

Satellite Made Easy with Smarter Tools

by Alvaro Sanchez

High Throughput Satellites (HTS) are changing the satellite business model by multiplying the capacity up to 100 times the FSS capacity; therefore broadband satellite terminals would be growing at least in similar order of magnitude to cover the connectivity demand worldwide for 2020.

Very Small Aperture Terminal (VSAT) manufacturers are making those terminals all the more efficient for being able benefit from this extra capacity that HTS generates and maximize the service performance. Moreover, satellite broadband is starting to be a key alternative to fiber and other type of terrestrial connectivity by simplifying the access and providing a greater value proposition thanks to smarter tools which allow installing and maintaining VSAT network much easier than ever before, even simpler than terrestrial infrastructure

Complex Networks

VSAT systems by its nature are often in remote environments, where is very hard to get on site to start the service, this bring a key difficulty because sometimes an installer is required to travel to the site during three days, install the dish and commission it; in order to do so they are required to call to the Network Operation Centre (NOC) or Hub support, however without any cellular connectivity is almost impossible the commissioning task.

Regularly there are terminals which are not installed correctly, providing a poor performance to the end customer, but more importantly degrading the overall service by creating interference.

This effect is maximized in HTS scenario where margins are smaller and the VSATs are forced to work to the maximum performance, therefore the entire beam performance or even the entire network can get degraded by the effect of a single remote. In this new High Throughput Satellite era, VSAT networks will be huge, if one single VSAT is mispointed or saturated; it can have an impact on the entire service performance, especially on adaptive power adjustment terminals.

Once the VSAT is installed, it is left unmanned to operate for years, and

will provide a result in a rough area of 1 or 2 square miles; then it should be looked for the candidate in helicopter. Once this is done a technician should revisit the installation. This long process causes significant expenses to the satellite operator in interference revenue loose, geolocation system CAPEX and service provider in travel and installation expenses and service revenue loses.

Of course, the complexity of VSAT networks is not limited to installation. It is easy for errors to occur during operation, either due to human error from onsite personnel, or other factors outside of the operator's control, such as atmospheric conditions.

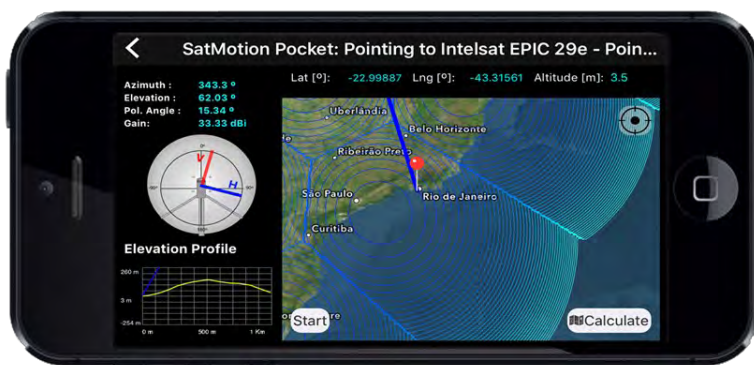
An added complication is that many VSAT networks are also mobile where the unit is constantly on the move. In those cases, it can have been perfectly well installed and pointed,

but then every time it moves, you risk all those same misalign problems again. Often the personnel accompanying the unit won't be highly trained in satellite communications, but even when they are, it means a constant job of realigning to ensure the equipment is always working at its optimum.

Smarter Tools

Today when those networks are deployed, service providers can ensure these effects will not be experience by counting with smarter tools which allow them to prevent and mitigate these service degradations and interference.

"At Integrasys, we believe that Preventing is the Key": if a VSAT is installed accurately, by analysing its transmis-



even when they are not operating correctly, often those people on site won't be trained in operating satellite equipment. Therefore an installer has to come back on site to revisit the installation; in some cases even a helicopter is required.

