

Media Processing for **IP** Communications



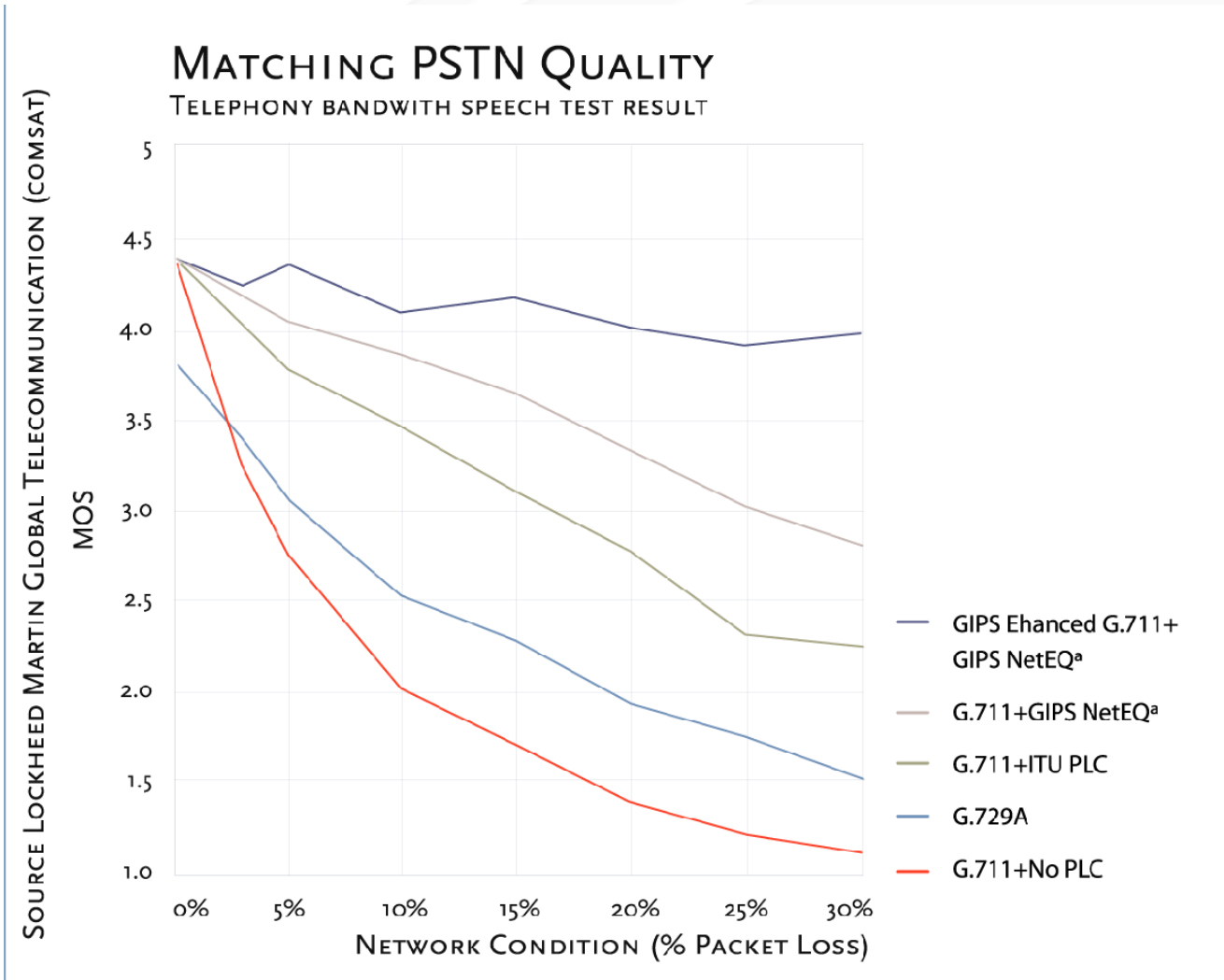
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GLOBAL IP SOLUTIONS

See the Difference. Hear the Difference.

