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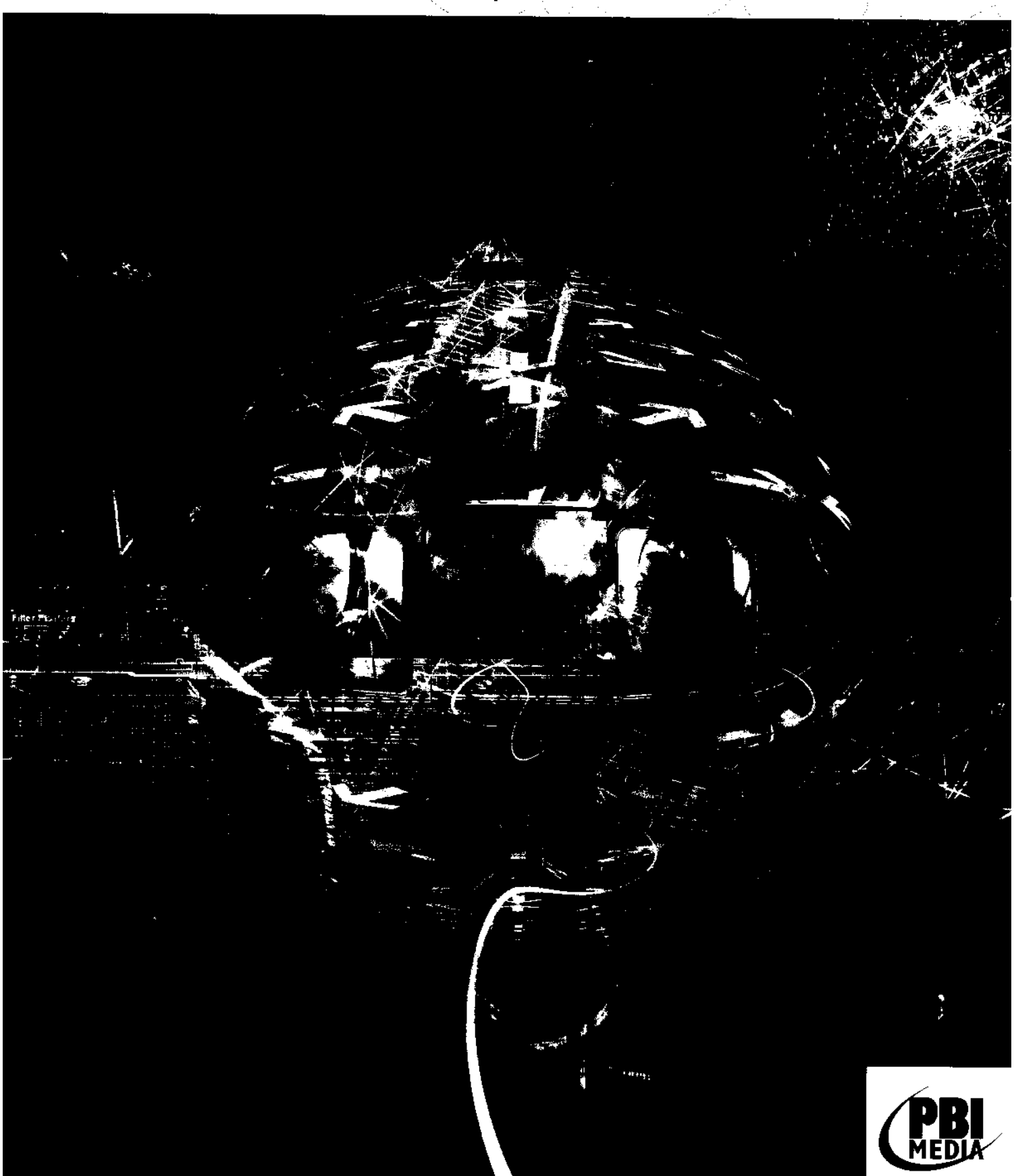
a bi-annual overview for the telecommunications & IT industry



PBI MEDIA

wirelessloop:ruralvs.

By Dan Thomas

Vice President of Marketing for **Telemobile Inc. – Wireless Communication Solutions** based in Los Angeles, California.

Wireless Local Loop (WLL) has received much interest and excitement over the past few years. However, many developing countries have come to the realisation that products designed for WLL applications are not properly suited to address the unique requirements in the rural areas.

As a relatively new term, Wireless Rural Loop (WRL) tries to address the unique wireless rural telephony applications in developing countries where the population distribution and the required teledensity over a specific geographic area does not match the business plan and models as generally laid out by the WLL producing companies.

WRL vs. WLL

WLL Wireless Local Loop has been described by Newton's Telecom Dictionary as "a means of provisioning a local loop facility without wires". The definition goes on to specify capacities up to T1 and data rates as much as 1Gbit. However, it fails to properly address or define the unique requirements of people in rural areas.

WRL Wireless Rural Loop can be thought of as a subset within WLL, specifically addressing "a small number of subscribers over a large geographic area".

