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WANTED: A bridge for Africa's digital divide
APPLY: Pretty much anywhere in Africa
QUOTE REFERENCE: VSAT

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"Of the more than three billion people on Earth who have never yet made a phone call very many are Africans. This vast continent has 13 per cent of the world's population and a mean teledensity of less than two percent."

-Dateline 2002

For Africa, and for the economy of the whole planet, those hundreds of millions of people across the continent who are currently denied reasonable access to even simple voice service represent a vast untapped pool of creativity. This very large and potentially very powerful economic dynamo demands access to more than the simplest tools of communication, and requires the means to unleash the potential productivity of its own knowledge-base into an increasingly connected world. The International Telecommunications Union acknowledges this, as does its sister organisation, the United Nations. The Global VSAT Forum enjoins you to acknowledge it too.

The provision of telecommunications connectivity catalyses local economic development, as World Bank studies have demonstrated. Borne out by numerous national examples, these studies have shown that a country's GDP is directly related to investment in telecommunications infrastructure. Universal Access to information and communications technologies (ICT) allows commerce, industry, agriculture, education, healthcare and government to operate more effectively, and facilitates improved individual and national economic growth, including indigenous ICT-enhanced local enterprise. But, how can the nations and peoples of Africa secure sustainable Universal Access, affordably and reliably?

Despite the best efforts of public and private sector telecoms companies to connect-up the entire globe with terrestrial infrastructure, this is not a cost-effective solution to the Universal Access problem.

What is needed is a state-of-the-art telecoms service provided at competitive price points via a highly versatile communications platform that is available now, not just a pie-in-the-sky promise for the future. Moreover, what is needed is Universal Access to 'the cutting edge'. There must be

"... a retreat from the self-defeating notion that rural and remote areas ... cannot afford or manage cutting edge technology. If ICT has efficacy, it is in its remarkable ability to facilitate leap-frogging the handicaps of disadvantage and deprivation. Given their

limited resources and facilities, it is unconnected communities that need the benefits of broadband applications to deliver critical services through great distances." -From: "Jumpstarting Affordable Universal Access in Africa: The Telecom Africa Initiative" by Joseph O. Okpaku, Sr., PhD.

Is there such a technology and service solution? Yes - satellite communications and the Very Small Aperture Terminal, or VSAT.

The Access Solution

The benefits of VSAT-based communications are being realised across all sectors of activity, both public and private - from banks, stock exchanges and ISPs (see graph), to schools, hospitals, and rural/semi-urban telecentres - to elevate economic, educational, and health standards amongst the populations of emergent nations. The global connectivity facilitated through the use of fixed satellite services has transformed VSAT communications from a niche technology to a mainstream telecommunications service platform used by many of the world's largest corporations and governments, as well as personal users.

Indeed, VSAT-based, fixed satellite services are not new.

Over more than the last decade 500,000 interactive VSAT terminals have been deployed and are in use today in over 120 countries. A further half-million receive-only terminals are installed and providing IP (Internet Protocol) multicasting. The costs of deploying and operating these VSAT systems is getting lower, their reliability greater and flexibility enhanced to enable cost-effective solutions for everything from stripped-down voice services to fully loaded multimedia.

Water Towers on the Skyline!

Further illustration of the widespread African demand for basic communication services, and of the expanding awareness of the cost effectiveness of providing such services via satellite, was given at the recent Global VSAT Forum African and Arab States VSAT Summit in Johannesburg, South Africa. The GVF's Southern Africa Affiliate, Geoff Daniell, reported that throughout the region local entrepreneurs have learned to meet this demand by offering voice over IP (VoIP) via satellite, using antennas hidden inside water towers! In the absence of clear government regulation on VoIP services, an obstacle to the more overt offering of such connectivity, the local private sector has taken the initiative to satisfy an otherwise stifled market.

Despite such examples, many governments do recognise the benefits of VSAT connectivity and many have already adopted enlightened regulatory approaches to facilitate the deployment of VSAT-based systems and networks. Yet others intend to do so. Others still require some encouragement. On the international stage, the

UN recognises that VSAT communications solutions warrant primary consideration when assigning priority to infrastructure investments in developing economies.

Tangible Benefit

VSATs are now providing one to three voice, fax and data channels on demand in places where there has never been a telephone. Subscribers can be seen lining up during each evening to use the local Public Call Office for toll quality voice service. Individuals are using such systems to deal directly with the marketplaces that traditionally re-sell their produce and products. Company field offices are using VSATs to ensure reliable contact with head offices.

Thus, access to telephony, fax and, increasingly, the Internet, whether from private homes, Public Call Offices, or commercial offices, is more and more provided via this inexpensive, single communications platform which is capable of serving an entire region or the world.

Additionally, many nations are implementing or operating VSAT networks to extend their national telephone infrastructure, including South Africa, Botswana, Ethiopia, Indonesia, Thailand, Kazakhstan, Bangladesh, Pakistan, Chile and Peru. These VSAT networks interface transparently into the existing (usually analogue) telephone network to provide seamless continuity with the national PSTN.