VoIP Quality



Mobile VoIP & Technology Trends

- **Greater accessibility and affordability**
 - Network operators are introducing new pricing models
 - Handset prices declining
- **Increased smart phone adoption**
 - Mobile phone increasingly perceived as a computer
 - MIDs and iPad like devices add capabilities
 - Users expect to access the same applications available across multiple platforms
- **Migration from legacy cellular to next-gen networks**
 - Allows for faster data connection
- **Development of 3rd party applications**



Technology & Business Drivers for Mobile VoIP

- **Technology Drivers**

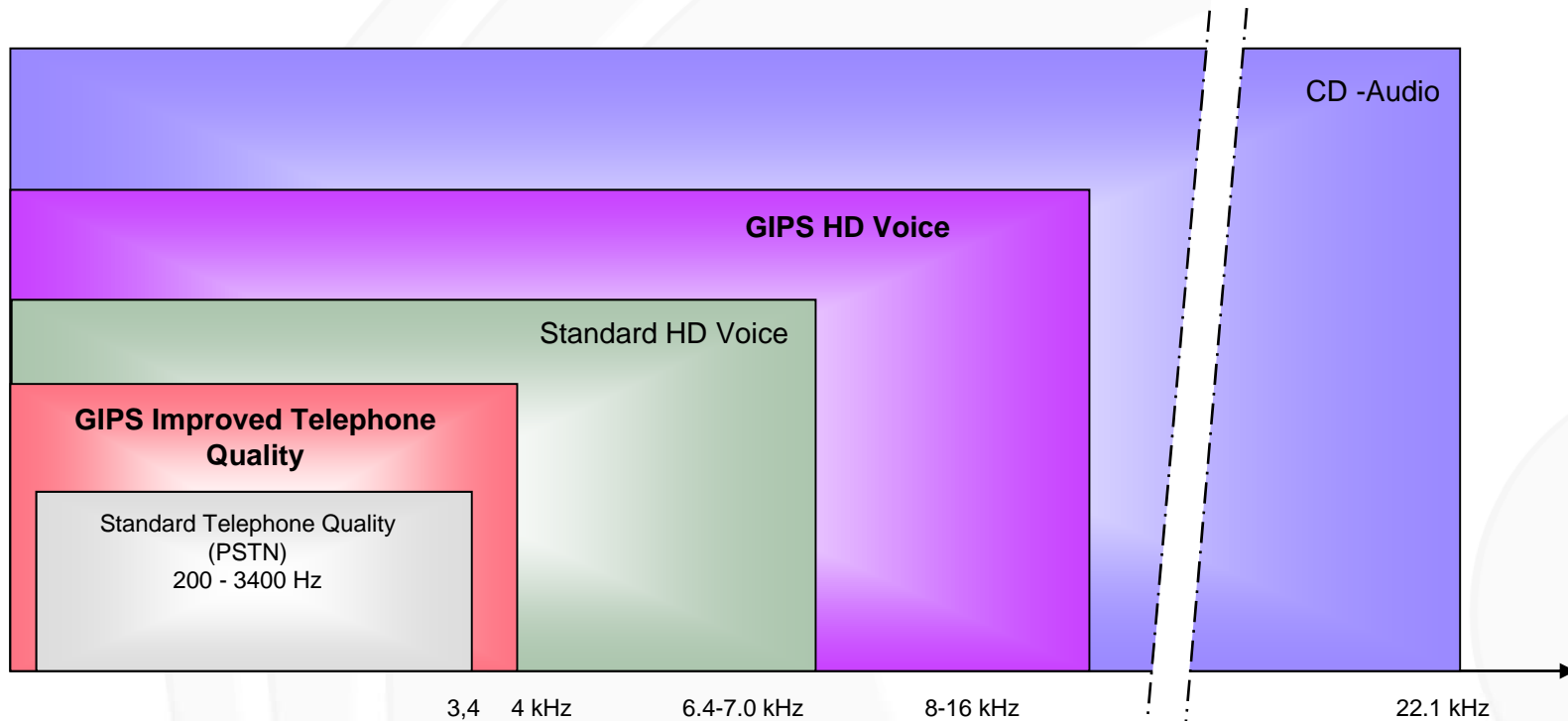
- Communication is rapidly migrating to IP networks
- Introduction of 4G/LTE on mobile networks
- Networks and devices support HD Voice
- High quality, two-way video becoming pervasive
- HD Video requires HD Voice

