

The Superyacht

TRUTH • OPINION KNOWLEDGE • IDEAS AND EXPERT INDUSTRY ANALYSIS



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LESSONS FROM THE DIGITAL VANGUARD



Attending a conference for the aviation and maritime industries on how to keep customers and businesses connected to the internet while in the air or at sea, business editor **Don Hoyt Gorman** witnesses the superyacht industry leading from the front.

As part of my research for our satellite communications report (on page 78), in February, I attended the Connectivity 2014 conference in London. This was a unique opportunity to hear from the business executives in the aviation and marine markets working at the vanguard of digital communications. They were all posing, and showing how they are answering, the challenge of keeping their customers connected and their businesses interactive, fast and affordable.

It wasn't all roses, as you might expect. One commercial ferry operator admitted that while it offered a pay-as-you-use internet connection to its passengers, in reality potentially 3,000 passengers were sharing a 768Kbps link; it was in effect utterly useless, and more importantly, highly frustrating for their customers.

The superyacht market presentation by Tony Holland of e3 Systems, on the other hand, shone a bright light on to what the future may hold for the majority of commercial shipping operators. Because superyacht clients have the very highest expectations in terms of quality and quantity for their broadband connection (like 100Mbps via dedicated satellite transponder), companies like e3 have to devise

solutions that most commercial marine operators haven't even had to consider yet. He sees this kind of event as an exercise in thought leadership, in which niche market experience helps inform the broader commercial market ahead of its own data demands reaching the levels of superyacht clients (if indeed they ever will).

Roger Horner, founder and CEO of e3 contributed, along with many others, to our report, and at the event he told me a bit more about how their thinking about what they offer has evolved. I explained that my aim in our satellite communications report was to ensure that all of the captains, ETOs and project managers, as well as interested brokers and others were up to speed with the latest developments in the satcoms market so they would be best positioned to make an informed commercial decision when it came to specifying requirements for a new build or refit.

"A few years ago, I wrote a technical paper on the very same thing for the same audience. I went through all the companies and what they offered, what tier they worked at and how they worked together, in hopes of educating our client base – but it remains confusing for most," Horner told me. "Owners, crew and guests often don't know the

Knowing how the landscape is changing in superyacht communications offers not only the ability to gauge whether you're getting the best service for your money but also, with a bit of thinking, some potentially interesting new business opportunities.

difference between their antenna manufacturer, their broadband service provider and their integrator. The antenna branding is more prominent, so when asked who provides their internet, people are apt to say 'Sailor', rather than Astrium, for instance. You recognise the device, not the service. You call it an iPhone, not a Vodafone."

Horner felt the better way to serve his customer was simply to ask them what they need: "Where are you going, how many guests and crew are there, and what do you want to be able to do? Once we know that, we'll get them what they need and build the service and support package around that. We don't bother them any more with the industrial details of how all the products and services work together, just the same way your cell carrier doesn't bother you with the details of how your signal is handed off to another carrier when you're roaming. It just works. You get a message welcoming you to the new country and laying out what it will cost to use the service. We're aiming to provide that level of service; automatically switching our customers to the fastest, cheapest service available, always keeping them connected and saving them money."

In another presentation, we heard from Roger Adamson, CEO of a company called Futureonautics on the topic of cloud computing and the future of shipping. I expected a treatise on how ship operators could capitalise on the increasing bandwidth afforded by the next generation of high throughput satellite systems to manage their fleet. Instead, he pointed out that the cloud offers tremendous opportunities for customers.

In the container-shipping world, he said, new digital businesses like Xeneta (crowdsourced container shipping) and VesselsValue (vessel valuations) are upending the market by exposing basic inefficiencies and offering new solutions to customers.

He was pointing out how in ways that should be both exciting and challenging to manage, increased connectivity was altering the way container-shipping customers were able to access information and assess value. It made me wonder how long it will take for the charter and brokerage side of the superyacht market to realise the writing is on the wall. When container shipping beats superyachts to leveraging cloud computing to deliver value to customers, it should really only be a matter of time before someone figures it out.

Understanding how new technology changes the markets we work in is key to business success, and always has been. Knowing how the landscape is changing in superyacht communications offers not only the ability to gauge whether you're getting the best service for your money but also, with a bit of thinking, some potentially interesting new business opportunities. Satcoms may be complex, even opaque to many people, but with a bit of research and understanding, it pays to stay ahead of the curve when it comes to implementing plans for the next stage of your business development. ■



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ERRATUM: IN THE BROKERAGE NEWS FOR ISSUE 151 WE INADVERTENTLY STATED THAT AXEL DOUQUÉ WAS A SALES BROKER FOR CAMPER & NICHOLSONS; HE IS ACTUALLY WITH OCEAN INDEPENDENCE.