Establishing such communications links has led to greater efficiencies and higher margins through closer co-ordination of supply of products to demand. Further, experience has shown that as a community's prosperity increases, not only does it foster new sources of productivity, but it also increases the demand for billable long-distance telephony traffic.

Benefits also accrue to large, urban and semi-urban areas, where terrestrial telephone lines may already exist, but tend to be unreliable and expensive. VSATs are a cost-effective means of introducing 8-16 highly reliable and robust lines. These connections carry high rate data with toll quality voice, enabling operators to deliver first class telephone and fax services to local hospitals, post offices and government ministries, as well as to private users.

Corporations operating in remote areas have long relied on VSAT networks to provide full mesh telephone and fax connectivity as well as data and video links, most notably for utility companies, banks with remotely located branches, oil and gas exploration and extraction companies, mining operations and forestry companies.

Leveraging the Gains

Once installed, a VSAT network can be leveraged to provide other value-added applications for a range of end-user types. Government agencies can implement interactive distance learning applications over the network to provide school, college and university-level education and teacher training programmes across an entire country, as well as telemedicine, and disaster recovery related applications. Other applications/services include:

- Government Closed User Groups Networks
- National and Multinational Networks
- Broadband Data Communications
- Multicast VSAT Services
- Intergovernmental and Corporate Applications
- News Distribution Services

For African nations and peoples to maximise these gains they must promote relevant training initiatives to create and nurture an indigenous talent for network content creation. Not because of any emotive, 'correct', politically driven agenda, but because of the simple economics of end-user propensity to buy that which is relevant to their needs and to 'leave on the shelf' that which is irrelevant - a propensity that speeds the economic dynamo that much more.

Talk (Etc.) IS Cheap

Cost-effective VSAT-based solutions have become available to every sector due to the convergence of critical technology trends and cost refinements. Space segment is more abundant and affordable today, and satellites are generally more powerful, enabling the use of smaller - and less expensive - antennas on the ground.

Meanwhile, voice calls are now being digitised using digital signal processing (DSP) and more than 2,000 telephone conversations can be carried on a single 36 MHz transponder, translating into a very low space segment cost per line. Further space segment savings have been realised through new modulation schemes and efficient coding techniques, which permit digital information to be recovered more efficiently from the satellite. Hardware gains have also been made. Application Specific Integrated Circuits (ASICs) that perform the majority of VSAT functions contribute to a reduced count of standardised components, increased reliability, and reduced costs.

In turn, this has fuelled higher adoption rates, greater economies of scale, and savings passed-on to the end user in the form of lower terminal prices. Development of VSAT equipment manufacturing capacity within the continent, itself a totally feasible outcome of improved access to the latest scientific and technological education, will further this downward trend in hardware prices resulting from greater regional competition in the sector.

De-Regulate to Accumulate

The end of telecoms monopolies around the globe have thus brought substantial economic dividends. The availability of VSATs and other satellite-based communications has been instrumental in creating jobs, attracting inward investment, improving foreign trade and facilitating local market initiative. Recognition of these benefits is manifest in various international advances in regulatory policy.

For example:

- GMPCS-MoU
The ITU Global Mobile Personal Communications by Satellite - Memorandum of Understanding is designed to reduce or eliminate the burdensome licensing, customs, and [equipment] type approval requirements associated with the use of mobile and fixed satellite terminals, such as VSATs.
- WTO
The World Trade Organisation Telecoms Agreement entering into force and bringing varying levels of expanded market access for foreign suppliers of satellite services.
- The Tampere Convention
The Tampere Convention on the Provision of Telecommunications Resources for Disaster Mitigation and Relief Operations is an international legally binding instrument to facilitate the immediate provision of VSAT and other telecoms services for disaster recovery programmes. Its key significance is in that its provisions for the reduction or removal of regulatory barriers during crisis also allow for arrangements whereby disaster recovery telecoms systems can become permanent networks for the delivery of additional services.

Yet, despite the recognition of the important role of VSAT-based services, and despite these international agreements, burdensome regulation is the primary obstacle to the full potential of market demand-based deployment of VSAT systems.

Which brings me, finally, back to the Global VSAT Forum and to one of the key aspects of its many activities around the world, encouraging regulatory reform. In co-operation with national regulatory authorities, and with other international, regional and national regulatory interests around the world, the GVF seeks to help establish core regulatory and trade principles to advance the deployment of satellite-based networks and the delivery of satellite -based communications solutions, to consumers, commercial and government organisations worldwide.

The long term, self-sustaining, economic development of the emergent economies of Africa and the rest of the world, and their ability to successfully engage in the increasing globalisation of the world's markets, depends ever more centrally on a comprehensively accessible telecommunications infrastructure for the exchange of information with the rest of the world. On all counts VSATs can deliver those solutions, provide that access...

In Africa, things are looking UP.

Global VSAT Forum: The GVF is the UK-based independent, non-partisan and non-profit organisation representing every major world region and every sector of the VSAT industry. It has more than 130 members and serves as the unified voice of the industry in regulatory, policy and trade matters. The Forum co-ordinates regulatory and policy solutions at the national, regional and global level, and supports educational and promotional programmes in every nation of the world.