

March/April 2018

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a chameleon satellite**

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Q&A Paradigm Communication Systems

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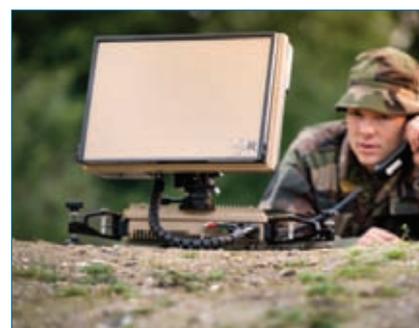
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Jon Godfrey, General Manager at Paradigm Communication ●●●

For 20 years or so of terminal development, Paradigm has made huge advances in efforts to simplify the setup and pointing of antenna systems and to modularise satellite terminal elements. With skillsets in software pointing, baseband management and NMS our teams of hardware, software, RF and IT engineers have successfully reduced the complexity of satellite systems, making them easier to use so that users can focus on the task in hand.

At the forefront of the HTS revolution

Paradigm Communication Systems is a satellite communications solution provider based in Hampshire, UK since its founding in 1996. The company utilises a large warehouse of readily available stock as well as its expertise in designing, integrating, manufacturing and delivering satellite terminals and Earth stations to provide end to end solutions for customers around the globe. Amy Saunders met with Jon Godfrey, General Manager at Paradigm Communication, to learn more about the company's presence, and identify their market expectations going forwards.

Question: Can you provide an outline of Paradigm's development over the years, including key milestones and achievements?

Jon Godfrey: Paradigm's development over the years has been driven by customer demand. Our goal has always been to help our customers' meet their goals faster, better and cheaper, to determine the 'clear sighted solution.' We work with customers to achieve the best solution by selecting the right components and products and then adding value to them, whether it's software, hardware, packaging, training or by developing a new product.

For 20 years or so of terminal development, Paradigm has made huge advances in efforts to simplify the setup and pointing of antenna systems and

to modularise satellite terminal elements. With skillsets in software pointing, baseband management and NMS our teams of hardware, software, RF and IT engineers have successfully reduced the complexity of satellite systems, making them easier to use so that users can focus on the task in hand. These achievements were key to our selection in 2012 as an Inmarsat Global Xpress Land Terminal Manufacturer and their sole approved Global Xpress Terminal Integrator.

This partnership also validated Paradigm's innovative work to simplify the user experience when operating satellite terminals. A key milestone of this work has been the PIM terminal controller, which allows a non-skilled user to successfully point a terminal simply by following straightforward audio and visual cues. It removes the need for a spectrum analyser and all cues are provided onboard the PIM, not even a laptop or external screen is necessary. Pointing can be achieved in less than a minute. The PIM represents an easy to use pointing interface that provides a simple, common pointing experience, plus it's technically agile and versatile allowing it to be integrated with all types of VSAT and modem technologies. The PIM is able to work with any air interface and so other antenna manufacturers can use it as the 'brain' of the system and open up a fast track to certification and market, not only on the Global Xpress network but on other satellite networks too.

Paradigm is now delivering a whole



The defence sector in the US was swift to adopt Paradigm's ultra-portable SWARM VSAT ●●●



range of PIM-based terminals and value-added services to meet customers' demands for global coverage, fast mobility and high-speed broadband connectivity.

Question: What can you tell us about Paradigm's products and solutions?

Jon Godfrey: Paradigm design and develop solutions to meet customers' specific requirements. Our focus is on complete, end-to-end solutions and turnkey systems. To keep costs and turnaround times down, we will source off the shelf; but if the need arises, we are more than capable of designing and manufacturing products. We are also vendor independent, so our customers know that our recommendations are objective and in their best interest. It allows us flexibility in what we offer, with trade-offs between performance, cost, specification and scalability being taken into account.

Our terminal product portfolio covers the whole range of satellite systems and includes ultra-portable terminals, DriveAway and fixed options. Our CONNECT, HORNET and SWARM ranges of fixed and mobile satellite terminals are all PIM-based terminals designed to meet a variety of customer demands – but with the same user interface: The PIM. Paradigm's VSAT2Go concept provides customers with a complete, packaged, price competitive VSAT system including antenna, RF, satellite modem/router, cables and mount. The system is supplied with a manual including installation and operating instructions and ordering is made straightforward with our tried and tested solutions.