THE FATTEST POSSIBLE PIPES

What technologies should we be preparing for and how will the landscape of services and products lie in 2020? **Don Hoyt Gorman** reports on what's on the horizon for superyacht connectivity.



Samuel Johnson once quipped that “No man will be a sailor who has contrivance enough to get himself into a jail; for being in a ship is being in a jail, with the chance of being drowned ... a man in a jail has more room, better food and commonly better company.” Thankfully, plenty has changed in the intervening 250 years or so since the good doctor opined on life at sea, but the perspective is helpful when we grapple with the amazing technical wizardry that both serves and stymies us in the 21st century.

Yacht communications is the set of services, systems, equipment and technology that enables yacht owners cruising the remotest oceans to watch their football team win the cup, live and in HD using transponders hung in Earth’s orbit, as well as terrestrial mobile and Wi-Fi networks – or that’s the plan. Typically, satellite communications carry entertainment and vessel operational data to and from yachts, doing the job of what

ashore would be a broadband subscription. But of course it’s much more expensive and, to this day, it is a highly competitive market that can often baffle owners and occasionally even their project managers and captains.

The global marine satcoms market is huge: in 2013, the revenue across merchant shipping, fishing, passenger ships, yachts, offshore and government use was estimated at €1.4 billion. However, superyachts have a very specific profile: it’s a premium leisure market with very high bandwidth demands, few constraints under international conventions and familiar geographic distribution across mainly the Mediterranean and Caribbean.

We’ve spoken to some of the most active and interested business leaders working in the superyacht satcoms market to get their sense of what captains, project managers, ETOs and interested owners will want to know about what’s next.

THE BASICS

The key thing to understand is how the businesses within it operate with each other. First-tier companies are the satellite owners and operators. These are Intelsat, SES, Inmarsat and others who invest in new technology, launch the satellites then sell the bandwidth to the second-tier service providers like MTN, OmniAccess, Airbus Defence and Space (which until last month, was called Astrium Services), KVH and others. Then there are the equipment manufacturers such as Cobham (which acquired the Danish satellite telecommunications equipment-maker Thrane & Thrane in 2012), which builds the SeaTel suite of very small aperture terminal (VSAT) antennas, and iDirect, which manufactures the on-board modems that manage the satellite traffic. Finally, there are the third-tier integrators, companies like e3 Systems and LiveWire, which are customer-facing and sell a variety of different

communication services directly to yachts, and are not tied to any service provider. Importantly, some companies span the second and third tiers, like MTN and OmniAccess, who operate as tier two service providers and who also sell their own services directly to yachts.

What's most important for the yacht project manager, captain or owner is to have trusted customer service representatives who understand the needs of superyachts. Typically, these are the independent integrators like LiveWire and e3 and consultants like Bond™, all of whom recommend airtime from the top flight airtime suppliers with a dedicated superyacht focus like MTN and Airbus Defence and Space.

“Customers need more clarity about what they are buying, what they are getting based on that purchase, and what it means in terms of the communications experience. This is particularly related to dedicated versus shared bandwidth.”

– Derik Wagner, MTN

KEY ISSUES

- How exploding data demand is managed.
- Providing quality, reliability and flexibility.
- Services and applications, not the mechanism of delivery.

THE ISSUES

The most pressing issue for every yacht is how easily it can connect to the internet, have telephone access and watch live sporting or other events on television – and how much it will all cost.

In the past 10 years, huge advances have been made in what's available to yachts via VSAT, the ubiquitous domes on yachts. Ten years ago, the first VSAT systems were being installed and only five years ago, mid-Atlantic VSAT coverage became available for yachts and roaming charges were slashed across Europe by the EU. Today, owners – and, perhaps as importantly, their kids – don't understand why they may not be able to have 4G speeds when at sea.

In fact, we are actually getting there in terms of what's technically available. Cost remains the issue because satellite bandwidth comes at a premium.

Smart integrators bundle packages that combine VSAT satellite services with coastal mobile data to provide a least-cost option. Crucially, though, all the various companies across all the tiers are developing new technologies and services at a rapid pace. By 2020, we'll see consolidation, faster speeds and lower costs, but at the moment not even the biggest players in this market can predict what the market will look like and what services will be standard, what will have disappeared and what issues we'll have. The satcoms market is the very definition of dynamic.

