

MPEG-4 ALS components

Developer Overview

Contact

Noboru Harada
+81 46 240 3676
harada.noboru@lab.ntt.co.jp

Moriya Research Laboratory
NTT Communication Science Laboratories
3-1 Morinosato-Wakamiya, Atsugi, Kanagawa,
243-0198, JAPAN

NTT Communication Science Laboratories

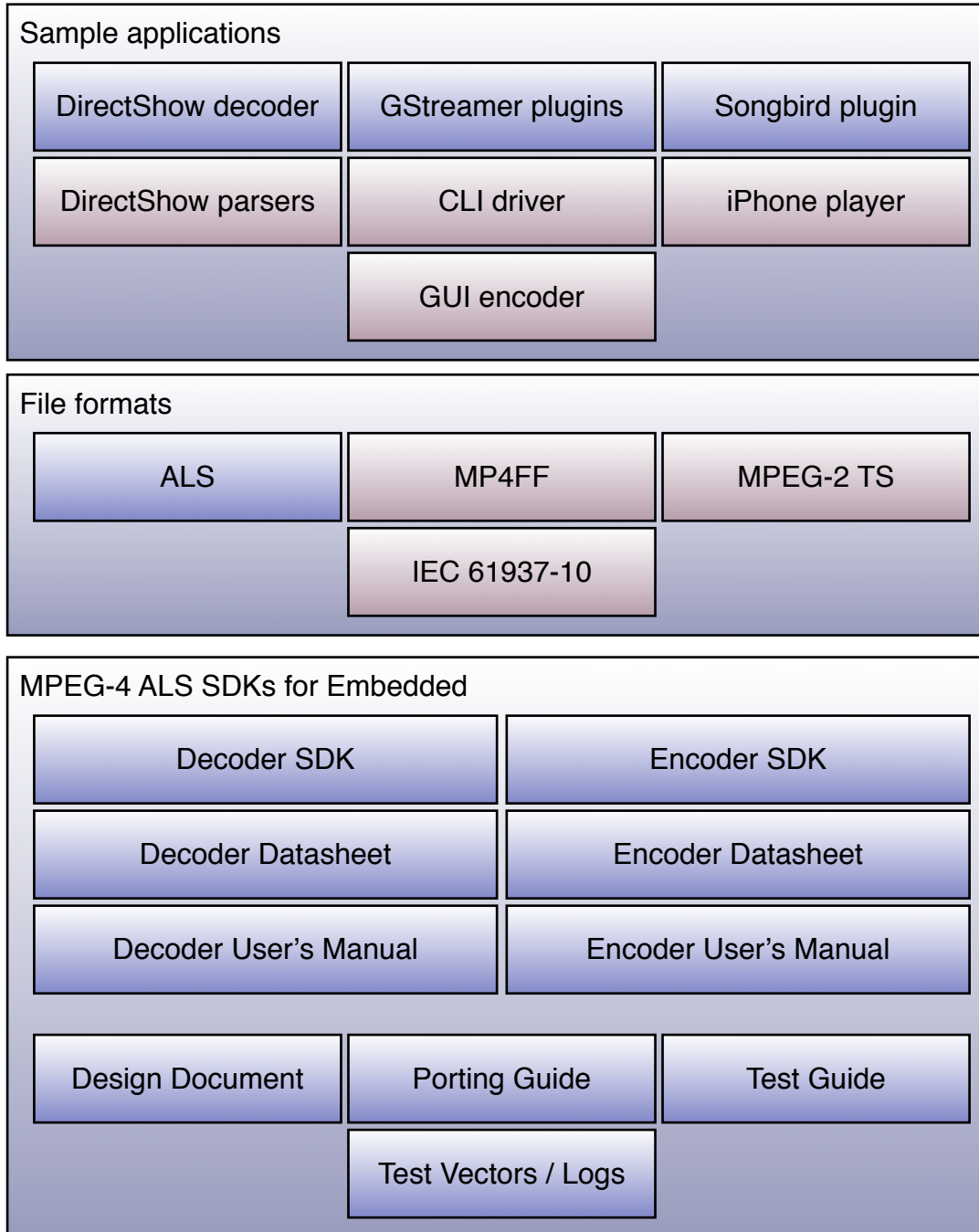
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Applications Overview

Application	Target	Profile	Encoder	Decoder	Additional tools
Portable Player (Embedded)	ARM, SuperH, TI, etc. Windows Mobile	Simple LV1		○	MP4FF
Portable Recorder/ Player (Embedded)	ARM, SuperH, TI, etc.	Simple LV1 + 96k/24b/2ch	○	○	MP4FF
IPTV, STB (Embedded)	TI, ARM, NEC	Simple LV1 + 96k/24b/8ch		○	MPEG-2 TS parser IEC61937-10 transport
ALS - H.264 Video encoder (Embedded)	TI	Simple LV1 + 96k/24b/2ch	○		MPEG-2 TS
PC Player plugin	Windows Media Player, Winamp, QuickTime (iTunes), Songbird, GStreamer	Simple LV1		○	MP4FF Splitter DirectShow Filter
PC Encoder plugin	iTunes encoder, Songbird encoder	Simple LV1	○		
PC GUI encoder	GUI application	Simple LV1	○		
PC IPTV player	Windows Media Player	Simple LV1 + 96k/24b/8ch		○	
For PA-AF	Windows, Linux, Mac OS X	All	○	○	PA-AF

Components Overview

Summary of NTT product offerings and pointers to related Open Source projects.



blue box: production quality code, red box: sample code

NTT MPEG-4 ALS SDKs for Embedded

Production quality SDKs for decoding and encoding of MPEG-4 ALS bit-streams. The SDKs are written in ANSI C, and contain assembly optimized routines for x86, x86-64 and ARM platforms. The SDKs have a clean and easy to use public API. The code is fully tested and validated on various platforms.

