

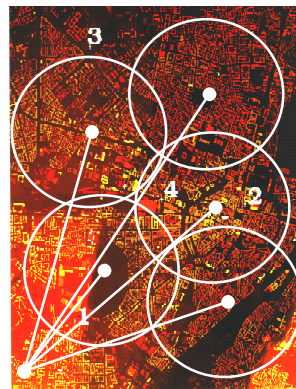


The Brazilian Experience of GVT in BWA for Rural and Remote Areas

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Why BWA is so
important to
GVT ?



Broadband Wireless Access (BWA)

Global Village Telecom – GVT Who we are?

- A mirror company with authorization to offer voice, data and Internet services in Region II.
- Our coverage area which includes 10 States has continental dimensions, various population density and diverse social and economical reality.

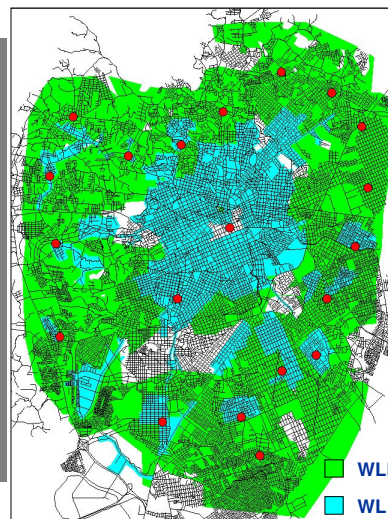


Broadband Wireless Access (BWA)

GVT's Current Network - Access

- GVT has two access technology: Wireless and Wire line (fiber/copper).
- Total metropolitan Rings and Copper Network is about 9.000 Km – the largest local access coverage in Brazil, after the 3 local incumbents
- 30 MHz in 1.9 GHz for WLL
- 199 WLL sites and 842 Street Cabinets
- Approx. 30% of Customers are WLL users

Access



Broadband Wireless Access (BWA)

BWA Market – Reasons to Deploy !

- The large covered areas opening large sales access potential;
- Incremental investment per customer;
- Fast connection of new customers from a base station;
- The easiness of re-deployment of subscriber radio hardware, comparing with the wire line solutions;
- Scalable architecture – can grow with take rate;
- Fewer right of way issues;
- Increase revenues by generating new customers and reducing churn rate due to retention capacity;
- Extraordinary grow in the high speed Internet access requiring the GVT's WLL replacement.



Broadband Wireless Access (BWA)

GVT' Wireless Experiences - Trials

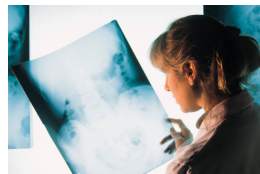
Features	WLL 2 ^o Generation	CDMA	Pre-WiMAX
Backhaul Interfaces	E1 TDM	E1 TDM	Ethernet
Maximum Speed (Kbps/user)	64	144	CPE Interface
Bandwidth (Mbps)	7,8 @ 30MHz	21,6 @ 10MHz	75 @ 21MHz
Working Frequency (GHz)	1.9	1.9	2.4 / 3.5 / 5.8
Avaibility of Voice / Fax / Dial up			
Avaibility of E1s			
Protected against Interference	Extra Filter	Extra Filter	
Non - Light of Sight Performance			
QoS guarantee			
CPE Estimated Cost	1.5 X	X	3.5 X



Broadband Wireless Access (BWA)

BWA Technology – What is new ?

- NLOS (Non Line of Sight). It means that does not need to see the antennas. “It goes up and down mount” (4 to 9 Km);
- Modulation OFDM (Orthogonal Frequency Division Modulation), which allows the simultaneous transmission of multiple signals through a handle or in air with different frequencies. Also, orthogonal separation of these frequencies prevent interferences;
- Support for intelligent antennas: this is one of the most important method to guarantee better spectral efficiency;
- Ability to work with PTP and PMP topology mesh, allowing direct communication between subscribers;
- Quality of Service (QoS) of NLOS isn't affected by buildings, meteorological conditions and vehicles.



Broadband Wireless Access (BWA)

BWA Market – Reasons to Wait !

- Spectrum license required – Auction Model;
- The restricted spectrum of 7MHz (3.5GHz) and 28MHz (10.5 GHz) requires a very complicated RF project (frequency coordination, polarization), increasing significantly the investment per user;
- The PMP technology requires a high upfront investment increasing the risk of businesses in Greenfield areas;
- No Volumes and Standards
 - Market fragmented with proprietary technologies
 - Volumes did not reach economies of scale for cost reduction
- Current CPE cost (US\$1k) reducing the businesses attractiveness.





Thank you !!!

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