

BRIEFS Breeutive summaries of market trends and opportunit

in key market segments and regions worldwide

The Maritime Satellite Market

Maritime Highlights



- Comsys projects that the number of vessels that will be connected by VSAT networks will more than double from 12,300 in 2012 to 26,000 in 2016.
- Growth will be driven primarily by increased data consumption as well as the adoption of a new generation of broadband satellite services.
- With the longest shoreline in the world at 152.100 miles. Canada's maritime market offers ample opportunities for service satellite providers.

by Virgil Labrador, *Editor-in-Chief* Satellite Markets and Research

he maritime market for satellite services is one of the fastest growing segments of the satellite

industry today. It is also the only market where satellites enjoy a near monopoly on the high seas.

Comsys projects that the number of vessels that will be conn e c t e d b y VSAT networks will more than double from 12,300 in 2012 to 26,000 in

to 26,000 in 2012 to 26,000 in 2016. It's not only in terms of

the number of vessels that are getting connected, but the bandwidth requirement for each vessel also is growing significantly.

Euroconsult in its report entitled *Maritime Telecom Solutions Global Market Analysis and Forecasts* published in 2014, predicts that the maritime satellite communications market will average 7% growth over the next decade. The report says that the growth will be driven primarily by increased data consumption across all maritime segments as well as the adoption of a new generation of broad-

band satellite services.

"Onboard bandwidth requirements keep growing which is driving the maritime market in a direction quite beneficial to satellite communications,"



said Wei Li, Senior Consultant at Euroconsult and Editor-in-Chief of the research report.

"We have observed growth in both Average Return per User ARPU and installations. Over the next year, a number of High Throughput Satellite (HTS) systems will become available in the maritime market, aimed at deliver-

ing three times more capacity by the end of 2014 and six times more capacity by the end of 2016. This additional capacity will drastically change the relationship between supply and demand in the market, and enable a range of new applications for the maritime community," added Li.

NSR's *Commercial Mobility via Satellite, 10th Edition* report finds the maritime market will dominate demand for FSS satellite capacity in large part due to cruise ships, offshore platforms and merchant maritime customers.

At over 980,000 in-service units by 2023, the maritime market will demand almost 160 transponders of FSS capacity, and generate more than US\$ 5.5 billion dollars in retail revenue. Over the next ten years a migration towards High-Throughput Satellite (HTS) offerings is quite likely across most maritime markets, except fishing that may see more hybrid systems such as MSS broadband or small VSAT services alongside narrowband offerings.

"Bandwidth demand is rising across most ships, and with more capacity available globally, the industry is in a race to meet

drive to more broadband connectivity, growth momentum. In addition, a large leading vendors to expand into what could be high-growth markets for new bandwidth. "The passenger market is one visible segment that emulates this trend and as a result will show a doubling of the VSAT market penetration in the next decade." stated Grady, "but at the same time, crew and operational needs in merchant maritime and offshore platforms and vessels will capture the largest slice of the 160 transponders of demand at the end of 2023, according to NSR.

part of the maritime community is not yet well addressed by the satellite communications industry, and opportunities are still ahead in underdeveloped vertical segments and emerging geographic markets. The upcoming Ka-band services are also expected to contribute to market growth in the next decade.

In a 2012 whitepaper Terry Neumann of iDirect predicted the high-throughput Kaand Ku-band satellites coming online would make bandwidth more affordable for maritime customers. With more provid-



- Voice and onboard GSM Internet for passenger wireless devices
- Interactive quest services
- Entertainment and streaming video

 Crew training · System automation and cloud computing

Seismic data transmission

· Live video monitoring and conferencing

the needs for seafarers, crew and passengers that want to stay connected," said Claude Rousseau, NSR Research Director and co-author of the report.

"With growth stabilizing from economic recession in the maritime market, there is more focus on improving operational efficiencies, providing services to crew to retain them, and to ensure compliance with regulations," added Brad Grady, NSR Senior Analyst and co-author of the report. With newer, larger, more sophisticated maritime vessels under construction, connectivity and communications will be a key enabler of cost and operational efficiencies - from fishing vessels to cruise ships.

Going forward, the 'Fear of Missing Out" for both work and pleasure will trigger a

The Global Maritime Market

· Online sales of catches and auctions

Telemedicine

Vessel monitoring

Catch reports for regulatory requirements

According to a Research and Markets report, the global maritime satellite communications market reached about 317,000 active terminals and more than US \$1.4 billion at the service provider level in 2013. Established MSS services and especially the emerging VSAT business contributed to the overall growth of the maritime satellite communications market. Since 2008, the global market has been growing at 7% compound annual growth rate (CAGR) in terminals, 9% CAGR in satellite capacity revenues, and more than 10% CAGR in equipment business.

