VSATS to weave the Web

Chanuka Wattegama

With the current telecommunication system hardly sufficient for reliable data transmission, it's time Sri Lanka exploited the VSAT-based technology to the hilt…

Though it seems to have happened centuries ago, it was only in April 1995, merely two years ago that T Lanka Internet, the pioneering Internet Service Provider (ISP) in the island, unlocked the gates of the largest known data base in the world-Internet, for us. At the moment of writing this it has proliferated to a level of around 5000 local Internet connections, at least 1000 web sites, six major ISPs (Lanka Internet, Sri Lanka Telecom, Eureka Online, CeyCom, ITMin and PanLanka) and more than 25 third party ISPs. However, some of the major barricades which curtailed the exponential growth of Internet, still haunt the Sri Lankan 'citizens.' In all fairness, one should not neglect the important efforts of communication and IT firms to raise the standards, but if a managing director of an exporting company thinks it is better to use a Business Directory to search for foreign buyers for his products, than using the Internet, I do not blame him. If someone asks about a site from where he can download a certain software utility, my answer will be 'better try to find a CD ROM. It's easier and quicker!'

In the December-1996 issue of 'Business Today' I wrote an article titled 'Are we ready for Intranet?" (If I were to write the same article today I would consider changing the title to 'Are we ready for Intranets and Extranets,' but Extranets were unheard of then.) My principal argument in this article, in case you have not read it, is that the current telecommunication system is hardly sufficient for a reliable data transmission required to build island-wide Intranets, and the alternatives are too costly. A leading communication engineer in Sri Lanka, later commented that though the telecommunications standards are slightly better than what I have explained in the article, he agrees with the basic idea. At the moment, he further said, the main concentration of the telecommunication authorities is to increase the number of phone connections, to satisfy the ever increasing demand which has now reached a colossal 220,000. Rest of the issues will have to wait.

So it is most certainly good news to hear that a Sri Lankan company is ready to

present us with a cost-effective, reliable and fast enough alternative in the near future. CeyCom Global Communications, plans to build an island- wide network as a solution. Says Romesh de Silva, Sales Manager, “There is no question about turning to better technologies. The present means of communication can in no way cater to the ever demanding requirements of today’s business community. That is why we intend to introduce an alternative. Our project is backed by several organizations both financially and technically. The key player is the Ceylinco Group, COMSAT Corporation, which had been instrumental in launching the first communication satellite ‘INTELSAT in 1965, Hutchison Whampoa Ltd., a Hong Kong based conglomerate and Hughes Escorts Ltd., a global leader in digital satellite communication products provide us the necessary technical support. We hope to use different technologies like microwave, fibre optics, radio links etc., but VSATS will be in the center stage.”

What are VSATS? How can they make such a dramatic change in the field of digital communications?

The abbreviation ‘VSAT stands for ‘Very Small Aperture Terminal.’ They are satellite based communication systems. The word ‘aperture’ refers to an extremely narrow and directed beam’ of electronic waves.

All the VSAT networks are based on two predominant technologies. The more popular one is called TDMA’ or Time Division Multiple Access technology. Somehow the opposite camp insists that, as a developing country, what is ideal for us is the ‘DAMA’ or Dynamically Assigned Multiple Access technology. Still it is too early to predict about their future developments. Perhaps both the technologies might develop simultaneously.

