Free audio software in the recording studio

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http://pkl.net/~node/affs-2003/

Digital Audio Workstations (DAWs)

- Computer-based audio processing/synthesis/recording
- Traditionally dominated by proprietary software, from the Atari ST onwards
- GNU/Linux finally making in-roads

GNU/Linux Audio

Changed from Windows audio to GNU/Linux audio, not alone

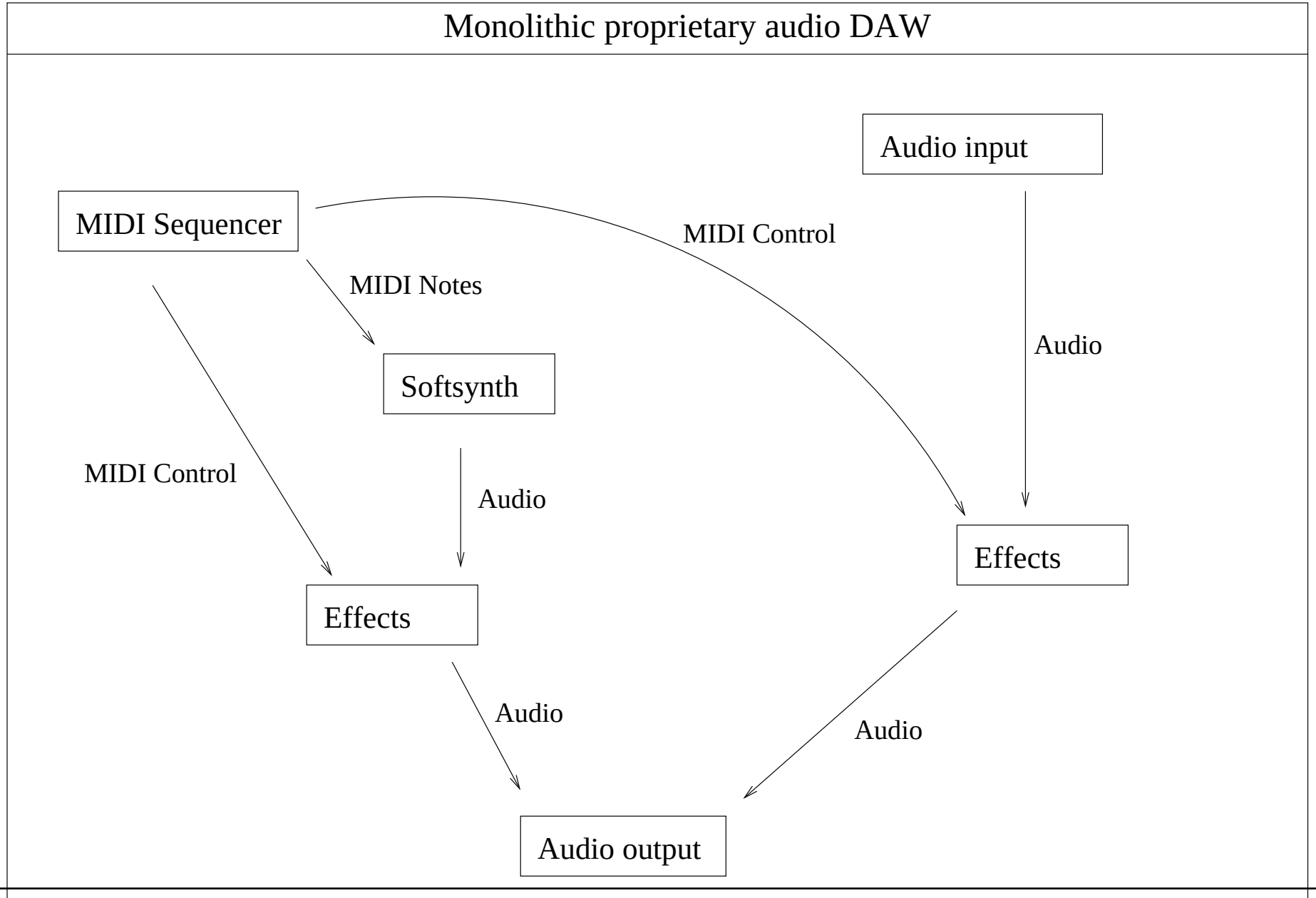
Many audio applications

- User unfriendly
- Not designed for pro audio
- Open Sound System

LAD Community

- Mailing list for discussing audio program development
- Many working towards a GNU/Linux DAW
- Produced many collaborative works

The Proprietary Audio Software World



Central Themes in Proprietary Audio

Data flow

- MIDI (Musical Instrument Digital Interface)
  - Archaic event system
  - 31,250 bps serial connections
- Audio
  - Stream or array of amplitude samples