Paradigm's ISO Corner Mount is an example of developing a product when an 'off-the-shelf' solution was not available. A requirement was identified for a solution to quickly mount antennas in remote locations when ground space is at a premium. Our skilled team of Design Engineers designed the ISO Corner Mount to allow up to four antennas to be mounted to a container, with no mounting frame and an extremely simple installation.

Paradigm also has Europe's largest satcom warehouse, often providing next day delivery. By carrying a large portfolio of antennas, satellite modems and RF systems we can ensure we are able to take a high-level viewpoint of our

clients' networks. We can integrate and test system components in our test facility prior to shipping, ensuring field-ready solutions. We can provide custom packaging including crating and customised inserts to Mil-Std and IATA specs where required.

Paradigm has designed and installed turnkey solutions for both commercial and military organisations. These can range from sub one metre VSAT systems up to fully redundant 15 metre satellite Earth stations with the associated infrastructure. We provided a full multiband antenna farm utilizing state-of-the-art communication technologies for Sky News Arabia; the design and logistics of fitting 10 or so large antennas on a relatively small roof space presented the kind of challenge we excel at.

Paradigm's dedicated Software engineering team design M&C Solutions for projects and products such as Global Fault Management Systems, Network Management Systems and Earth Station M&C systems. Our Monitoring, Management and Control solutions support standard telecom networks as well as satellite and military communications systems.

Question: Which markets are key to Paradigm's business, and how do you expect them to evolve in the years to come?

Jon Godfrey: Paradigm meets demand from all over the world and our main sectors can be highlighted as military and government, satcom/telco

operators, broadcast/media, oil and gas and maritime.

The defence sector in the US was swift to adopt Paradigm's ultra-portable SWARM VSAT. With a terminal datalink capability of greater than 25Mbps, the back packable SWARM has the best size to performance ratio in the market. These impressive field-proven capabilities have seen demand spread further afield, not only for the US military but internationally as well, a trend we fully expect to continue. Additionally, we are seeing the NGO and government sectors expanding with our cost-effective, rugged and portable PIM-based terminal solutions, particularly the CONNECT100T for longer term support service after an initial first deployment with the SWARM terminal.

Geographically, from being proven and heavily fielded in the Western world we are now focussed on the further development of the Middle East and Asia markets. Our SWARMKu variant has sparked real interest over a number of sectors throughout Asia because of its high-throughput and field-proven ability to provide a reliable solution to mobile connectivity.

Vertically, our role as Inmarsat's sole Global Xpress integrator will evolve much further as GX is more widely adopted. With the commercially agile and rugged SWARM VSAT, Paradigm expects the military and government sectors to continue to increase. We are also working much more closely with a number of other satellite operators including Intelsat, Avanti, SES, Eutelsat



CONNECT100T - cost-effective, portable PIM-based terminal ●●●

and Telenor, to provide viable solutions which utilise their networks fully.

Question: Paradigm is a major player in the defence, government and broadcast sectors. What trends and challenges are shaping this market for Paradigm, and how is the company responding?

Jon Godfrey: Paradigm has always worked closely with the defence and government sectors. Advances and developments made to meet customer demands in these sectors will often transfer over to also meet the requirements of the broadcast market. With the move by the military to utilise more commercial off-the-shelf solutions in their procurement, this synergy can only improve giving Paradigm the opportunity to better fulfil requirements in both sectors.

Additionally, as the military demand increases for higher and higher throughput to allow faster communication and live streaming of videos and images, then demand for VSAT solutions will also increase.

However, the successful VSAT solutions will need to be lightweight and easily accessible by personnel with minimal training. They will also need to be able to establish communications in the remotest of locations.

Clearly, Paradigm can respond to this with the PIM terminal controller and the ultra-portable, high speed SWARM. In combination they provide a VSAT which is rugged, easily transported in a backpack and commercially agile. The SWARM's modular design means that it is operable on Ka, Ku and X-band and can support a range of networks. With the simple addition of a laptop, router and a phone handset it will provide secure, beyond-line-of-sight, video and data comms without any need for local network infrastructure. Add in the PIM Power Pack and the user also achieves autonomous use and the ability to use locally available power such as vehicle batteries, solar panels and generators where available.