Despite the fact that legacy Mobile Satellite Services (MSS) services are being phased out, MSS broadband and Ku-band VSAT services are maintaining strong

- Crew welfare
- · Electronic charting and weather
- Remote IT services
- · Electronic port and customs documentation

Graphic source: iDirect

ers blanketing the oceans with more bandwidth, pricing will become more flexible. MSS services are well established and readily available. As some customers switch from MSS to VSAT, MSS capacity is freed up for new customers who find it the right fit for their application. MSS providers still have to price competitively, hence the growth in terminals with a narrowing of margins. While the compound annual growth rate (CAGR) in revenue globally is nine percent, the global CAGR of VSAT revenue specifically has been 28 percent since 2010.

According to Euroconsult MSS represents 97 percent of market share in terminals globally, but only 73 percent in revenue. It is predicted that VSAT will account for 55 percent of the global maritime market by

2021. Even with MSS being "phased out" in some areas with the introduction of high -throughput VSAT, demand for MSS and Ku-band services is still growing. Although the margins generated are not growing as much or at all.

The Canadian Maritime Market

With the longest shoreline in the world at 152,100 miles, Canada's maritime markets have offered, and continue to offer, ample opportunities for satellite service providers.

Dotted along that shoreline are 18 major port authorities overseeing the shipping of 310 million tons of goods each year, which is expected to double over the next 15 to 20 years according to the Association of Canadian Port Authorities (ACPA). The Canadian government, scientific community, and fishing industries utilize satellite not only to gather and relay important data to and from the field, but to also track wildlife, vessels, and pollution.

Canada's ports and waterways also serve a multitude of cruise ships, ferries, and recreational crafts carrying millions of passengers each year. The crews of these ships of course require a reliable method of receiving and sending communications and information, but also the passengers have come to expect cellular and Wi-Fi connections of the same quality as they can find on land.

Canada enjoyed solid growth in marine transportation, including increased container and cruise ship traffic, a successful crossing of the Northwest Passage and a North American record for bulk cargo loads according to the latest annual Transportation in Canada report published by the Canadian government agency, Transport Canada.

Meanwhile, new regulations will ensure marine transportation continues to be safe and environmentally responsible while a new container inspection facility in Vancouver will improve supply chain security and efficiency.

The 18 Canada Port Authorities (CPAs) across the country handled approximately 294 million tons of goods in 2012, a 3-percent increase over 2011. Total marine



The cruise ship market is the fastest growing segment of the maritime market and Canada is one of the key hubs of the cruise ship industry. Pictured here are cruise ships docked in Vancouver harbor. (image courtesy of Industry Canada)

freight traffic in Canada reached about 475 million tons in 2012, the latest year for which data were available, up 1.9 percent compared to the previous year. Marine transportation services in 2013 carried CDN\$ 205 billion worth of international trade, an increase of 0.3 percent over 2012.

BC Ferries carried 16.1 million passengers in 2013, down 0.5 percent compared to 2012. On its busiest route, between Tsawwassen (Vancouver) and Swartz Bay (Victoria), BC Ferries carried 4.6 million passengers, the same as in 2012. Marine Atlantic Inc. carried 351,643 passengers, 123,609 passenger vehicles and 103,160 commercial vehicles in 1,818 crossings it operated between Newfoundland and North Sydney, Nova Scotia in 2012-13. It also generated a record CDN \$107.3 million in revenues, up 6.8 percent from 2011-12.

The number of cruise passengers visiting Canada's busiest cruise port—Port Metro Vancouver—increased by 21.9 percent in 2013 to reach 812,398. The number of vessels carrying these passengers increased by a similar amount (23.0 percent), with 235 ships calling at the port in 2013. The second busiest cruise ship port in the country, Quebec City, welcomed 164,000 visitors on 103 cruise ships.

Applications

The major addressable maritime market segments include Merchant Shipping, Fishing, Passenger Ships, Leisure Vessels, Offshore, and Military/Government.

According to Rick Simonian, president of Maritime Solutions of Harris CapRock Communications, at the entry level what used to be a satisfactory bandwidth was 64 kbps just 12-18 months ago. "Now the entry level is 128-256 kbps at the low end to up to in the hundreds of megabits for the larger cruise ships," he said.

"One of the key trends we see is the growth in demand for bandwidth and what's driving that is the need for constant connectivity by guests and crew on a cruise ship and there's also expectation of streaming video. The voice requirement is taking a bit of the demand but it's far less than the need for internet connectivity," said Simonian.

