



Adding Speech or Audio to the Networked Home

More and more players in the fast-evolving and highly competitive world of consumer electronics are seeing the advantages of adding fun and useful convenience features like speech and audio to differentiate their products from the pack. As speech and audio capabilities become integrated into every type of consumer product, from toys and interactive games to PDAs and home security systems, interacting with these everyday electronic products is becoming easier and more intuitive through natural language conversational interfaces.

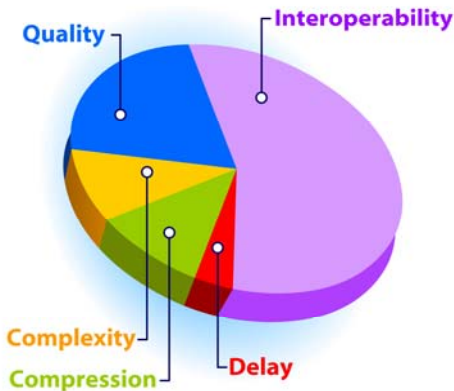
A key enabler of this dramatic enhancement in human-device interaction is provided by speech and audio coding/ decoding (codec) technology. Codecs provide essential functions for digital speech and music recording and reproduction, and they can provide advanced features that truly move you ahead of your competitors. But every application has unique requirements and challenges, so working with experts is important for making the right choices in balancing five key codec attributes:

- Audio quality
- Compression rate
- Delay
- Interoperability
- Complexity

Optimizing these qualities usually involves trading off their relative performance due to interdependencies. So, in most cases, you need to focus on optimizing one or several attributes based on your application's main requirements. With our vast experience in codec technology development and speech and audio processing, VoiceAge welcomes the opportunity to work with you on your innovative products to help you deliver best-in-class speech and audio to delight your customers.

Note that the pie charts represent the relative importance of the five attributes for each particular case.

For Security Systems: Interoperability

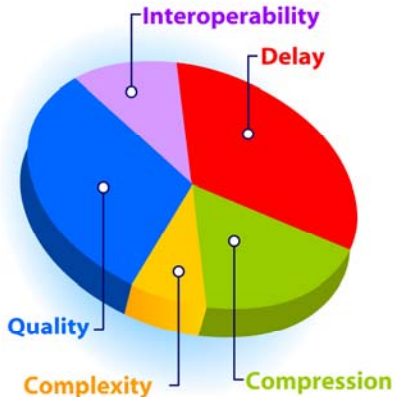


A sense of security is fundamental to homeowners' peace of mind, and now security systems are moving beyond basic protection and offering convenient, centralized management of all household systems like lighting and temperature control. The networked house can be monitored and controlled locally or remotely, and no interface is more natural and convenient to use than speech.

Interoperability and compatibility with existing systems can be important features in products like enhanced security systems, where global connectivity facilitates monitoring and control from a wide array of devices around the world. For example, when you choose AMR speech coding, you can communicate with your networked home from over 2 billion devices already on the market – with another 800 million being added each year. In many cases, if you don't build in interoperability now, you'll have to do it in the future.

VoiceAge Added-Value Features: VoiceAge codecs are in 15 international telecommunication standards, providing interoperability, low delay, high quality and built-in robustness in networks throughout the world

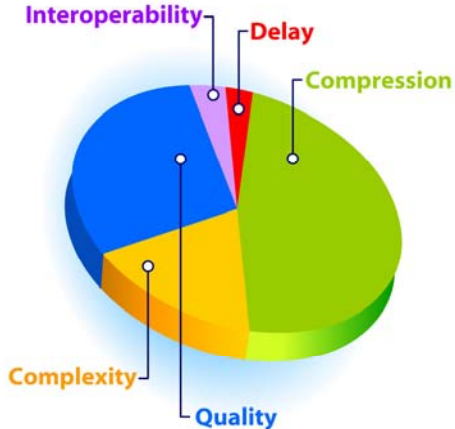
For Videoconferencing: Enhanced Audio



Consumer electronic applications are not usually concerned with delay. However, videoconferencing is a case where the key qualities of low delay, high compression and high audio quality are most important for user satisfaction. It's well known that videoconferencers can cope with choppy video and frozen video frames, but the audio channel must be clear and its response "immediate" – with minimum delays – or communication loses its naturalness and becomes extremely frustrating, annoying and ineffective.

VoiceAge Added-Value Features: Wideband speech codecs provide an enhanced sense of presence for applications like videoconferencing, and stereo sound improves the feeling of presence and adds directionality. VoiceAge codecs include parametric stereo and are moving toward full surround-sound extensions to enhance the audio experience.

For Streaming: Quality & High Compression



The Internet brings the world to the networked home, and growing numbers of listeners enjoy the specialty programming available over Internet radio. Both consumers and providers of audio content want rich, reliable sound for streaming applications, so VoiceAge recommends a high-quality and efficient codec for these types of applications.

When higher bit rates are used for streaming audio, network congestion is likely to force interruption of the media stream. A bandwidth-efficient, low bit rate, high-quality codec is less likely to have interruptions of this type, thereby reliably providing the great sound quality that customers demand. A low bit rate codec also benefits the content provider by allowing it to serve more customers over a given amount of available bandwidth to maximize revenues over its service delivery infrastructure.

VoiceAge Added-Value Features: VoiceAge offers multiple strategies for increasing robustness, including, for example, **interleaving**. These techniques can be optimized based on the system and the codec.

About VoiceAge

VoiceAge Corporation is the forerunner in the development and dissemination of speech and audio compression technologies and solutions at the convergence of wireless, 2.5G, 3G, Wi-Fi and Internet protocols. Our active participation in the development of 15 international telecommunication standards and our extensive experience as developers of codec implementations for diverse platforms and environments have nurtured world-class expertise that we apply to each new project. The VoiceAge product portfolio includes both off-the-shelf implementations and custom codec solutions.

VoiceAge is defining the state of the art in low bit rate, high quality speech and audio coding technologies. Our research and development teams have implemented numerous custom designs, for example, low-complexity codecs, Windows RTC adaptor, RTP monitoring, and conference talker-selector. Our codecs offer a wide range of bit rates as well as value-added features including variable playback, pitch shifting, noise reduction and – soon – morphing.

VoiceAge will work with you to respond to your specific requirements for quality, performance, and complexity. Whatever your needs in speech and audio coding solutions, whatever constraints your product has, VoiceAge expertise in development and implementations will help you deliver quality, efficiency and dependability at a competitive price.

VoiceAge and ACELP are registered trademarks of VoiceAge Corporation in Canada and/or other countries. All other trademarks are the property of their respective owners.



VoiceAge Corporation 750 Lucerne Road, Suite 250 Montreal (Quebec) H3R 2H6 Canada
Tel: +1.514.737.4940 Fax: +1.514.908.2037 <http://www.voiceage.com> email: sales@voiceage.com
MAN-2 Revision 1 01/2006