consistent high quality of service. BusinessCom operates in Ku, Ka and C frequency bands—the latter, we recognize, as being critical to delivering reliable service in tropical climate zones. Another direction we are active at is mobile connectivity including traditional gyro-stabilized maritime solutions and, recently, communications-on-the-move (COTM) systems based on electronically steered flat panel antennas (FPA).

What would you say are the unique differentiators between you and the other service providers?

The nature of our customers demands that we underline quality of experience as the most important factor in our work. There are several components in our business that make BusinessCom stand out. First is the way we manage our satellite networks. We work with each client to make sure they buy enough CIR and MIR bandwidth to satisfy their traffic requirements. Each remote is pre-qualified on sales engineering stage before joining the network. This allows BusinessCom to deliver consistent quality of service on a long-term basis to all the subscribers while generating enough revenue to continue upgrading our capacity pools as we grow. As a result, we have clients who have used our services for well over a decade. We believe our churn rate is lower than many other service providers.

In 2016 we introduced our Portal – a business



Maxim Usatov

and operations support system. This platform, popular with our clients and partners, is continually being developed and updated to provide new features and capabilities for our internal administration as well as adding new features requested by clients and partners. We use Portal to converge multiple VSAT platforms on different satellites and teleport networks with the goal of delivering a unified managed service offer. The Portal aggregates all the operations data and statistics from different VSAT platforms and remotes into a single integrated platform where we and our clients and partners can make educated decisions regarding bandwidth allocation, service management and future procurement.

Another technology we actively rely on is our Sentinel – a server based on the open source FreeBSD operating system, designed by BusinessCom for remote VSAT management. We delivered the first model in 2013 and it has proven to be a highly successful product, currently on its fourth revision. A Sentinel at a remote site is almost like having an IT technician at the site. Most remote problems end up being data related, rather than satellite related. The modems from vendors such as iDirect do a good job on the satellite side but come up short when it comes

to diagnosing data-related problems. An extensive set of diagnostic and troubleshooting tools makes it possible to identify traffic issues and then leverage full-featured bandwidth management controls to ensure that the client's bandwidth is optimized to their requirements. Sentinel also provides VPN, firewall, network intrusion detection, monitoring and other advanced networking services, such as caching, user authentication, fail-over and load balancing—at the remote end. The Sentinel, effectively, is a computing platform that allows us to deploy advanced networking services at the remote sites, secure them, custom-tailor our solutions to satisfy particular business application requirements and integrate seamlessly into existing local networks.

In addition, BusinessCom offers a wide selection of telecommunications and IT services, such as our threat management platform called SecureLink, SD-WAN and terrestrial MPLS-enabled backhauls, and WAN optimization solutions.

What unique benefits and advantages does your services provide to your clients?

We have a unique portfolio of satellite services that deliver exceptional value to our clients and partners. We can start with our access to exclusive satellite capacity and uplinking capabilities in Europe, USA and elsewhere. We have invest significant resources in service management. For example, for our shared bandwidth services, like iDirect Broadband, we have developed a unique automatic methodology for monitoring our TDM/TDMA pools and overall network health. This allows our NOC to exercise proactive network management ensuring that the quality of burst delivered to each remote site remains consistent, and that the SLA terms are met throughout the whole contract term. With Portal, our partners and clients also have the ability to manage and monitor all their satellite links and contracts from a single web interface. This is quite convenient if you are an organization with, say, many tens or hundreds of remote sites.

Our Sentinel-enabled VSAT remotes are “smarter” than basic satellite IP routers. Sentinel and SecureLink help keep our networks effectively free of malware. This helps to reduce wasted satellite capacity, network downtime and remote maintenance

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costs. Business clients deploying office branches may want to have the ability, for example, to authenticate end users in their LANs to avoid bandwidth abuse, or implement automatic switch-over or even load balancing between the VSAT link and a terrestrial connection like LTE – something we also support by default.

Unlike traditional service providers, our NOC has significantly extended its remote monitoring capabilities and troubleshooting jurisdictions, often going into the remote's LAN, if the user permits, and addressing many issues at their source. The bandwidth is also managed locally. In other words, instead of providing bandwidth on a per-remote basis, our clients can elect to have their bandwidth delivered on a per-host basis, with unique QoS policies defined at the remote end per each user connected and authenticated in the LAN.

It is a little challenging to describe all the technological advantages we deliver in a brief interview, as we have spent more than a decade developing all those capabilities. In short, we see ourselves as a complex solution provider. We like to delve deep into customer connectivity problems and offer solutions that work. We have a team with in-depth technical knowledge of all the key VSAT platforms available on the market, Unix-like operating systems and IP networking, microwave and other terrestrial connectivity media—and they're backed by a strong global operations unit to provide logistics and on-site support. Our sales engineers go the extra mile to understand the customer's connectivity requirements from multiple perspectives, deliver an efficient, uncompromising solution and work with the NOC to provide effective support service. The turn-key systems we offer often consist of the satellite terminal, service, and an array of other components. The quality of user experience is put first.

What are the most recent innovative solutions in the Comms on the Move market that you provide?

BusinessCom has adapted its capabilities with the goal of delivering the most high-performance COTM service available on the market today. We have paused and asked ourselves—can on-the-move services offer enterprise-grade reliability with unlimited data? We asked ourselves what had to be done to make this happen. I believe we have achieved this quite successfully. Unlike our competitors offering best-effort connectivity with data caps, BusinessCom offers its COTM service with fully unlimited bandwidth and an enterprise-grade SLA. At our price point we believe we are delivering exceptional value to users seeking for on-the-move connectivity for intensive use, such as high-definition streaming and high-volume data transfers. For many user applications our unlimited COTM service, billed at a flat monthly fee, provides typically 2-3 times better OpEx than other services billed on a per-GB (or per-MB) basis, and the users don't have to worry about reaching hard data caps. The solution is especially effective if you consider a fleet of vehicles or sea vessels sharing the same bandwidth pool, offering unprecedented capability, at the cost lower than competition.