"Underlying all this is the growth of the Internet of Things. Most electronic devices on ships are getting connected and operators are wanting to have access to the information from those devices – whether it be pressure, temperature or other sensor data – to improve operational efficiencies and safety of the vessel as well as automate the ship's operations over time," added Simonian.

"We are expecting, anticipating and building for a 20 percent year over year bandwidth growth in most segments of the market; and, on top of that, there's expectation of higher availability and reliability of the communications service as well as security of the network," he added.

Simonian said that the maritime market is becoming a bigger customer for satellite operators. "We are growing very fast and we are the fastest growing segment in Harris Caprock right now, keeping our suppliers very busy with more bandwidth and connectivity requirements," he said.

Service Providers

There are many satellite service providers and equipment manufacturers specializing in the maritime market including Harris Caprock, ITC Global, MTN Communications, Speedcast, Globecomm, among others.

To give a snapshot on the type of innovations that the service providers are offering the market, we can cite Harris CapRock's most recent product, Harris CapRock One.

Customers in the energy and cruise industry, for example, often struggle to obtain reliable, always-on communications when their vessels, drilling sites and ships change their global positions and communications needs. With the just recently launched Harris CapRock One, they can replace current single or dual-band communications support options with a multiple-medium solution that exceeds their needs by providing optimal connectivity at any given time.

"Harris CapRock is going to drastically change the way our clients experience managed communications services," said Tracey Haslam, president, Harris CapRock. "Harris CapRock One is the first commercial service of its kind to unify satellite, wireless and terrestrial connectivity into one platform. Customers want a solution that is flexible and optimizes their operations no matter where they are located, or how mobile their assets are. Har-



ris CapRock One delivers that and more."

Harris CapRock's unique service offering combines a multi-band antenna with an Intelligent Communications Director (ICD). The multi-band antenna allows for C-, Ku- and Ka-band connectivity with no additional moving parts, meaning that any satellite orbiting the Earth can be accessed with no technician intervention required. The ICD is a geographically aware smartbox that recognizes where the multi-band antenna is around the world and carries a database of the network footprints available. The device is aware of the operator's traffic and can route traffic intelligently over the most appropriate network path based on speed, latency, location and cost. By optimizing the network traffic, the ICD enhances the end-to-end experience, completing an intelligent routing solution with end-to-end application performance management.

Energy and cruise industry businesses can invest in fewer radomes that support any signal and will self-configure for the scenario depending on where the vessel or site is in the world. Ships and oil and gas sites now have multiple communications choices in one technology solution, achieving the highest uptime in the industry at 99.999 percent. Customers can receive this high availability solution for one simple price, according to Harris CapRock.

Another service provider is MTN Communications, which in February 2015 announced the delivery of high-performance Internet connectivity and access to online

content through the first Wi-Fi hot spot on the English Channel for P&O Ferries.

This service is now live on the English Channel on ferries serving the P&O Ferries Dover-Calais route. These vessels are the first ferries in the world connected to the MTN Terrestrial Broadband Network (TBN), in addition to having back-up satellite connectivity, as many cruise ships do today. Each P&O Ferries vessel now has a broadband antenna tracking and stabilization system, which works across the entire 22 miles (35.40 kilometers) of the English Channel. This allows the antenna to "lock" onto MTN TBN access points on shore, providing broadband service to the end user. In addition, the shipboard data center of each vessel is equipped with the industry's most advanced processing technologies.

This new service follows the launch of a satellite communications solution on the P&O Ferries Irish Sea Route in December 2013 and North Sea Route in August 2014. This initiative serves the 11 of the P&O Ferries vessels that make up Europe's largest and leading ferry fleet. P&O Ferries carries more than nine million passengers annually and provides 365x7 transport.

This initiative marks P&O Ferries' implementation of the most advanced communications ecosystem in the ferry market and one that only MTN delivers.

MTN introduced this hybrid network component of its advanced communications system, comprising satellite and terrestrial

Interview with Brent Perrott, President of **Hunter Communicatons Canada**

Give us an update on the Hunter Beam?

The new satellite hosting the Hunter beam – the E115WB or Satmex-7 - has just been successfully launched by SpaceX on March 1st this year. We have the equivalent of eight 36MHz transponders in that satellite and we expect to launch services by the fourth quarter of 2015. And we are enjoying a very positive relationship with Eutelsat on which our beam is hosted – the relationship is somewhat unique for us both, and we're looking forward to exploring further ways to expand the partnership. And most importantly in the short term, we are thrilled that our first hosted beam will be in operation in just a few months.

Can you reveal what commercial successes have been achieved so far?