In case the VSAT was not installed correctly, a long process should be done by the satellite operator notifying the service provider that there are some VSATs in its network which are interfering other services or even other satellites, and the satellite operator will need to geolocate the interference with an expensive geolocation system during days and only possible if there is a "friendly" adjacent satellite which would like to share the satellite ephemerides information. This geolocation

sion, we ensure that for a long period of time this site will be performing optimally. By performing the Peak & Pol in transmission the installer is capable of minimizing the squint error and maximizes the availability; even for higher frequencies such as Ka, and heavy rainy days.

Moreover, a VSAT needs to be operating within its ideal power thresholds, one of the key VSAT issue happens when the remote is in a wrong power level. The installer should be capable of determining the BUC saturation point and optimal power in clean skies. This automated process is done by using an extremely user friendly interface designed for installers, crew members or even end customers, for being fully controlled.

Automated tools such as Satmotion Pocket which help them with coarse pointing, fine pointing, Cross Pol or ASI nulling, compression point and commissioning are ideal for installing quicker and accurate almost forever.

The VSAT industry now needs to get smarter after installation to ensure the network continues to operate accurately and without degrading performance or creating interference. Most Network Management Systems (NMS) assume that satellite terminals are reachable and therefore aim to optimise network performance or detect terminal malfunctions based on satellite IP feedback. However, errors at the premises, such as antenna de-pointing or signal level variations, usually result in the VSAT connectivity break.

Today it is much efficient with smarter tools such as Alusat by allowing to calibrate the network and maintain in optimal performance fully automated. Service providers can check within seconds each remote reception and transmission RF quality, without the need to send an installer to perform lineup checks. Therefore Alusat provides the network overall view of every key RF parameter to ensure the maximum accuracy and optimal performance, taking in to account the satellite beam footprints. It can even recover VSAT out of service.

The result of Alusat, is overall network performance enhancement and reduction of maintenance time, effort, and interference by automating the checks and corrections from the NOC. Alusat is deployed at the Hub site and automatically checks the uplink and downlink health of the VSAT population at radio level. It also collects relevant configuration and performance information.

Alusat is an evolution of our existing Satmotion Pocket and coexists sharing the same hardware, allowing the hub operator to evaluate the overall network performances with a single click, just in case anything has happened to change the status following accurate installation using Satmotion Pocket remote commissioning.

Satellite Made Easy

In a world where VSAT networks are getting all the more prevalent and all the more complex, it is more important than ever to make it easier for the end customer and all industry in general with innovative tools.

The more automated the processes and error detection, the more efficient and easier for the end customer can be, making life better for the entire industry and more profitable for those service providers who benefit from these automations.

At Integrasys we have released "Satellite made Easy" video available in Youtube which explains that today with smarter tools satellite could be a much easier solution.


Smart Providers

There are many service providers which have been benefiting from this smart tools already with great success in their projects such as ViaDireta with a iDirect Evolution network with 1200 VSAT de-



Pegaso Banda Ancha, Toluca, Mexico

ployment in Amazonia, Brazil, on a very extreme conditions, installers must travel in canoes in the river and install the VSAT over the river at the same time that they manage to not fall from the canoe; without knowing which type of animals are under the Amazonas river brown waters. Another example is Telefonica Peru, being the first service provider within Telefonica group acquiring Satmotion Pocket: "By using Satmotion Pocket and iDirect hubs we have ensured the maximum deployment quality in our VSAT projects for commercial and governmental applications"; said Martin Cabellos Gomez, Senior Product Manager, Satellite Service, Telefonica Peru.

Also another great example is Pegaso Banda Ancha with 5062 VSAT deployment for bridging the Digital Divide in rural areas in Mexico, which is part of the Mexico Conectado initiative with the Hughes JUPITER™ System high throughput platform." 



Alvaro Sanchez is Sales & Marketing Director at **Integrasys**. Alvaro is responsible for Satellite Carrier Monitoring at Integrasys, providing most innovative solution to satellite operators and service providers. Alvaro prior to join Integrasys was signal analysis expert at CERN European Organization for Nuclear Research. He can be reached at: alvaro.sanchez@integrasys-sa.com