- **Business/Cultural Drivers**

- Unified Communications
- It is becoming easier to be green
- Globalization

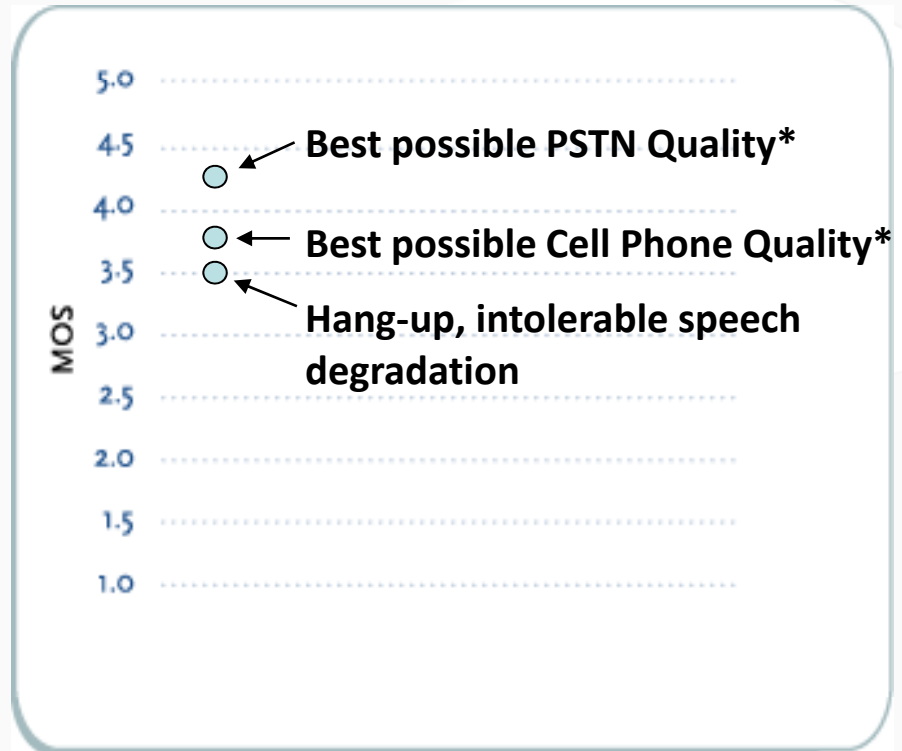


What's HD Voice?



Why HD Voice is necessary for Mobile VoIP?