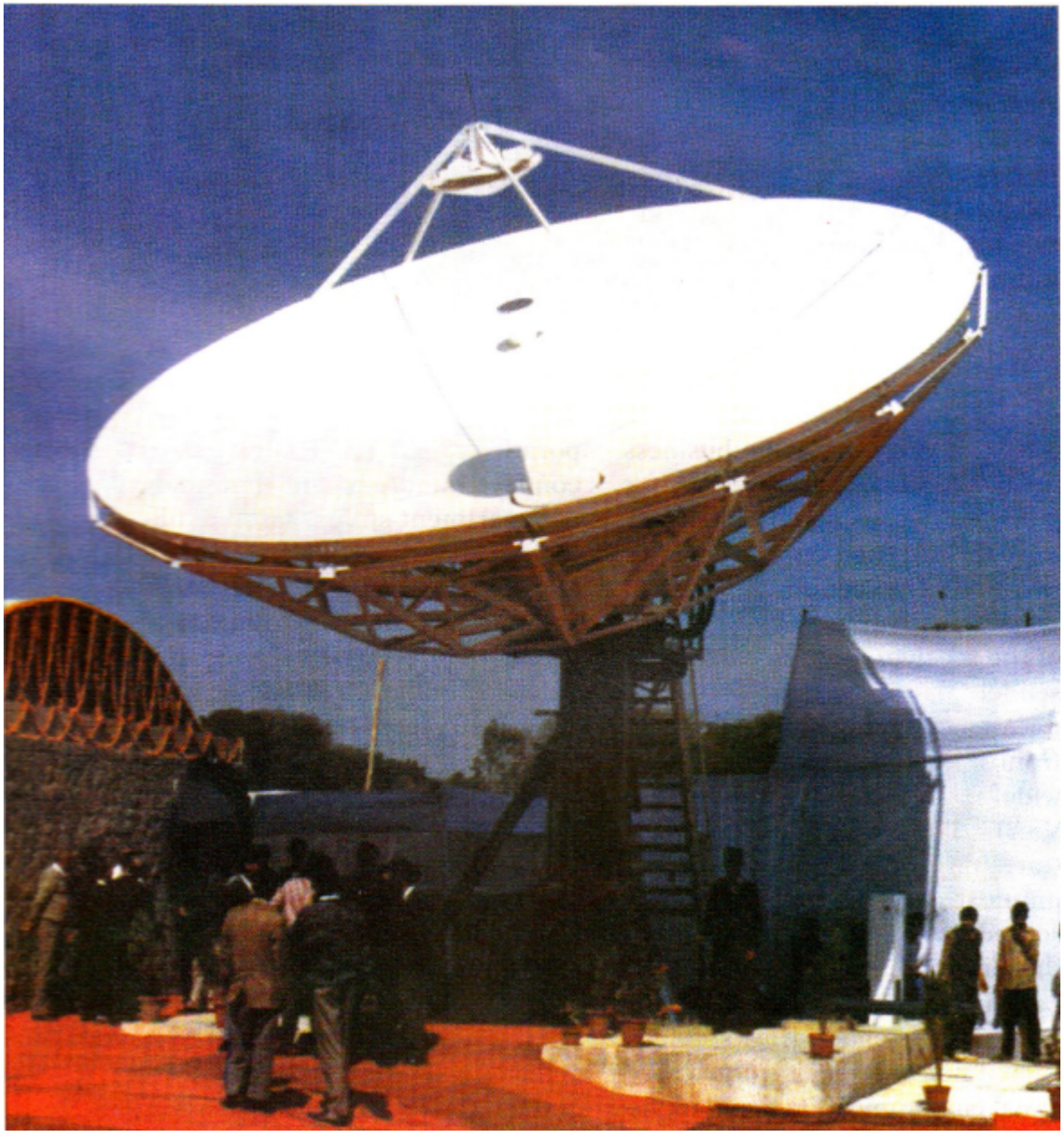
DAMA technology enables one VSAT to directly establish a channel of communication with another in a single hop. It also establishes an exclusive circuit between the two VSATS for the duration of the communication. This is reflected in faster flow of data and better transmission of video images. On the other hand, TDMA involves a double hop of signals, which have to travel through a hub. The hub may be dedicated (owned by the user company) or shared (owned by at service provider). A packet based protocol operates between the

hub and the remote earth station. data ports, providing data and voice transmission between ports.

A VSAT network provides two way data communication between a central hub and multiple remote locations. A large satellite dish (9 to 11 meters in diameter) is used at the main hub. At the user site a smaller user dish antenna (1.2 to 3.8 meters) is locked on to the satellite, and cabled to an indoor unit which provides the necessary data interfaces.