STATE OF THE MARKET

For our report, we sought counsel from some of the industry's most prominent companies from each tier to get a thorough perspective on the state of the market and what to expect for the near future (see *The Knowledge*, page 91).

MTN's yachting division, led by Derik Wagner, has carved itself a prominent role in the industry as not only service providers but also as communications consultants with the highest calibre of clients. While their service is 'platform-agnostic' (they can deliver bandwidth to their clients via any of the networks), they do, of course, have a service to sell.

What Wagner has focused on is dedicated bandwidth: ensuring yachts get the minimum bandwidth they need to run all the applications they expect to run, and never going below that level. "What is really confusing is what is being provided in terms of bandwidth and committed information rates (CIRs). Customers need more clarity about what they are buying, what they are getting based on that purchase, and what it means in terms of the communications experience. This is particularly related to dedicated versus shared bandwidth."

New technology terminology such as Ka-band, HTMS or LTE can be very confusing for customers. The key, Wagner said, is to rely on the right communication provider to select the best-suited technologies and equipment, as well as provide a unique solution matching the customers' expectations, without the customer

worrying about understanding all the technologies.

David Walker at LiveWire Connections in the UK notes that the smaller companies (many of which are located within the traditional yacht cruising grounds in the western Mediterranean and Fort Lauderdale) have been able to build solid reputations as independent consultants because of their connections to owners. “Each superyacht is bespoke. Their audio-visual (AV) system or on-board IT network has been designed to suit that owner or to connect to the owner’s corporate network. The owner may trust the supplier because they have worked in their house and he wants a similar solution fitted to his yacht.”

Roger Horner of e3 Systems in Palma said the landscape for superyacht clients is confusing. “There is not a single service that provides the total solution for a superyacht client. Even for us ashore, in offices that don’t move, we have a plethora of communication services being pushed at us that is confusing enough.” Horner sees the problems as direct sales only offering their own service, and not understanding that a combination of options is most often best for the customer; service plans are almost impossible to compare with another, the level of understanding required to assess the services generally being outside that of most captains’ skillset. “We regularly come across yachts that have been undersold or oversold. Neither of these is good for the industry.”

To get a system that provides the best performance at the lowest cost, Horner urges owners, captains and project managers to work with seasoned integrators that work across platforms and can suggest hybrid packages that are tailored to the owner’s expected usage.

Martin Kits van Heyningen, CEO of second-tier KVH Industries, agrees that the landscape for clients is confusing. “The modular approach that many manufacturers and service providers in the superyacht

communications market currently employ is extremely baffling, where each part of the system (antenna, router, on-board server, etc.) comes from a different supplier. It makes installation and integration very challenging.”

Despite the variety of products and services on offer, the trend everyone understands is the need for more data. To that end, all of the companies we spoke with had programmes and plans in place to deliver greater connectivity via an array of services.

WHAT’S COMING FOR 2020

One of the hottest subjects at the top of the global satcoms conference programmes is Inmarsat’s new Global Xpress (GX) network of satellites that is pioneering the Ka-band, which is expected to be faster than the current Ku-band VSAT technology installed across most of the fleet, but is more susceptible to rain-fade because of its frequency. Inmarsat aims to reduce concerns of rain-fade with redundant ground stations, and is bundling its existing reliable

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– Martin Kits van Heyningen,
KVH Industries

SNAPSHOT: WHAT’S COMING FOR 2020

- High Throughput Satellites (HTS)
- Intelsat EPIC (100Mbps in Ku-band)
- Inmarsat GX (50Mbps in Ka-band), with dynamic bandwidth allocation
- Long-range Wi-Fi with 1-2Gbps 40km from shore
- 4G, then 5G – allowing one-second film downloads
- Hybrid offerings standard
- Flat panel antennas
- Global Ka- and Ku-, augmented with faster C- and L-band technology
- Multicast services

SATELLITE FREQUENCY BANDS



L-Band (1-2GHz) | C-Band (4-8GHz) | Ku-Band (12-18GHz) | Ka-Band (26.5-40GHz)

<http://www.marinesatellitesystems.com>

DATA POINTS

- Global mobile data traffic will increase 18-fold between 2011 and 2016.
- Market estimates show that mobile broadband connectivity in the maritime industry is expected to double by 2020.
- The average smartphone will generate 2.6 Gigabytes (GB) of monthly traffic in 2016, up from 150 Megabytes (MB) in 2011.
- Tablets will generate almost as much mobile traffic in 2016 as all devices did in 2012 (monthly).
- By 2016, there will be more than 10 billion mobile-connected devices – exceeding the world’s population at the time.

