

MoMedia Product Brief

64+ Polyphony Software MIDI Sound Synthesizer

Revision 1.4

September 2004

Description

MoMedia is a highly innovative Polyphonic Sound Synthesizer that significantly reduces System Cost and Power Consumption for high polyphony and continuous sound generation in mobile phones and gaming devices.

The Silansys MoMedia Polyphonic Sound Synthesizer requires only $\frac{1}{3}$ of the MIPS and $\frac{1}{2}$ of the RAM for 64+ polyphony applications while offering superior ringtone, sound effects and audio quality.

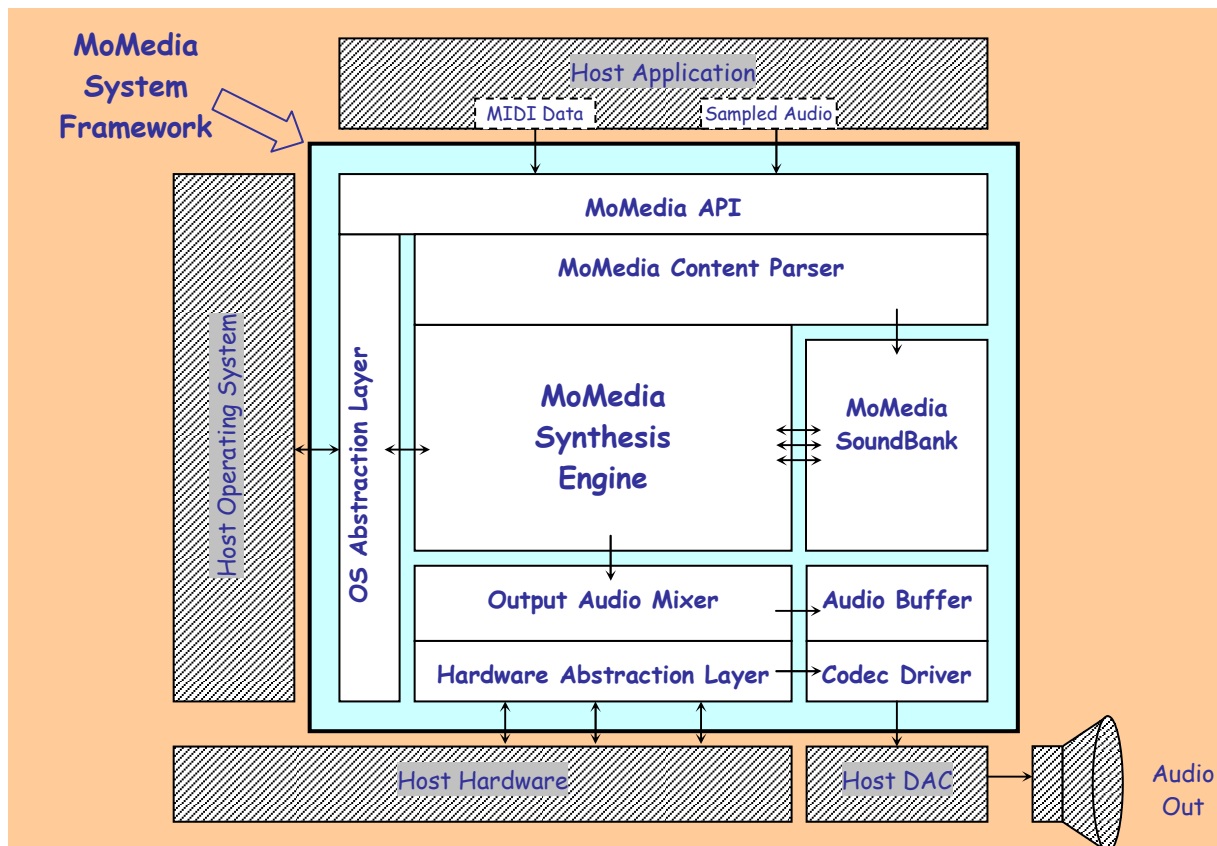
The MoMedia Synthesis Engine is based on innovative proprietary technology that overcomes the performance and power issues associated with incumbent FM and wavetable sound synthesis at high levels of polyphony. This novel technology delivers a breakthrough in cost and performance advantages. The MoMedia System Framework integrates the standard system interfaces with the MoMedia Synthesis Engine to ease embedded system deployment.