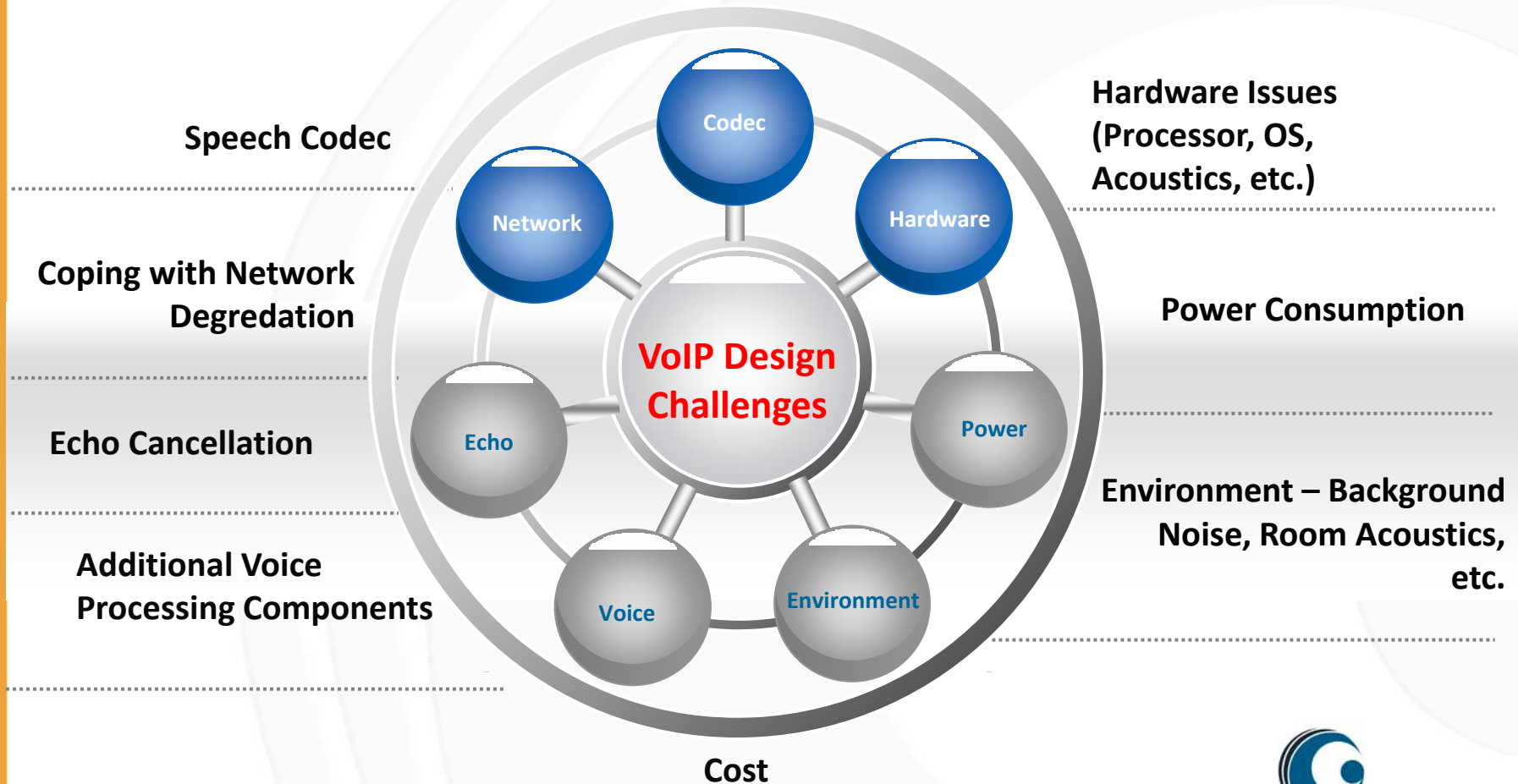
- Where audio bandwidth is currently most constrained
- Where intelligibility is most difficult
- Where environmental factors (background noise, echo) further impair quality



*Best quality means clean, or perfect conditions

Mobile telephony is the most in need of a quality upgrade

HD Voice Design Considerations



Two-Way Video Will Soon Be Everywhere

– HD Voice is required

Collaboration Applications



Desktop Conferencing



Video Chat Applications



Mobile Devices



Tablets: Changing the Definition of Mobile Devices

- **Fewer hardware limitations**
 - Larger screen displays more participants
 - Greater CPU
- **Adoption in verticals seeking video conferencing**
 - Telemedicine will be \$3.6 billion annual market in next 5 years (Pike and Fischer)
- **Major smartphone players entering market**
 - Apple
 - Google
 - Microsoft



Mobile Video Challenges

Many Technical Limitations Have Been Overcome:

- **Software to handle poor networks**
 - Can manage delay, packet loss, jitter
- **H.264 SVC delivers much better conferencing experience**
 - Layered approach tailors video for each participant and device



The Question Remains:

- ***Do people want it?***
 - Screen size limits number of visible participants
 - Non-mobile users get lower resolution from mobile users
 - Social norms restrict usage



Mobile Quality Issues

- **Network Deficiencies**
 - Low signal strength
 - Wi-Fi/3G bottlenecks
 - Additional delay, jitter and packet loss in IP network
- **Device Limitations**
 - Limited processing power and battery life
 - OS limiting access to real-time VoIP
- **Environmental disturbances**
 - Acoustic Echo
 - Background noise



Case Study

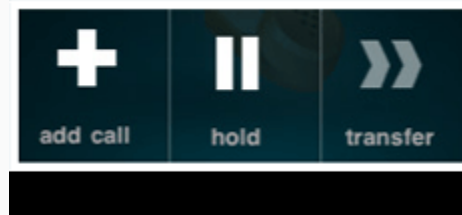
Toktumi– Line2



- **Toktumi/Line2**
 - Be productive anywhere
 - Go mobile
 - Save Money



Offloads to the Wi-Fi network to make cost savings for enterprise



Line2 combines the best elements of Skype and Google Voice and adds business grade features, reliability



Dual mode cell phones required



Question & Answers

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