Sources: Cisco, KVH, MTN, e3 Systems

L-band Fleet Broadband with GX services as a back-up option if the GX service is interrupted.

“With GX coming to full global service in 2015 this will form the backbone of services going forward,” Guy Sear, head of business development for Inmarsat maritime, said. “However, by 2020, conversations about Ku- versus Ka-band will not even be in the market anymore. Instead, we think the conversations will be focused on services and applications rather than technology. If you draw similarities with the terrestrial industry and how applications platforms are now the key factors rather than the medium

modem for instance,) as well as other Moore’s Law-type advances in processing speed, will actually enable more content over the C- and L-bands as well. So everywhere we look, there will be more and more reliable satellite broadband connectivity available via satellites.

Carlos Carbajal at OmniAccess said that, from his perspective, the trend is clear: faster internet links, more coverage and easier-to-use systems for crews. “We will be in a completely IP-based environment where pretty much any electronic device will be connected to the internet and IP protocols will be the backbone to all communications.”

David Walker of LiveWire remains focused on the data demand problem, and looking ahead to 2020 asked whether the increase in data rates available across the satellites will be sufficient to keep pace with on-board demands. “I personally feel, having had a great debate during the Global Superyacht Forum communications workshop, that unless we look to use a range of services when available – like shore Wi-Fi and 4G – we will be in the same boat we are today where control is key to ensuring the owner and guests get the access they require when they need it.”

Shore-based services are expected to expand as well, according to Roger Horner at e3 Systems. Along with pay-as-you-go global VSAT Ku- and Ka-band 300Mbps services, Horner is predicting long-range Wi-Fi with 1-2Gbps service at 40km from shore and superfast 5G, allowing one-second film downloads by 2020.

Jens Ewerling at Cobham focused on the availability of satcoms coverage and expects good competition, meaning a wide availability of choice. “We’ll

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Carlos Carbajal, OmniAccess

by which the connection is delivered, it is easy to see that our industry will be moving in the same direction and talking about enablement through platforms rather than talking about the mechanism that it is delivered by.”

Inmarsat’s investment in new satellites in the Ka-band is also being met by a new constellation from their competitor, Intelsat, with their EPIC platform, which is expected to launch in 2015. EPIC will provide higher throughput platform on the Ku-band, and experts I spoke to said that software and technology developments (iDirect’s X7

see global high throughput satellite (HTS) networks at modest bandwidths although with great availability and redundancy and super-hot regional HTS networks in Europe and North America being able to provide very high bandwidths but limited to certain regions like the Gulf of Mexico, Caribbean, Med, eastern Atlantic, North Sea and Baltic areas. The customer will have a fantastic choice for their particular requirements.”

to shore. This link was about 50 times more than an offshore vessel needs today, so we're already talking about some very fat pipes being possible. The thing is, away from cruise ships and ferries, it can quite easily be said that the speeds and indeed availability of service we have today are close to being satisfactory for most types of maritime operation, including providing broadband for luxury vessels. So in 2020, we may not be in a race for speed,

“In 2020, we may not be in a race for speed, it could be about quality and reliability, about getting more performance from smaller antennas, about ensuring full global coverage availability, with complete flexibility for owners to decide which service they want to use.”

**– Tore Morten Olsen,
Airbus Defence and Space**

Derik Wagner at MTN said, “We are constantly analysing trends and working with our technology partners to make sure we are steps ahead of where at-sea communications is headed. It's not just about communications, but about how it can be managed on board. The proliferation of devices and the explosion in usage will be no different in the yacht market. If anything, the typical owner and guest will exceed these averages, given they are early adopters with significant resources.”

Tore Morten Olsen, head of maritime activities at the global satcoms giant Airbus Defence and Space (formerly Astrium Services), is keen to point out how his company is leveraging the higher bandwidth capabilities to offer the fattest possible ‘pipes’ to the company’s clients. “High throughput services via operators such as Intelsat, Inmarsat or SES are coming online, so we will see a big boost in the speeds commonly available within one or two years,” he said. “In summer 2013 we provided a 12Mbps uplink for a seismic survey vessel to deliver live survey data

it could be about quality and reliability, about getting more performance from smaller antennas, about ensuring full global coverage availability, with complete flexibility for owners to decide which service they want to use.”

