

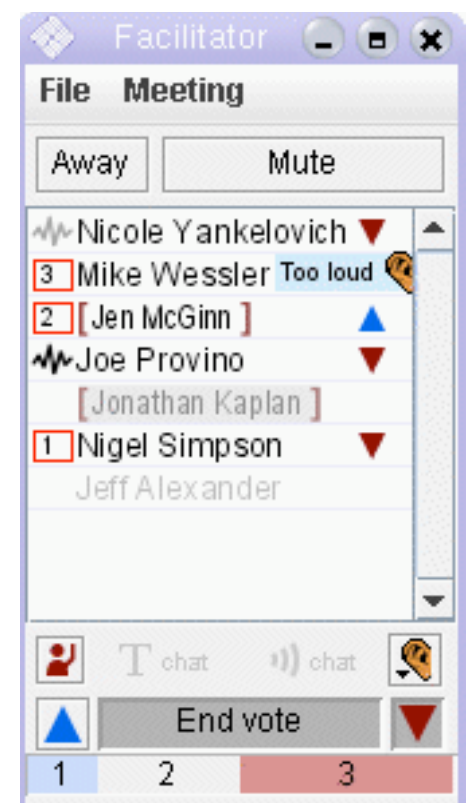
Sun Labs Voice Bridge

Applications

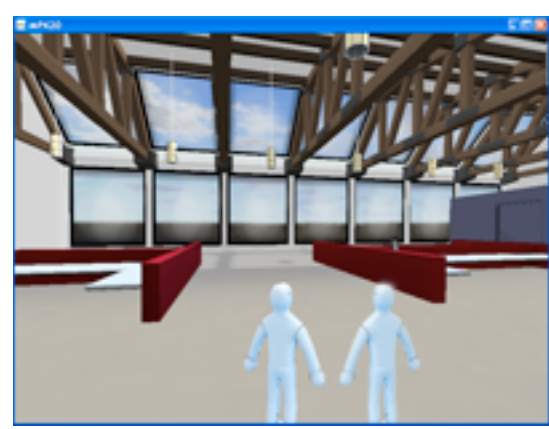
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Enterprise Application