For broadcasters, breaking the story by being 'first on the scene' is more and more critical with the immediacy of

social media platforms. Consequently, satellite terminals that are easy to use and simple to setup have become essential for the media sector. A satellite system that can be easily carried and setup anywhere provides a mobile office in the true sense of the word. Operating the SWARM with minimal training after carrying it as hand luggage on the flight, makes this remarkable terminal highly attractive for this requirement. The PIM can then also enable a secure network to be created for VoIP, SIP and cellular phones and can even provide the Power over Ethernet for VoIP phones so that no additional local power is required.

But Paradigm's other PIM-based terminals are also providing ideal solutions for these sectors. Longer term, temporary setups requiring high data rates at a lower cost will benefit from the transportable CONNECT100T. Shorter term requirements will look to the quick deploy HORNET with its segmented carbon fibre antennas.

Question: With Paradigm's innovative development of straightforward user interfaces for satellite terminals how do you see this technology contributing to the future of satellite communications?

Jon Godfrey: Making satcom more accessible for non-skilled users, more versatile, more portable and faster to setup and more straightforward to point - thus broadening the market and addressing the 'myth' that satcom is complicated and cumbersome. This is key for the future of satellite communications. 4G technology (and soon 5G) has given users the ability to easily transfer large amounts of data at high speed and the satellite industry needs to respond to that expectation. Anything that can be done to simplify the setup and pointing process of a high-speed satellite terminal will inevitably drive satcom forward and provide a viable alternative to alternative wireless communications.

The future of satellite communication will also require a much more modular approach, with feeds that are multi-capable and easily interchanged, swappable modem technology and options for antenna size. Paradigm considers itself as being at the forefront of modular development of satcom systems with the PIM as the



HORNET65 - compact, easy-to-operate PIM-based terminal ●●●

base building block for this. Therefore, we are open to working with other manufacturers to integrate the PIM with any modem to enhance the usability of the air interface and start delivering to customers much quicker than by developing in-house from scratch.

Question: In February 2017, Paradigm received type approval from Telenor Satellite and Global Xpress for its Swarm Ka-band terminal. Can you explain exactly what this means for Paradigm going forwards?

Jon Godfrey: Type approvals for our terminals are ongoing and have always been part of our business; we have since had a number of other operator approvals including Avanti, Intelsat EPIC, SES and Eutelsat. Such approvals for the SWARM during 2017 illustrate its commercial agility and versatility but our entire CONNECT and HORNET terminal ranges are also now certified on many networks.

Commercially these are important, when a system can operate on Ka, Ku or X-band and across multiple networks it opens up a variety of use case scenarios suitable to many sectors. These can range from a first response unit arriving quickly on the scene and setting up a link to transmit news back to a whole mobile military unit being

able to communicate seamlessly and securely with each other and back to base.

Question: What can you tell us about Paradigm's major achievements during 2017?

Jon Godfrey: The widespread adoption of the PIM as a standard for controlling terminals has been a significant achievement. More and more manufacturers are integrating it with their systems because of its easy onboard pointing and reliability.

With its pre-certification on a range of networks it provides a quick route to market and a technology that is widely understood both in and beyond the satellite industry. Its modular capability allows multiple modem options to be integrated which further increases its commercial agility. Paradigm has also stayed in the forefront of the HTS revolution by providing a number of certified terminals which can maximise this opportunity. Our CONNECT, HORNET and SWARM terminals all offer high-throughput for our customers whilst variously ticking the boxes of affordability, mobility and durability.

Global demand for the SWARM terminals has also exceeded all expectations yet is testament to its remarkable capabilities. Roll-outs and field implementations have been

achieved across five continents and there is no indication of it slowing down – in fact, quite the opposite. The SWARM is robust, reliable and field-proven. Going forward, we are expecting even more network registrations across X, Ku and Ka-band and for the SWARM to become an integral standard component for military and government solutions.

Question: What do you expect Paradigm to achieve in the rest of 2018 and beyond?

Jon Godfrey: As we all know, the satellite industry doesn't stand still, and our development and integration engineers are constantly improving our range of products and skills and our modular elements for satcom terminals. Together with our partners, we will continue our drive towards providing solutions which are resilient on every level, ensuring that satcom is accepted as a viable and affordable option for global communications. This will cover support for new and up and coming satellite constellations as well as catering for a greater number of efficiencies and power supply options, moving away from a reliance on AC supply to increase satcom mobility, easily swappable modular components and straightforward setups and operation.



Paradigm full antenna farm system for Sky News Arabia ●●●