The hub also provides centralized communications management for the remote centres. All traffic between remote centres must pass through the hub. Traffic cannot pass directly from one VSAT to another over the satellite link as happens in case of DAMA technology. The remote centers are geographically dispersed sites that contain earth stations and customer equipment such as LANs, computers and work stations. The hub architecture is built in such a way that most of the components have backups. In case of failure of any of the equipment the job is taken over by these stand-by machinery.

India is one of the countries in the South Asian region which had exploited the VSAT technology almost since its inception. According to ‘Computer Today’ the leading IT magazine in India, more than 1500 VSATs were installed in India in December 1996. In 1997, this figure is expected to increase by at least another 2000. If the same trend continues, the magazine also expects this number to be somewhere between 15,000



20,000, in the beginning of the next millennium. Till the beginning of this year only the TDMA technology had been used, but now several players offering DAMA technology based VSAT services also have entered the scene. With the advent of the DAMA based VSATs, higher dependability compared to WAN options, better remote connectivity with faster deployment, and flexibility of network configuration and capacity will be the most possible market drivers.

‘Compared to what India had achieved so far our penetration into this field is

negligible,’ laments de Silva. This is true but it is not a surprise that a country almost sixty times larger finds VSAT an indispensable tool. Again, it should be pointed out that VSATS have been in Sri Lanka for a long time though not for data communication purposes. All of our TV and broadcasting services, most of the diplomatic missions and even some business. organizations use them either for video or audio communications data communication purposes. purposes. In nine out of ten cases these communications are done in one way with only playing the part of the receiver, not the part of the sender.

Amal Punchikewa is an Electronics Engineer who has written widely on subjects related to VSATS. Though he mainly concentrates on VSAT based video communications, the paper he presented at the annual sessions of the Institute of Engineers (Sri Lanka) in 1994, deserves a mention. The broadcasting services should not only exploit the VSAT based communication medium, he

says, but also develop it in order to introduce various new services which would be difficult to bring into reality by terrestrial means from economical and technological points of view. He also points out how a direct satellite broadcasting service that uses VSATs can serve the whole island, ousting what is called ‘shadow areas’ under terrestrial broadcasting.

In the IT environment, most early VSAT applications involved retail establishments with thousands of widely scattered local outlets that needed to communicate with a single site. Major corporations used VSAT networks to connect hundreds and thousands of department stores, gasoline filling stations, automobile dealers etc., for such applications as credit card authorization distribution of product information, and employee training. In terms of both cost and response time such systems often outperformed dialup connections over the public network.

So what exactly is CeyCom up to? What are the specific services it intends to offer its clients?

Explains Gamini Gunawardene, executive director, CeyCom Global Communications, ‘the application domains will be limitless. However, in the incipience our attention will

be drawn to providing services like Data Transferring, Online Transaction Processing, Electronic Document Interchanging (EDI); Closed Circuit Television Monitoring (CCTM), Video Conferencing, Electronic Messaging, and the

communication facilities required in Telemedicine. We have already completed building our own earth station at Hokandara, a locality. around 25 kilometers from Colombo. This earth station will act as the main hub which will link our clients with the outside world. Practically, this project is in its gestation period yet, but we will open our services to the Sri Lankan business community very soon.” Perhaps easier to prepare a list of businesses who will not benefit from these facilities, than who will. Apart from the apparent users like banks, financial institutions, retail dealers, insurance companies etc., even the educational institutions and hospitals are among the prospective patrons. In India for in- stance, tele-medicine has gained a wide popularity during the past few years. It has eliminated the necessity of the physical meeting of patient and physician and in extreme cases patient and surgeon. Sometime back I remember reading about a successful remote operation done in this manner, in a computer magazine. At present the surgeon directs a general practitioner to perform the operation. In future, he himself will be able to do it using remote mechanical hands.

Chanuka Wattegama is an electronic engineer and a regular contributor to the business and IT pages of local newspapers. He received the award for the ‘Best Science writer” in the island in 1988.