

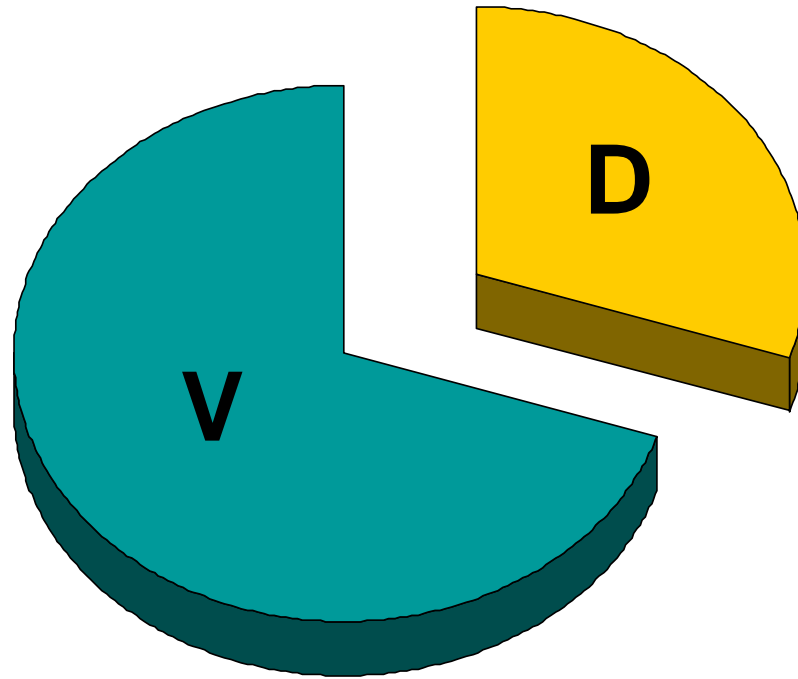


Maximizing Current Investments with CDMA2000

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Talking to the future

Hypothetical Investment Opportunity



- Option 1: Incremental Investments Quadruples Efficiency of V
- Option 2: Incremental Investments Improves Performance of D
- Option 3: Major Investment Doubles Efficiency of V and Substantially Improves Performance of D

CDMA2000 1X Enhancements

	Available today	Implementation Enhancements	Standards Development
New Vocoder EVRC-B	+		
More Antennas Mobile Rx Diversity	+		
Less Interference Interference Cancellation	+	+	
Additional Walsh Codes Quasi Orthogonal Functions	+		
New Radio Configuration Less transmit power and interference			+
	+60%	+60%	+60%

■ Fully Backward Compatible

1X Enhancements Available Today: 60% Increase

- EVRC-B vocoder enables lower data rates with same voice quality as EVRC



- Rx Diversity and QLIC increase received SINR resulting in less FL power per user



- To capitalize on the enhanced capacity*, additional Walsh Codes are needed

- QOF however contributes to increasing FL interference



These features are already available in current chipsets

Further Receiver Enhancements: ~90 Calls/Sector

- Advanced QLIC (A-QLIC) enables cancellation of interference introduced due to QOF and neighbor set



- RLIC reduces intra-cell interference and rise-over-thermal (RoT) enabling more users per sector



These enhancements do not impact the standard

New Radio Configuration: Even Higher Capacity

- Smart Blanking of 1/8th rate frames reduces FL and RL Tx power used for background noise



- Reducing power control bit rate to 400MHz significantly reduces overhead power per user
 - Power control commands sent at power of full-rate frames
 - Soft Handoff users consume additional power for PC commands



- Early decode of frames allows system to further reduce transmit power and other-cell interference



These enhancements are part of a new standard - cdma2000 1x Rev. E

1X Enhancement Benefits

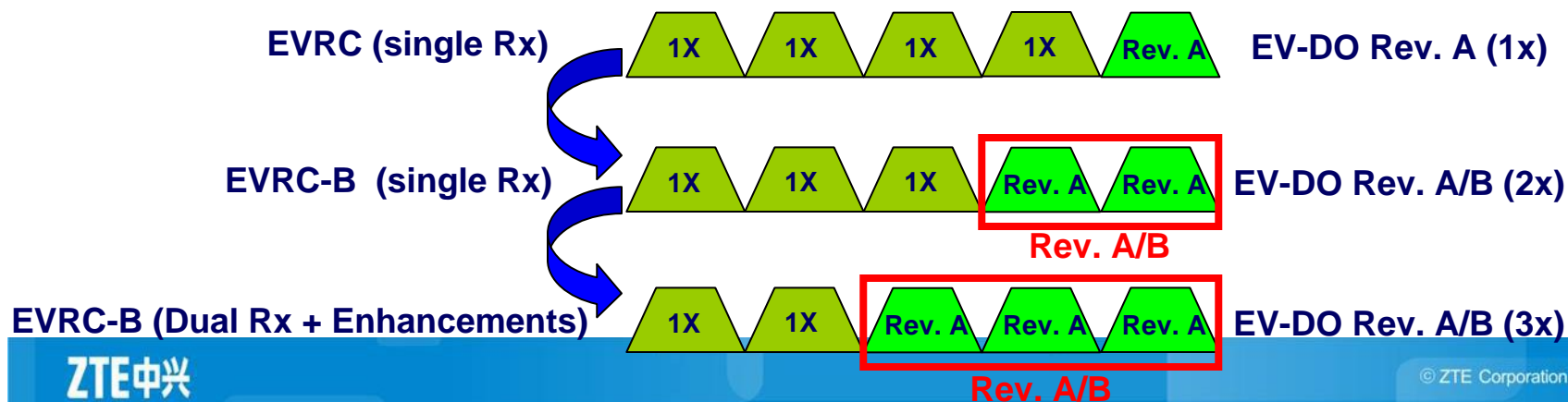
Lower Cost per Call
Greater spectral efficiency

