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## Overview: $A+B+C = VSAT$

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## **A+B+C = VSAT**

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The benefits of VSAT systems and services are being realised in all spheres across the globe, both private and public. Banks, government departments, schools, hospitals, home offices, small enterprises, multi-national corporates, and rural telephony... all sectors are seizing upon the opportunity to get connected through satellite communications.

Name three big global communications issues of the day... "Access!..."  
"Broadband!..." "Connectivity!"

Contrived? Well, perhaps. But none the less true for it, given that these occupy premier positions in the lexicon of the modern connected world. The same lexicon, the one that had already dismissed the hyperbole of super-fast fibre optic connectivity to every home, has more recently had to admit such terms as 'telecommunications meltdown' and 'dot-com crash' to its pages. The very same lexicon has for nearly twenty years featured an ever more important solution to communications problems - the Very Small Aperture [satellite] Terminal, or VSAT, provider of point-to-multipoint applications for one-way or two-way interactive communications around the globe.

### **Making Connections**

Global communications problems require a range of suitable solutions. Solutions appropriate to prevailing economic, geographical and technological conditions, appropriate to end-user requirements, and appropriate to local price structure sensitivities.

Under one set of conditions, lets say the point-to-point connection of major population centres both within and between countries and continents, fibre optic networks provide extremely reliable service delivery at cost levels which give good value for money. Cable provides similar value, only limited because it will only ever be laid around urban and sub-urban areas where it is economic to do so. DSL technology has the great advantage of bringing new bandwidth to old copper but is limited because it only works within a maximum radius of three to five kilometres of the nearest local exchange carrier central switching office/exchange.

Even for a large non-metropolitan consumer population - and the tens of thousands of SMEs (small and medium sized enterprises) and SOHOs (small offices/home offices) located outside of cities and large towns - across a highly

developed economy like the United States, access to these platforms is not necessarily available. For vast swaths of consumer and enterprise end-users across much of the planet, where geography and economics combine, these infrastructures are a non-starter.

In such circumstances, under such conditions, a question arises. How to gain access, obtain connectivity; for the rest of the world, to the rest of the world.

For example:

- Access for local, national and multinational networks; for ISPs; for government closed user groups; for intergovernmental and corporate applications; for disaster relief agencies; for rural Public Call Offices.
- Access to news distribution services; to broadband data communications; to interactive distance learning networks; to multicast services.
- As well as provision of extensions to PSTN infrastructures.

The answer is - satellite.

### **Access All Areas**

Only satellites - and the Very Small Aperture Terminals used to receive or receive/transmit from/to them - provide the necessary service reach, availability, rapid service deployment and compelling price performance to meet the communications requirements of such regions of the globe.

As noted, VSATs are not new. In the last ten years alone over half-a-million interactive VSAT terminals have been deployed in over 120 countries around the globe. They are used to deliver services ranging from stripped-down rural voice via Public Call Offices through to fully loaded enterprise sector multimedia services. Another half-a-million receive-only terminals are deployed providing IP multicasting.

The value-added advantages of satellite-based communications can be readily appreciated:

- Single communications platform

VSATs provide a full range of services: from voice, video and data for the multinational corporate, to single channel on-demand voice, fax and data for rural telephony. VSATs are highly effective tools for Internet service provision, LAN internetworking, multimedia image transfer, batch and interactive data transmission, caching, interactive voice, broadcast data and video communications.

- Fast deployment

VSATs can be quickly and easily installed anywhere. A network comprises a receive-only or receive/transmit terminal installed at dispersed sites, connected to a hub via satellite using a small antenna (typically 0.6 - 3.8 metres).

- Service reliability

VSATs provide high availability and excellent transmission quality. Performance levels are high: 99.9% for data and 99.5% for voice.

- Cost insensitive to distance

A VSAT network can be provided through a lease or purchase arrangement with fixed transmission costs regardless of distance or the number of receiving stations.

- Control

Users retain complete control of the way information is transmitted within the network, wholly independent of local telecoms infrastructure.

- Upgradeable

VSATs generate flexibility, particularly where new VSAT sites need to be added, or existing sites moved within or removed from the network.

### **VSAT - The Rural Application**

Three billion people on Earth are still without access to a basic telephone service. VSATs can and do provide cost-effective links to dispersed sites or small villages, most particularly, and importantly, in developing countries where the isolation of a greater proportion of the population can be overcome and they can be engaged in economic activity on an extended scale. Among the countries that are operating VSATs for rural connectivity are South Africa, Botswana, Indonesia, Chile, Peru, Kazakhstan, Bangladesh, Pakistan, Thailand, Ethiopia, Australia and the United States.