So the program thus far includes the re-pointed Ku-beam on Satmex 5 in the same orbital position, and we will continue to service that beam with Eutelsat through the end of this year at a minimum. The partnership has sold transponders for Alberta and the US for oil and gas applications, to most of the major aeronautical service providers as well as maritime services for cruise ships and commercial vessels. It's done surprisingly well and both Eutelsat and



Brent Perrott

Hunter feel that we are ahead of where we thought we might be. Once the new Hunter beam starts operation in about six months from now, we are in discussion with our current clients to explore various options including the possibility of migrating to the new satellite or staying with Satmex-5 which still has more than five years of operational life left. In addition, we can also reveal that we just completed a contract with a major aeronautical client just a few days prior to the Satmex 7 launch, which by themselves took up nearly one-third of the available capacity on the upcoming payload.

What advantages does the Hunter beam have over other satellites?

First of all, it is located in an orbital position that covers the entirety of the vast Canadian space. If you go too far West you miss the east coast and if you go too far East you start to miss the Yukon or British Columbia. The Hunter beam is in the area that Industry Canada calls the "Canadian arc" which covers Canada from coast to coast. There are only a limited number of satellites that can cover all of Canada and the Hunter beam is arguably in the best possible orbital position.

In addition to this ideal orbital position, we have enhanced significantly the power and concentrated it in Canada. This ultimately translates into more megabits per megahertz, which open up new opportunities. Other satellites typically have diminishing power the more North you get into Canada and this precludes access from smaller maritime or aeronautical antennas as small as one meter, or at least makes it commercially unattractive. The Hunter beam has such an advantage for smaller antennas for maritime, aeronautical, land mobile and other applications.

We essentially have a unique property, where we have four degrees of separation from our satellite and its nearest neighbors. What this does, is that is provides a real advantage for smaller antennas – the smaller the antenna, the more our beam is set apart from competitors. Of course, the smaller the antenna the greater the cap-ex savings for operators and the greater the number of vessels that can be served. Finally, it's just the availability. For a variety of technical and commercial reasons, there has been limited Ku capacity available in the Canadian market – but while capacity has been limited, demand has been on the rise.

What differentiates Hunter Communications from other service providers?

What's unique about us is Hunter's history over the past 14 years has been all about working with our clients to help reduce their costs for satellite capacity and teleport services. That is what we wake up and go to bed thinking about every day—how to reduce the operating costs for our clients so they can have an advantage in the market place. While the traditional satellite operators do a very good job in our industry, it is not necessarily in their DNA to be so focused on squeezing out the most operational savings for clients, so perhaps that is what sets us apart the most.

Expanding Ku-Band Capacity Over Canada

The Hunter Ku-Band Beam at 114.9°W

Hunter Communications has invested in an expansion of Ku-band capacity over Canada and the U.S., adding the "The Hunter Ku-Band beam" at a prime orbital position providing much needed Ku-band space segment over the region for data network requirements- i.e. maritime, aeronautical, land-based mobile, and fixed VSAT, among others.



broadband connectivity, seamless switching with zero impact to users, smart computing and a comprehensive platform for eCommerce and other apps. All this is now in place so P&O Ferries can deliver passenger and crew conveniences now required onboard their ferries.

When Harkland needed to extend broadband communications for multi-regional locations and upgrade all onboard satellite technology, it went to ITC Global for a solution.

ITC Global designed a custom network using iDirect X5 VSAT platform to ensure high-efficiency broadband connectivity. Dual-stabilized satellite antenna systems were provided. The network has the ability to be pooled and shared only by Harkand sites in the same footprint. Secure network connection were established from remote The result was improved communications

sites to corporate HQ. The network was also capable of beam switching.

> ITC Global currently supports the diving support vessel Swordfish, the multipurpose support vessel Viking Poseidon, and subsea vessel Spearfish. These vessels act as a base for advanced remotely operated vehicles (ROVs), and have been placed in the Gulf of Mexico and North Sea to inspect and repair offshore installations.

> ITC has developed an end-to-end satellite communications solution tailored to the unique requirements of Harkand. The network has been designed to ensure operational integrity, protect personnel and property, and provide seamless coverage to sites across the globe.

speeds over the previous solution. The network supports additional voice, video and data applications, as well as Citrix, HSE and Financial Procurement corporate applications for Harkland and it's clients.

Opportunities in the Canadian Market

As mentioned earlier, Canada has the longest coastline in the world spanning the strategic areas of the Pacific, Arctic and Atlantic oceans as well as the Great Lakes. It also has one of the busiest maritime industries in the world with 18 major international ports handling 310 million tons annually.