The traditional and original WLL concept was more of an answer to fixed cellular phone requirements in cities where the existing wire line infrastructure could not be built out fast enough. However, the projects that have been started and the equipment used to address these requirements were lacking somewhat due to the limited bandwidth for the ever increasing demand for faster and more seamless Internet access.

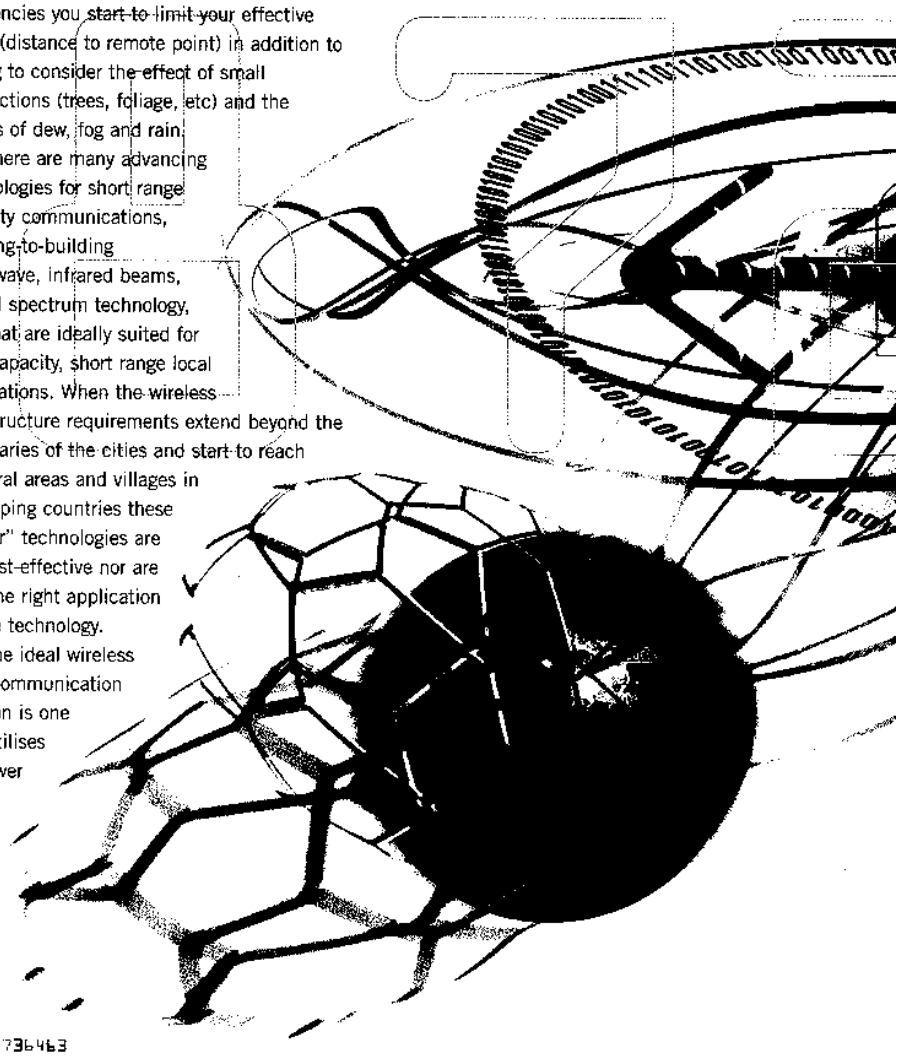
Many WLL equipment providers have continued their product development along these lines and have developed the LMDS Local Multipoint Distribution Systems for higher capacity and higher bandwidth requirements.

The original frequency designations and channel allocations of VHF (136-300MHz) and UHF (300-520MHz) did not provide sufficient bandwidth to extend the higher speed data services. Therefore the new technologies have migrated to higher and higher frequencies including 5GHz, 8GHz, 23GHz, etc.

The higher frequencies do allow for more data to pass between the wireless points. However, as in life there is a series of trade offs in any new development. With the higher frequencies you start to limit your effective range (distance to remote point) in addition to having to consider the effect of small obstructions (trees, foliage, etc) and the effects of dew, fog and rain.

There are many advancing technologies for short range intercity communications, building-to-building microwave, infrared beams, spread spectrum technology, etc, that are ideally suited for high capacity, short range local applications. When the wireless infrastructure requirements extend beyond the boundaries of the cities and start to reach the rural areas and villages in developing countries these "newer" technologies are not cost-effective nor are they the right application for the technology.