Van Heyningen at KVH insisted that along with supplying faster speeds and fatter pipes, the big second-tier companies are also positioning themselves to be content providers as well. “Content is the key to success going forward; connectivity is fine, but being able to deliver content that everyone on board wants and needs is important. Our KVH Media Group has licences to distribute in the marine market premium movies from major studios, international films, BBC and other world news, sports highlights and sporting events, and even digital newspapers. We have our own editors creating digests of international news in 19 languages from around the world, so if a superyacht has multi-national crew or guests on board, which is very common, the yacht can easily provide news from home every day.” >>

THE KNOWLEDGE



Jens Ewerling
Global VSAT business manager
Maritime VSAT, Cobham



Carlos Carbajal
Managing director yacht services
OmniAccess



Roger Horner
Group managing director, e3 Systems



Tore Morten Olsen
Head of maritime activities, Airbus Defence
and Space, Satellite Communications



Guy Sear
Head of business development
maritime, Inmarsat



Martin Kits van Heyningen
CEO, KVH Industries, Inc



Derik Wagner
Managing director, MTN Yacht Services



David Walker
Owner, LiveWire Connections

FLAT-PANEL ANTENNAS

Meanwhile, a small company with big-ticket investment from Bill Gates, Kymeta, has made a significant splash with its recent announcement of meta-material flat-panel antenna technology, which, if approved for use on yachts, could reduce or eliminate the need for traditional satellite domes. e3 Systems is collaborating with Kymeta on developing the technology for the superyacht market, leading the drive on this as yet untested, yet utterly compelling innovation.

“In cometh the flat panel,” said Roger Horner. “The panels themselves will be either Ku- or Ka-, but can obviously be mixed and matched and clearly are not obtrusive. We are currently working with Kymeta to help them define the products for the superyacht market so the final specifications and order of development are currently being defined.”

David Walker of LiveWire Connections cautions against overhyping new services and technologies. “For obvious reasons the industry gets very excited about the prospect of removing radomes from masts and achieving sleeker lines,” he said. “Kymeta’s technology may well prove to be fantastic but to be able to use any new antenna on a superyacht it first has to pass some fairly rigorous tests, have the understanding of the design community and address health and safety considerations. All these issues will become clearer in time, but being the first yacht to adopt new technology may not always be the best place to be.”

At Cobham, which, among other services, sells radome antenna systems, Jens Ewerling was even more cautious when it came to new antenna technology, raising the persistent point of future-proofing the yacht. “There might be some hyped-up technologies which may not be around in three years, or which

will be overtaken by more advanced future-proof platforms within a few years. Satcom radome installations will certainly not disappear.”

UNDERSTANDING CONTENTION

The key issue for all superyacht communications is the matter of whether their satellite coverage is dedicated or contended. Contended simply means satellite access bandwidth is shared with other vessels in the area, and the service provider should be able to tell you what that ratio is. A 10-1 contention rate means that whatever bandwidth is being advertised is potentially shared between 10 vessels, so that at peak usage times, one yacht will only ever have 10 per cent of the total bandwidth – and that’s to the yacht. Every user aboard the yacht each then shares the available bandwidth according to how the IT management system allocates usage to owners, guests and crew, aside from any

dedicated safety communications for the bridge.

“If a customer with contended service is sailing in an area off-season, they may have low contention,” said Wagner at MTN. “However, in-season the contention will likely increase and their connectivity will slow down. This is dependent on how well the provider plans for seasonal demands and new business. Due to our commitment to excellent service MTN will upgrade the network prior to each season to accommodate higher demands. A committed information rate (CIR or dedicated) option effectively is a 1:1 ratio and cannot be shared. This means the customer will have bandwidth dedicated only to their yacht. The best way to determine how much CIR is needed is to understand what the minimum bandwidth requirement for each critical application and which applications the customer will run simultaneously. Add up the total bandwidth requirement and this is the customer’s CIR.”

CONCLUSION

If there is one inescapable trend you could bet on in 2014 it is that by the year’s end vastly more data will be transmitted around the world than when this article went to print. On superyachts, that means the expectation of what owners, their families and guests will be able to do and access via Wi-Fi and broadband will have increased. It is, without argument from any of the industry-leading sources I contacted for this report, the single greatest problem for communications specialists in our area.

As a proportion of the yachting experience, I’d argue, a yacht’s connectivity – being the particular challenge it is – is also increasing. The Internet is no longer a research tool, it’s part of our everyday lives, and while a yachting holiday may be the perfect setting for unplugging from the World Wide Web, a successful yacht must still be able to – as with all of its offerings – cater to the whims of its guests. ■



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