Beyond telephony and fax, VSAT-based data exchange can extend to support the incorporation of a bank ATM machine at the Call Office. So, imagine the scene in the hinterlands of Nigeria. A villager steps up to a VSAT-linked, solar powered, ATM and withdraws money from his savings account to purchase a petrol-driven tiller that will more than double the efficiency of his crop production.

### **VSAT - The Semi-Urban Application**

In many countries the existence of telephones does not necessarily bring reliability and low tolls. VSATs are invaluable in regions where the traditional copper infrastructure is poorly maintained, and are a highly cost-effective means

of introducing reliable and robust lines. These connections carry high-rate data with toll-quality voice, enabling operators to deliver first class services to outlying hospitals, schools, post offices, government offices, as well as private users.

The scene now shifts to the outskirts of Budapest, where a young entrepreneur maintains a VSAT Internet link through which she sells locally produced red wine, driving up hard currency earnings and promoting the country's business.

### **VSAT - The Corporate Application**

VSAT sales have grown consistently over the last decade, driven largely by corporate demand for flexible communications network solutions. Formerly a niche technology, VSAT-based services have become a mainstream service platform used by a large percentage of the world's corporations for mission critical applications. Low initial cost, high levels of service and short time to market have resulted in VSAT being selected by the entire spectrum of commercial organisations.

The final scene alternates between a forester's mobile control centre in the mountains of northern Malaysia, a conference room in the regional headquarters of a multinational timber corporation in Kuala Lumpur, and an investment analysts' meeting in London. Managers on the ground send the current harvest yield report by e-mail into their HQ, via a VSAT. Senior executives use these statistical reports to feed into a video presentation to their bankers through the company's VSAT virtual private network.

### **VSAT Generations**

Satellite-based communications continue to advance dramatically. Successive generations of satellites have incorporated the latest technologies to deliver ever-increasing volumes of traffic via smaller and cheaper VSATs, and greater amounts of low cost bandwidth. Savings in the cost of space segment have been realised through new modulation schemes and efficient coding techniques - which permit digital information to be recovered more efficiently from the satellite - and together with falling hardware costs (particularly the cost of Application Specific Integrated Circuits), satellite access is very price competitive.

Due to this, and despite some notable satellite-venture failures (for example the US\$7 billion Motorola-backed Iridium debacle), interest in satellites to solve the Internet/broadband last-mile problem of how to create a high-speed link to enterprise and consumer end-users has never been stronger. Yet reading the influential business press brings into sharp relief just how much work the satellite community (including its expanding user community) still has to do to educate and inform on these points.

Not so long ago I read a piece in a respected business (OK, business technology) periodical in which it was recognised that in the competition to deliver broadband content to the end-user, satellites are a perfect 'last mile' solution. "Great!"

It was further acknowledged that satellites have a good track record for proven security. "Getting better!"

Finally it was stated that the technology is considered young when it comes to delivering data. "Come again!"

The writer was obviously unaware that in the very market he was primarily addressing, the US market, satellites have been successfully used in the commercial transmission of commercial data for... yes, well we've covered that ground here already.

### **Reform in Mind**

Against this compelling backdrop of low terminal costs, economical bandwidth, inherent cost advantages and network flexibility some governments have in the past moved very quickly to facilitate the provision of VSAT-based services by advancing the programmes of telecommunications regulatory reform.

In the United States the satellite community has long enjoyed the fruits of a light regulatory touch, and blanket licensing of VSAT terminals has enabled efficient network installation, reduced fees and relatively open competition. With the largest regional installed base of VSAT networks (also, I might add, the greatest density of fibre-links of any nation), the result has been the widespread availability of high quality services at low prices. The nation's largest employer, the United States Postal Service, is linking its 34,000 offices with the most extensive VSAT network in the world.

### **All Around the World**

Other governments have recognised, still more are in the process of recognising, that removing telecommunications - and other! - monopolies brings substantial economic dividends. The availability of VSATs and other satellite-based communications is increasingly understood to be instrumental in creating jobs, attracting inward investment, and improving foreign trade.

Indeed, the United Nations recognises that VSAT communications solutions warrant primary consideration when assigning priority to infrastructure investments in developing economies.

VSATs provide cost-effective, rapidly deployable solutions that are flexible enough to address a wide range of applications. That they are self-sustaining and also help to create new sources of capital is a further aspect of the value-added

equation that requires the as yet unconvinced to re-examine their copy of the lexicon.

Oh! By the way, work in progress comes under "D" - for deregulation.