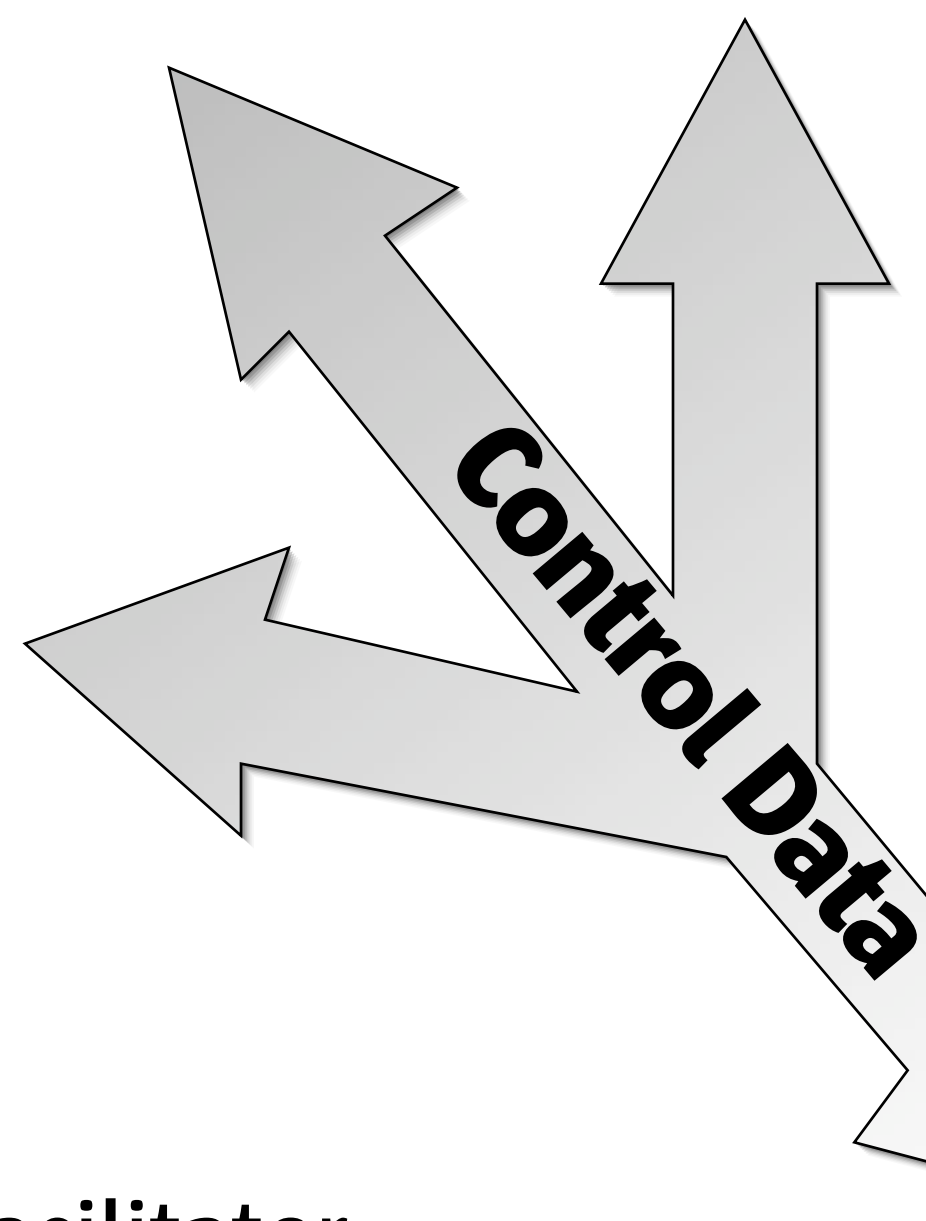


Sun™ Labs Meeting Suite Facilitator

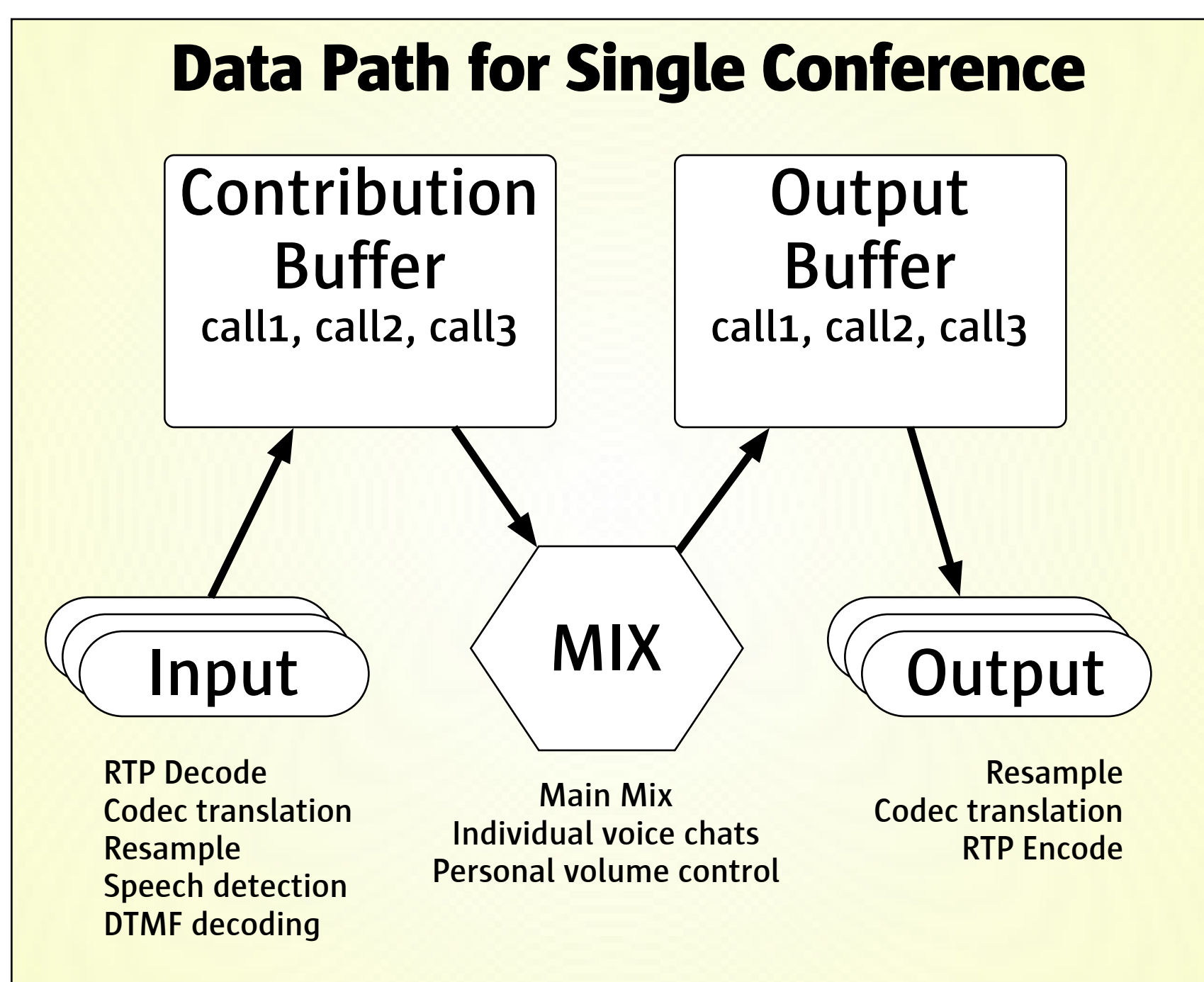


High-fidelity audio in 3D environment

Voice Bridge: Software that handles audio communication and mixing for tasks such as conference calls, voice chat, speech detection, and communication within 3D virtual environments. The Voice Bridge is written in 100% Java and runs on multiple computer platforms.



Voice Bridge



Cool Features

CD-quality audio:

The phone system uses only 8,000 samples per/second, but we support up to 44,100.

Stereo:

Hear *where* people are and feel like you are in the same space.

Private mixes:

Adjust the volume of anyone else in the conference.

Side conversations:

Hold multiple private side-conversations with option to hear main conversation in the background.

Audio treatments:

Play CD-quality music into your conference.

Overcoming Challenges

Real-time mixing:

For each conference, the mixer must generate one packet of data for each call every 20ms. We use sleeping, busy waiting, and accounting for over/under-sleeps to average 20ms.

Efficient Threading:

Each conference uses one thread to send and one thread to receive voice data regardless of the number of calls in the conference. We use asynchronous I/O from Java NIO to manage all sockets from a single thread.

Garbage collection:

GC pauses must not interfere with sending packets every 20ms. We use a small young generation and concurrently collect the old generation to limit pause times.