More Minutes of Usage
Enables unlimited voice offerings

More Efficient Use of Spectrum
Important for spectrum constrained markets

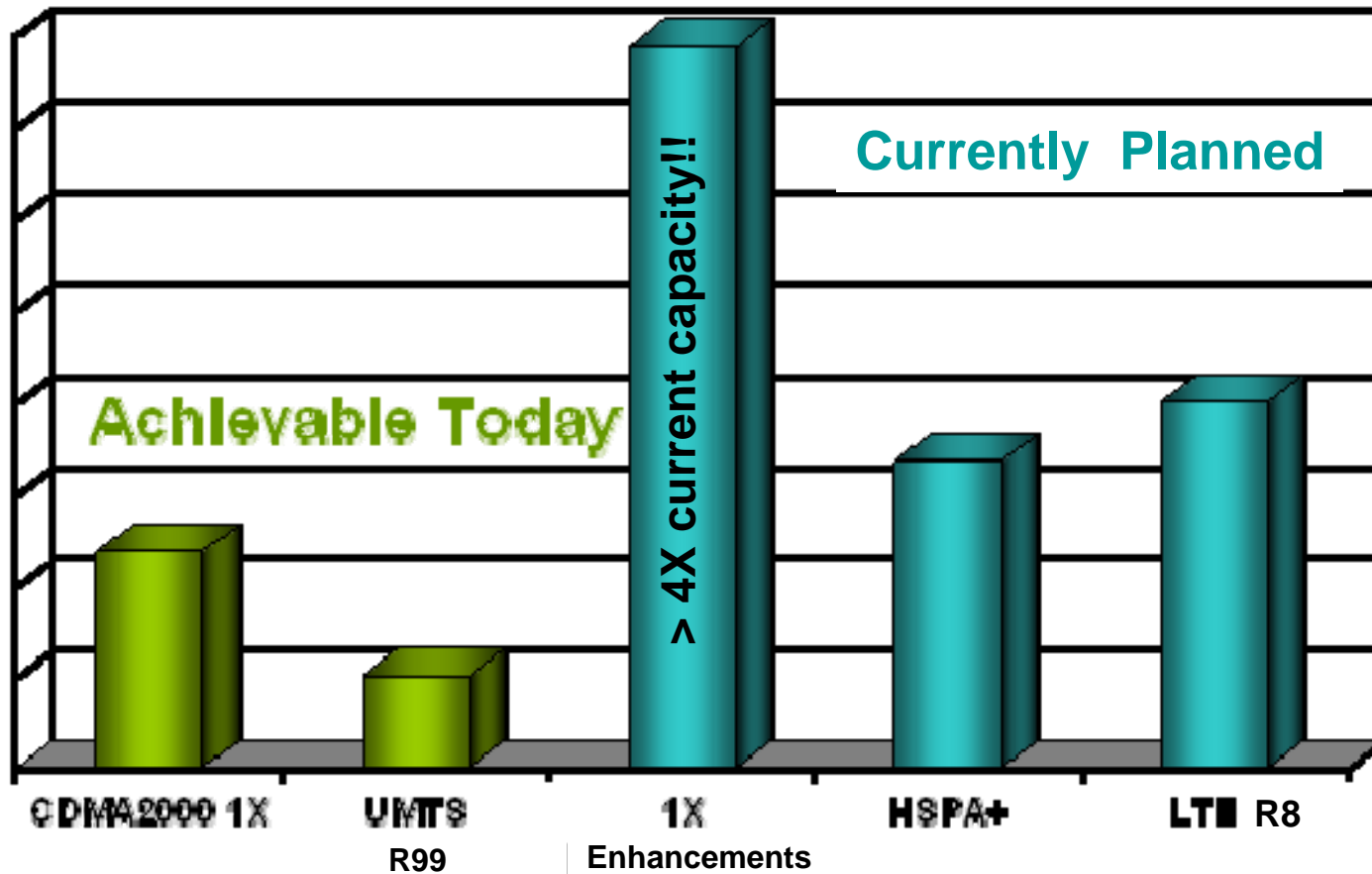
Enables Opportunity to Increase Revenue
Frees up channels that can be used for EV-DO services

Evolutionary Steps to Greater Broadband Revenue



Voice Capacity Comparison

Number of simultaneous voice calls per sector



1X Enhancements increase CDMA's already excellent voice capacity

1. Single antenna 1X devices with EVRC vocoder. Capacity shown has been validated in the field.
2. UMTS (WCDMA R99), AMR 12.2 vocoder.
3. 1X Enhanced devices with EVRC-B vocoder, Rx Diversity, QLIC, RL IC, QoF, FL and RL early termination, reduced power control bit rate, efficient closed loop power control, and smart blanking of 1/8 rate frames. Results based on simulation and estimated analysis.
4. Circuit-switched voice over HSPA+, AMR 12.2 vocoder, Rx diversity, DTX, UL IC, E-FDPCH, HS-SCCH-less, F-DPCH. Result based on simulations.
5. LTE - Rel. 8, AMR 12.2 vocoder, Rx diversity, Based on NGMN simulations assumptions and Release 8 basic setup

Voice is still the Killer App



Does Not Have to Be Sexy to Make Good Money



Do Not Overlook Current Investments!



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Thanks!

Talking to the future