The ideal wireless rural communication solution is one that utilises the lower



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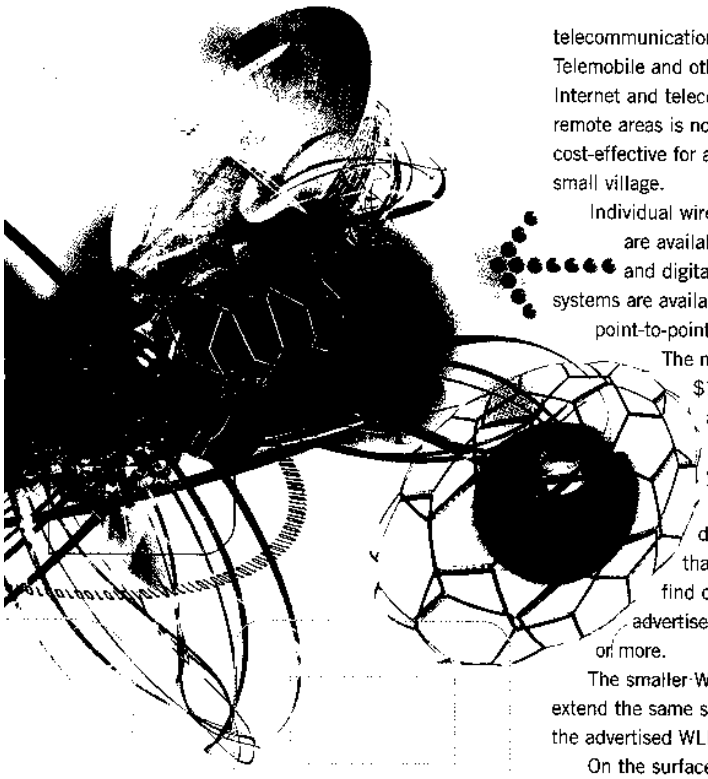

frequency spectrum at moderate radio power levels to extend the signal from its point of origin to the required service location. Again, there are more trade offs here in that the lower frequencies as mentioned above were not originally allocated for higher speed data services.

Many developing countries have hundreds of sustaining villages with dirt floors and neither electricity nor telephone service and while it is an ideal goal to provide "universal service" for telephone and Internet access to all locations the Internet access speed does not need to be DSL or E1 capacity.

When most of us first experienced the Internet, browsing speeds of 9.6Kbps or 14.4Kbps were acceptable and close to the practical limit for personal use. As these limits and speed thresholds were raised to 32Kbps, 56Kbps and now beyond, the online population benefited and started using the Internet more and more. Still with slow downloads and many web pages being so graphically intensive, the Internet was used primarily as a communication device to send and receive e-mail.

With the moderately priced wireless rural telecommunications equipment from Telemobile and other providers, wireless Internet and telecom access into these remote areas is now a reality that is cost-effective for a single remote user of a small village.

Individual wireless Phonelink® systems are available for single line extension and digital multiplexed Phonelink® systems are available for 2, 4 or 8 lines in a point-to-point manner.

The magical per line cost of $1,000 or even $500 is an ambitious goal even for large systems. However, if you try to install a WLL or larger point-to-multipoint distribution system for less than 20 customers you will find costs that can exceed the advertised cost per line by 20 times or more.

The smaller WRL systems can generally extend the same service for only 2-3 times the advertised WLL cost per line of $1,000.

On the surface the WRL cost per line may seem higher than the WLL until you start comparing "apples to apples". Rather than having an undersubscribed WLL system for a thin route wireless rural telephone requirement, selecting the appropriate WRL technology (with its quick deployment and relocation possibilities in addition to the low overall system cost) will benefit many true "rural" customers.

Part of the confusion in the communications industry is due to the convergence of technologies and the combination of different disciplines that have been previously kept separate. We now have computer and software engineers in addition to radio technicians and designers interfacing together with telephone company officials and infrastructure development planners.

Quite often one word or term can have different meanings for each of the separate disciplines.

Even over time customers' requirements have changed although requests and words have stayed the same. For example, in the 1980's the end user asked for a wireless telephone system to make and receive regular voice telephone calls. In the early 1990's the same wireless telephone system was expected to adequately send and receive fax transmissions and now since the late 1990's and early 2000's the same wireless telephone system is expected to provide Internet access to send and receive e-mails in addition to providing fax and voice service.

The industry overall has continued this development and tried to address the latest global requirements for Internet access. The ITU (International Telecommunications Union) based in Geneva, Switzerland, recently announced on World Telecom Day, 17 May 2001, its launch of the Internet Training Centers Initiative for Developing Countries (ITCI-DC). This initiative takes the next step beyond the Community Telecom Centers (CTCs) to provide a central location for telecom and Internet services for the developing countries.

Telemobile Inc. also continues to support the telecom advancement in developing countries and is holding its 10th annual Wireless Rural Telecom Training event June 25-29, 2001 in Los Angeles in conjunction with the USTTI (United States Telecommunications Training Institute).

The "Digital Divide" between the have's and have-not's will constantly be a topic of heated debate and discussion. Developing countries should not be forgotten or left behind. There are many technologies and solutions available today for immediate implementation providing part time, temporary or long term permanent solutions.

With today's choices in equipment, technologies, companies and system design there is a wide variety of options that should be explored to determine the best solution to connect the world's rural citizens in the developing countries to the Internet and the public telephone network.

□ Telemobile has been providing Wireless Rural Loop solutions in the last 17 of the company's 38 year history. The primary customers are phone companies, oil companies, international humanitarian assistance groups and private service providers. Additional details can be found at the company's website **www.telemobile.com** or can be requested by fax +1-310-532-8526.