Our COTM service is based on the same hub infrastructure as our other iDirect-enabled services, providing all the features of the Portal, Sentinel, SecureLink, and all the other value-add we provide to clients on parabolic reflectors. From a user experience, a COTM remote is very similar to a fixed or a Communications-on-the-Pause (COTP) remote, except that it stays online in motion. As many types of remotes converge to the same platform, our customers can have a single pool of bandwidth serving a wide range of assets – from fixed headquarters, branch offices, to mobile COTM and COTP remotes, and maritime vessels on both gyro-stabilized and flat panel antennas.

What can we expect from BusinessCom Networks in 2021?

As an authorized Kymeta partner, we are going



One of BusinessCom's COTM vehicles equipped with Kymeta's u8 antenna. Leveraging Kymeta's revolutionary software-defined, electronic beam steering technology, the u8 antenna has been re-engineered for full coverage of the Ku band spectrum, increased antenna performance, and extended environmental coverage. All this while maintaining low power operation for seamless integration into mobile platforms.

to explore our COTM capabilities further: we plan to extend our wide-beam Ku-band COTM coverage this year to accommodate users from Africa and the Americas. We also stand vigilant vis-à-vis recent pricing trends on GEO satellites: as capacity prices continue their descent globally, we hope to offer even faster satellite services at lower price points. I see this as a positive for the satellite broadband industry overall: businesses and organizations require increased throughput to support ever-growing data volumes and high-definition streaming. The last couple of years I have suggested that VSAT risks becoming a dinosaur—while terrestrial services are now sold in hundreds of Megabits or even Gigabits, the VSAT industry is still largely counting kilobits! According to the latest Cisco report, the average global terrestrial broadband speeds are expected to exceed 100 Mbps within a couple of years, so it is promising to see the satellite industry finally catching up. BusinessCom offers 50 Mbps packages on some of the broadband beams we have in the Middle East and sub-Saharan Africa already, and we are working to expand this capability to other regions, and increase the speeds even further. 

ever a lightweight, easily deployable antenna is needed for fixed applications such as mining and construction, offshore platforms, or alternative energy installations, an FPA may be the best solution.

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BusinessCom's COTM services enable guaranteed quality satellite private networking, delivering broadband IP throughput to air, sea and land vehicles in motion. BusinessCom's services provide

“...As the connectivity marketplace becomes more competitive, the operators are becoming increasingly demanding. Commercial and military customers alike are looking for higher speeds and more competitive rates for bandwidth...”

broadband service to a single or a group of mobile terminals operating within wide geographical coverage zone, typically a wide Ku-band beam on a geostationary satellite. This allows to inter-connect an array of mobile enterprise, government and defense assets, as well as deploy new points of presence rapidly whenever needed. Key features include:

- Unlimited data volume
- High-throughput IP service for land, sea and air
- CIR bandwidth service with SLA
- Bi-directional QoS
- Available on multiple Ku-band satellites
- Guaranteed audio, video and data streaming
- Link encryption and security
- 24/7 NOC technical support
- Fully accelerated VPN

BusinessCom's COTM service is a unique blend of tried and trusted technology, mixed with thoughtful and sometimes radical design. The service can be provided in man-

aged private network and VNO modes and is compatible with parabolic and flat panel COTM terminals from a variety of manufacturers, including Kymeta™, General Dynamics, L3 and others. The user link power budget and satellite transponder operation are custom tailored to a particular customer's IP throughput, geographical coverage and link availability requirements. Downlink capabilities often exceed tens of Mbps, with guaranteed network availability and without any limits on data volumes.

More information on BusinessCom and its services can be found at the website at www.bcsatellite.net

Conclusion

Prospects for COTM market are indeed very promising in this decade. The global COVID-19 pandemic has not slowed down growth but actually has increased demand for various applications requiring mobile communications solutions.



Virgil Labrador is the Editor-in-Chief of Los Angeles, California-based Satellite Markets and Research which publishes a web portal on the satellite industry www.satellitemarkets.com, the monthly Satellite Executive Briefing magazine and occasional industry reports called MarketBriefs. Virgil is one of the few trade journalists who has a proven track record working in the commercial satellite industry. He worked as a senior executive for a teleport in Singapore, the Asia Broadcast Center, then-owned by the US broadcasting company CBS. He has co-authored two books on the history of satellite communications and satellite technology. He holds a Master's in Communications Management from the University of Southern California (USC). He can be reached at virgil@satellitemarkets.com

Satellite Communications on the Move.



Actual Installation, u7 FPA

Presenting our enterprise COTM service.

BusinessCom's COTM service, designed for Kymeta™ u7 and u8 flat panel antennas, provides broadband connectivity on the move with *guaranteed quality*.

Developed to support a wide range of mission-critical applications at a high level of performance, our service features unlimited traffic, full bi-directional QoS, dedicated CIR bandwidth, LAN management, fully accelerated 256-bit AES VPN, network intrusion prevention system and *enterprise-grade SLA*.

The bandwidth can be provisioned either to a single remote or as a *Private Network* with a common bandwidth pool dynamically shared across a group of terminals. The flat panel metamaterial *antenna with no moving parts* can be integrated into any land vehicle or sea vessel.



Kymeta u8 Antenna

Contact us at www.bcsatellite.net for a demonstration.
Or call +1 (866) 556-3176.

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