Besides the Royal Canadian Navy and the Coast Guard, there are also thousands of leisure and commercial craft engaged in



SOURCE: EXACTEARTH.COM

ANDREW BARR / NATIONAL POST

yachting, fishing, cruising and ferry service. The rapidly growing cruise industry in Canada sees more than two million passengers going through Canadian ports annually. Satellites are used for navigation and weather monitoring application for all type of vessels. There is also an increasing requirement for broadband connections for passengers and for crew welfare.

There has been a dramatic increase in maritime traffic in the Northwest Passage between mainland Canada and the islands in the Arctic Ocean. Climate change appears to have caused Arctic ice to recede allowing the Northwest Passage to open for commercial shipping for part of the vear.

west Passage, the first time ever for a large markets and offerings have been putting a commercial vessel. The route of the Nordic dent in that. Orion through the Northwest Passage was 1,000 miles (1,600 kms) shorter than going Hunter Communications has the exclusive through the Panama Canal, cutting four use of E115WA (formerly Satmex-5) for days sailing time to Europe. The 75,603- much needed Ku-Band capacity for the deadweight-tonne Danish ship was the first Canadian market. Hunter Communications dry bulk ship to successfully complete the is marketing this beam as the "Hunter voyage and saved \$200,000 as compared to Beam". Satmex-5 was repositioned over going through the Panama Canal. Twenty Canada for Hunter as an interim solution other vessels voyaged through the North- until the firm's hosted payload on the west Passage in 2013, mostly yachts and newly launched E115WB (formerly Satcruise ships.

Commercial bulk carrier ships such as the Nordic Orion are also able to carry 25 percent more cargo through the Northwest Passage than would be possible in the shallower waters of the Panama Canal. In 2013, 21 vessels sailed through the Northwest Passage. If the ice continues to melt at its present rate, some maritime analysts

Northwest Passage, mainly to assert its sovereignty over the area. As traffic increases in this vital route, Canada will beef up its monitoring and search and rescue infrastructure in the region, requiring increased satellite communication services. Canada has already announced plans for developing a deep water port and naval facility in Nanisivik in Northern Canadian Territory of Nunavut, which will be used as a base to patrol the Northwest Passage and provide air and sea rescue capabilities.

Service Offerings

Historically, Telesat and Inmarsat have dominated the Canadian market, but in-Nordic Orion, sailed through the North- creasing demand for satellite services by

> mex-7) is made available in the $114.9^{\circ}W$. orbital position this coming fall of 2015.



shipping via the The Hunter beam is designed to be the Northwest Passage could account for up to 25% of the cargo traffic between Europe, Asia and North America by 2030.

Canada requires registration of all vessels of more than 500 tons before traversing the

highest-powered Ku-band satellite over the entire Canadian landmass and surrounding waters and the orbital location of 114.9° W is uniquely advantages as being in the center of the "Canadian arc":

• It is the only satellite orbital location that can see both the northwest tip of the Yukon and the southeast tip of Newfoundland at a 10 degree elevation or better.

• All other satellites in the US and Canadian domestic arcs have 2 degree coordination placed on them due to adjacent satellites. There are no Canadian beams on either of its two neighboring satellites, so the Hunter beam enjoys no adjacent satellite interference. Any application involving small antennas less than 1 meter, this is a critical benefit that allows clients to use fewer MHz of transponder capacity to achieve the same Mbps of throughput.

· The Hunter beam in Canada has the strongest power, measured as EIRP, of any beam available on competing satellites. While the beam covers the continental US, the power is concentrated across Canada's mid-north. This allows for efficient teleport operations through all of North America, while still providing the highest EIRP's in Canada, where it is most needed. From the oil fields of Alberta through the Northwest Passage and Hudson Bay, to Newfoundland and Labrador, there is no other Ku-beam with such high power, allowing for smaller antennas and lower costs per Mbps for service.

Conclusion

The Canadian market is not generally perceived as a very large market for maritime services. But as we can see, there is growing demand for various maritime segments. The opening up of the Northwest Passage for commercial traffic will only see this demand continue to grow. ~



HUNTER COMMUNICATIONS CANADA

Hunter Beam Ready for Launch.

Hunter Ku-beam

- 288 MHz new Ku-band satellite capacity
- In-service Q4 2015
- Designed and Built for Canada
- Exceptionally high power enables small antennas for:
 - Aeronautical
 - Marine
 - Land mobile



Land Mobile

12







www.huntercomm.net

Brent Perrott brent.perrott@huntercomm.net 914-723-3595 Roland Renner roland.renner@huntercomm.net 613-612-0501