



National Aeronautics and
Space Administration



TECHNOLOGY SOLUTION

Communications

Ad Hoc Selection for Voice Over Internet Streams

Distributing audio streams in the form of encrypted data packets

NASA seeks interested parties to license the Ad Hoc Selection for Voice Over Internet (VoIP) Streams technology developed by engineers at Johnson Space Center. This technology features the ability to select specific audio streams from one or more sources and then convert them into a multicast to the users audio player. This selection ability benefits the user by allowing a wide range of information and/or data to be monitored from a remote location using existing network technologies in near real time. For example, a user with a personal computer equipped with special purpose, audio player software first needs to launch the program and provide an identification and a password. Once both access control checks are completed, the audio software graphic is displayed, including audio stream and volume control buttons. The user can now select up to 21 streams to monitor simultaneously.

This NASA Technology is available for your company to license and develop into a commercial product. NASA does not manufacture products for commercial sale.

BENEFITS

- Flexible and compatible with industry standards: uses standard VoIP technologies
- Private: features real-time encrypting of the multicast audio streams
- High capacity: integrates multiple audio streams into a real-time, single source
- Individuality: receive audio at any location and individually control volume
- High quality and efficient: high-fidelity system with excellent reproduction of voice



THE TECHNOLOGY

This technology was initially developed to broadcast multiple audio streams through the NASA MCC VoIP system. The technology has provided significant benefits to NASA by enhancing situational awareness among flight-support personnel and management who are located outside of the Mission Control Center (MCC), and it has excellent potential to provide similar benefits in commercial applications. The innovation allows multiple users to monitor the activities taking place at various locations by integrating multiple audio streams into a single source in real time. The technology offers excellent sound reproduction, and adds users automatically for networks supporting multicast traffic. It does not require dedicated connections, and the total data-processing load on the distribution system is relatively minimal, allowing for wide and secure distribution at low cost.

The audio distribution process begins with feeding the audio signals to analog-to-digital converters. These converters create digital streams of MP3 VoIP audio packets. The resulting digital streams are sent through an audio Intranet, using a user datagram protocol (UDP), to a server that converts them to encrypted multicast data packets. These packets then are routed throughout the network to provide access to one or more audio streams concurrently on personal computers of authorized users.



This flexible system is applicable to a wide variety of systems, including office communications and telemedicine.

APPLICATIONS

The technology has several potential applications:

- Audio multicasting and monitoring
- Air-traffic training applications,
- EMS communications and telemedicine
- Stock exchange and other information and data sharing

PUBLICATIONS

Patent No: 7,415,005; 8,767,714

technology.nasa.gov

More Information

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Agency Licensing Concierge

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NASA's Technology Transfer Program pursues the widest possible applications of agency technology to benefit US citizens. Through partnerships and licensing agreements with industry, the program ensures that NASA's investments in pioneering research find secondary uses that benefit the economy, create jobs, and improve quality of life.

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