See also:

- [ISO/IEC 14496-3: MPEG-4 Audio](#) (Subpart 11: Audio Lossless Coding)

Deliverables:

- SDK source code (C and assembly) or library object and header files
- Decoder and Encoder SDK Datasheet
- Decoder and Encoder SDK User's Manuals
- Porting Guide
- Design Document
- Test Guide
- Test Vectors
- Test Logs

File formats

Raw ALS file format

The native bit-stream format of MPEG-4 ALS mainly for testing purposes. The NTT decoder and encoder SDKs directly support this format.

See also:

- [MPEG-4 ALS Reference Model implementation](#) version 23 (RM23)
- [ISO/IEC 14496-3: MPEG-4 Audio](#) (Subpart 11: Audio Lossless Coding)

Deliverables:

- NTT MPEG-4 ALS Decoder and Encoder SDKs for Embedded

MP4 file format

A multimedia container format defined in MPEG-4 mainly for storage and distribution of audio (including MPEG-4 ALS) and video content. The file format supports progressive download and live streaming as well.

See also:

- [ISO/IEC 14496-14: MP4 file format](#)
- [ISO/IEC 14496-3: MPEG-4 Audio](#) (Subpart 1: Main, Subpart 11: Audio Lossless Coding)

Sample code: NTT's `AlsImf` library is a C++ library for reading and writing MP4 files. It supports all the MP4 boxes that are required for reading and writing ALS content and most iTunes-style metadata values. Support for other boxes might be lacking. The library is well tested, and API Specifications document is available.

Deliverables:

- `AlsImf` source code
- API Specifications document
- Glue code for using the `AlsImf` library together with the NTT ALS Decoder and Encoder SDKs

MPEG-2 TS

MPEG-2 Transport Stream is a digital container format that encapsulates packetized elementary streams of multimedia data, and other information. It is commonly used for broadcasting and network streaming of digital multimedia contents.

See also:

- [ISO/IEC 13818-1: Information technology - Generic coding of moving pictures and associated audio informations: Systems](#)

Related Open Source projects:

- [Media Player Classic Home Cinema project](#): an Open Source (GPL) media player for Windows. Includes an MPEG-2 TS splitter DirectShow filter that can be modified to support MPEG-4 ALS.
- [FFmpeg project](#): FFmpeg is “a complete, cross-platform solution to record, convert and stream audio and video” (GPL/LGPL). Future versions will properly support splitting MPEG-4 ALS content from MPEG-2 Transport Streams.

IEC 61937-10

The IEC 61937 standard is an interface specification for the carriage of non-linear PCM digital audio. The most widely known interfaces that use this standard are S/PDIF and HDMI.

IEC 61937-10 specifies the carriages of MPEG-4 ALS bit-streams.

See also:

- [IEC 61937: Digital audio - Interface for non-linear PCM encoded audio bitstreams applying IEC 60958](#)
- [IEC 61937-10: Non-linear PCM bitstreams according to MPEG-4 Audio Lossless Coding \(ALS\) format \(TA4\)](#)

Sample code: NTT's `CSpdif` C++ classes and Windows command line test application implement software encoding and decoding of audio files according to IEC 61937-10.

Deliverables:

- `CSpdif` source code
- Command line test application

Sample applications

DirectShow decoder filter

NTT offers a production-quality Windows DirectShow filter component written in C++ that decodes ALS bit-streams to LPCM audio. The filter uses the NTT ALS Decoder SDK, and builds on 32-bit versions of Windows, and Windows Mobile (ARM). Note that on Windows XP, Vista and Mobile, an additional splitter component is required to support playback of MP4 files.

Deliverables:

- NTT ALS Decoder DirectShow filter source code (C++)
- Win32 installer application

GStreamer plugins

ALS decoder and encoder components by NTT for the GStreamer framework written in C using the NTT ALS Decoder and Encoder SDKs.

See also:

- [GStreamer](#): open source multimedia framework

Deliverables:

- Decoder component source code (C)
- Encoder component source code (C)
- Sample command line for decoding and encoding

Songbird plugin

ALS decoder plugin for the Songbird media player using the NTT GStreamer decoder component.

See also:

- [Songbird](#): Open Source Music Player

Deliverables:

- Plugin installer XPI file
- NTT GStreamer decoder component

CLI driver

Command line front-end application (`mp4a1s.exe`) for decoding and encoding of MP4 and ALS files using the sample `AlsImf` library and the NTT ALS Decoder and Encoder SDKs.

Deliverables:

- source code (C)
- Win32 binary

GUI encoder

A graphical Windows front-end to the NTT CLI driver application for encoding LPCM audio the MP4 files containing ALS bit-stream, and tagging them (in one step). Written in C#, .NET.

Deliverables:

- source code (C#)
- Win32 installer application

iPhone player

Demo music player application for Apple iPhone and iPod Touch using the `AlsImf` library and the NTT ALS Decoder SDK.

Deliverables:

- source code (C/C++/Objective C)
- XCode project file

DirectShow parser filters

On Windows XP, Vista, and Mobile, DirectShow parsers are required to play MP4 and other (MPEG-2 TS, etc.) files in Windows Media Player.

Related projects:

- [Media Player Classic Home Cinema project](#): an open source (GPL) media player for Windows. Includes MPEG-2 TS and MP4 splitter DirectShow filters that can be modified to support MPEG-4 ALS.

- [Free DirectShow Mpeg-4 Filters project](#): provides a MP4FF DirectShow splitter filter that can be modified to support MPEG-4 ALS and compiled on for Windows Desktop and Windows Mobile.

Revision history

Date (YYYY/ MM/DD)	Version	Comments
2009/10/05	1.00	Initial version.