



1990 Worldwide Developers Conference



**Integrating Sound into
Your Applications**

Eileen Hart

Today's Mission Critical

- Wake Up
- Warm Up

Then,

- Listen Up

Today's Panelists

- Neil Cormia - System Software
- Kip Olson - System Software
- Michael Arent - Human Interface Design
- Third Party Developers
 - Articulate Systems
 - Farallon
 - SuperMac Technology



The power to be your best



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Neil Cormia

System Software Engineering
Software Engineer



Integrating Sound into Your Applications

Taking Advantage of
the Sound Mgr.

What You're Going to Hear

- Extensions to sound output
 - Features
 - Considerations
- Sound input—what it is and how it works
 - Features
 - Key sound input calls
 - Designing your own input driver
 - Considerations

Sound Manager Overview

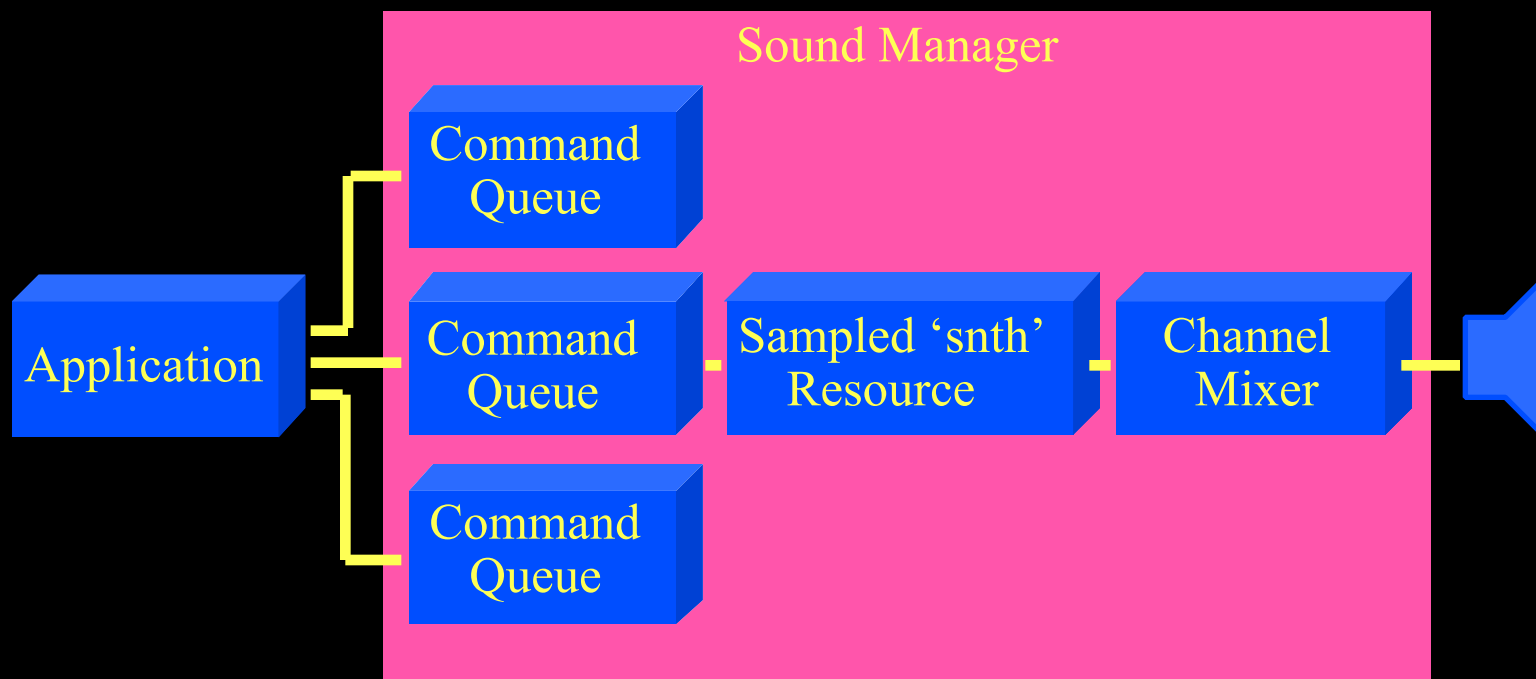
- Collection of routines that allow you to produce sounds without extensive knowledge of sound
- Ensures compatibility across Macintosh product family

Sound Output

Features

- Multichannel sampled sound
- Play from disk
- Enhanced status routines
- Stereo capability
- Compression and decompression
- Bug Fixes—too numerous to mention

Multiple Channel Output



Sound Output

Considerations

- Multichannel and play from disk only available on Macintosh SE/30s and above
- Faster CPUs can do more with sound manager
- 100% compatibility with existing, well behaved applications
- Apps that use the Sound Driver &/or depend upon emulation still work

Sound Input

Features

- Fully device independent
- Supports:
 - Simultaneous recording from multiple devices
 - Recording to disk
 - Multiple sample rates and sizes
 - Compression

Sound Input

Considerations

- General purpose design required tradeoffs
- High level calls geared toward annotation and e'mail uses
- Low level calls are more complex but provide more flexibility

Sound Input

Considerations

- Synchronous input hardware can't exploit all features
- Can't record directly to floppy

Low Level Sound Input Calls

- SPBOpenDevice
- SPBCloseDevice
- SPBRecord
- SPBRecordToDisk
- SPBPauseRecording

Low Level Sound Input Calls (*cont.*)

- SPBResumeRecording
- SPBStopRecording
- SPBGetRecordingStatus
- SPBGetDeviceInfo
- SPBSetDeviceInfo
- SPBGetIndexedDevice

High Level Sound Input Calls

- SndRecord
- SndRecordToDisk

Sound CDEV

- Sound input drivers user selectable here
- System beeps can be added and deleted

Device Level Sound Input Calls

- SPBSignInDevice
- SPBSignOutDevice

Designing Your Own Input Driver

- Sound input drivers are device drivers
- Status and Control routines connect your driver to the sound input manager

Things to Keep in Mind

- Sound is a real time process
- Don't forget about GIGO
- Work with, not around the sound manager



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