MoMedia Highlights

- ⇒ 20MIPS*, 32kB RAM for 64 Polyphony MIDI
- ⇒ 64[†]-Note MIDI Polyphony
- ⇒ 3GPP TS 26.234 v6.0.0 compliant
- ⇒ Support of GM MIDI Type 0 & 1
- ⇒ Supports SP-MIDI & Device Profiles v1.0a
- ⇒ Supports mobile-DLS/XMF Spec. v1.0
- ⇒ Multi-channel sample-rate conversion
- ⇒ 8, 11, 16 and 22kHz mono/stereo sampling rates
- ⇒ PCM/ADPCM/MIDI output mixing
- ⇒ PCM/ADPCM .au and .wav file playback
- ⇒ MIDP v2.0 & MMAPI Profile Support
- ⇒ CLDC v1.1 Device Configuration
- ⇒ Hardware & System Abstraction for Integration
- ⇒ ARM9, SH3-DSP & proprietary platforms
- ⇒ Portable Code to other RISC, DSP architectures

Applications

- ⇒ Advanced Polyphony Mobile Handsets
- ⇒ Resource constrained Mobile Internet Devices
- ⇒ Digital Media Players
- ⇒ Gaming and Entertainment Platforms



* Figures based on ARM926EJ-S RealView™ Tool Suite

† Higher & Lower Polyphony builds available on request

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MoMedia Features

- ⇒ **Embedded Synthesis Engine**
 - Optimized for MIPS & RAM
 - Approx. 0.3MHz per polyphonic voice
 - High quality sound
 - Abstraction Layers to external interfaces
 - Agile interfaces match device constraints
 - Sound Effects & Gaming extensions
 - Channel Equalization
 - Stereo Implementation
- ⇒ **Music Articulation**
 - Note On/Off, Program Change
 - Pitch & Modulation Wheel
 - Pitch Bend Sensitivity
 - Channel Pressure
 - Balance & Pan Position
 - Master Volume & Expression
 - Hold, Sustain & Damper Pedal
 - Data Entry MSB, RPN LSB/MSB
 - Universal SysEx, Channel Mode Messages
- ⇒ **Format Support**
 - .mid (GM MIDI Type0/1, SP-MIDI v1.0a)
 - .dls/.xmf (mobile-DLS/XMF v1.0)
 - .wav (PCM, A-law/ μ -law, IMA ADPCM)
 - .au (8/16/32-bit PCM, A-law/ μ -law)
 - Optional Proprietary compressed format
- ⇒ **SoundBank Features**
 - Full 3GPP General MIDI Sound Set
 - 3GPP SP-MIDI Device 5-24 Note Profile
 - Perceptually Encoded for Optimal Quality
 - Digitally Recorded Studio Samples
 - Standard 8/11/16/22kHz sample rates
- ⇒ **API Profile Support**
 - MMAPI (JSR-135) Profile
 - MIDP2.0 (JSR-118) Profile
 - CLDC1.1 (JSR-139) Device Configuration
 - Customisable MoMedia API Extensions
- ⇒ **Output Mixer**
 - Multi-channel mono/stereo playback
 - Device specific sample-rate conversion
 - Real-time, low latency output
 - Automatic file looping
 - Streaming audio

Deliverables

Silansys delivers the whole product surrounding the MoMedia Synthesizer Engine. In addition to the MoMedia Synthesis Engine and MoMedia System Framework, full test and verification suites are supplied, along with extensive documentation and customer training.

- ⇒ **Technology**
 - MoMedia Synthesis Engine
 - Standard 64* Polyphony Build
 - MoMedia System Framework
 - RISC/DSP Abstraction Interface
 - Codec Interface & Drivers
 - Static File and Streaming Format Parsers
 - Device Configuration & API Profiles
 - Multi-Channel Sound Mixer
 - Standard 3GPP SoundBank Cuts
 - Test Framework & Sample Test Suites
 - Build Environment for Windows PC Host
 - Multiple Sound Source Plug-ins
- ⇒ **Documentation**
 - System Architecture Specification
 - System Interface Document
 - Module Design Specifications
 - Hardware Abstraction Layer Design
 - MoMedia API Description
 - Release & Integration Notes
- ⇒ **IP Technology Training**
 - Firmware Design training
 - Test and Verification recommendations
 - Presentations and Documentation

Additional Offerings

A variety of Design Services are provided to support customers integrating MoMedia into their products. These include:

- ⇒ Processor & OS porting services
- ⇒ Customisable SoundBank Cuts
- ⇒ Addition of custom/proprietary sound effects
- ⇒ System and Code Modifications
- ⇒ Additional customer proprietary requests

* Higher & Lower Polyphony builds available on request