Audio objects

- Audio samples
- MIDI sequences
- Softsynths
- Effects

The GNU/Linux Audio Software World

Provides all the functionality of the proprietary world

Data flow

- MIDI
  - ALSA
- Audio
  - JACK, PortAudio

Audio objects

- Audio samples and MIDI sequences
  - Monolithic apps, stand-alone samplers
- Softsynths
  - Stand-alone synths, XAP
- Effects
  - LADSPA

ALSA - Advanced Linux Sound Architecture

- Hardware Abstraction Layer for audio and MIDI interfaces
- Born out of GUS Ultrasound driver project
- Kernel drivers and user-space library
- Preferred sound driver in Linux as of 2.5.5

JACK - JACK Audio Connection Kit

- Inter-process audio transport
- Synchronous
- Low latency
- Designed from the ground up for pro-audio DAW uses
- Moves away from "Everything is a File" by using a callback-based system

LADSPA - Linux Audio Developer's Simple Plugin Architecture

- DSP plugin architecture
- Single header file
- Many hosts
- Hordes of plugins

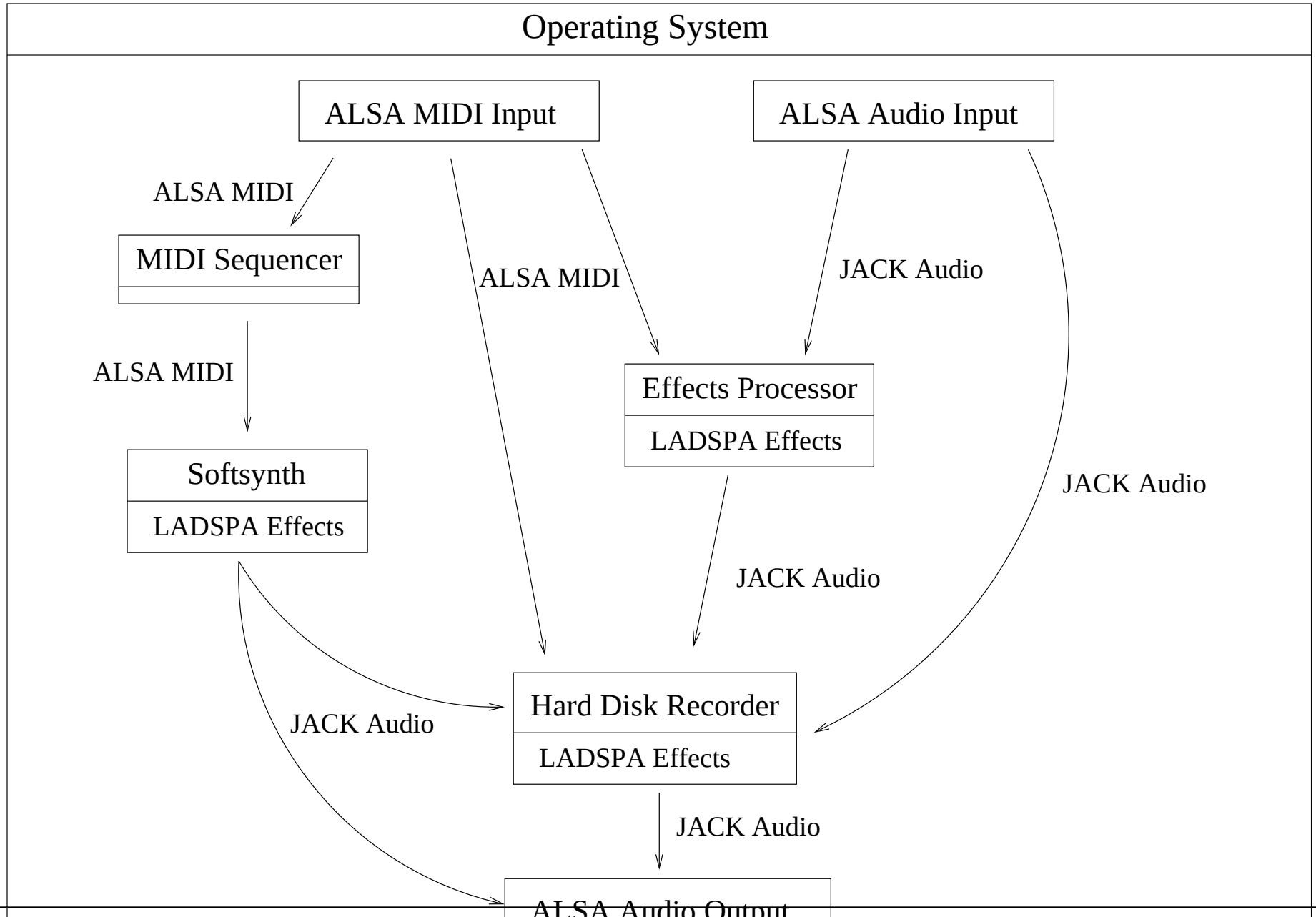
XAP - X Audio Plugins

- Successor to LADSPA
- Facilitates generic audio objects
- Event-based control
- Possibly obviated by the proprietary world’s efforts

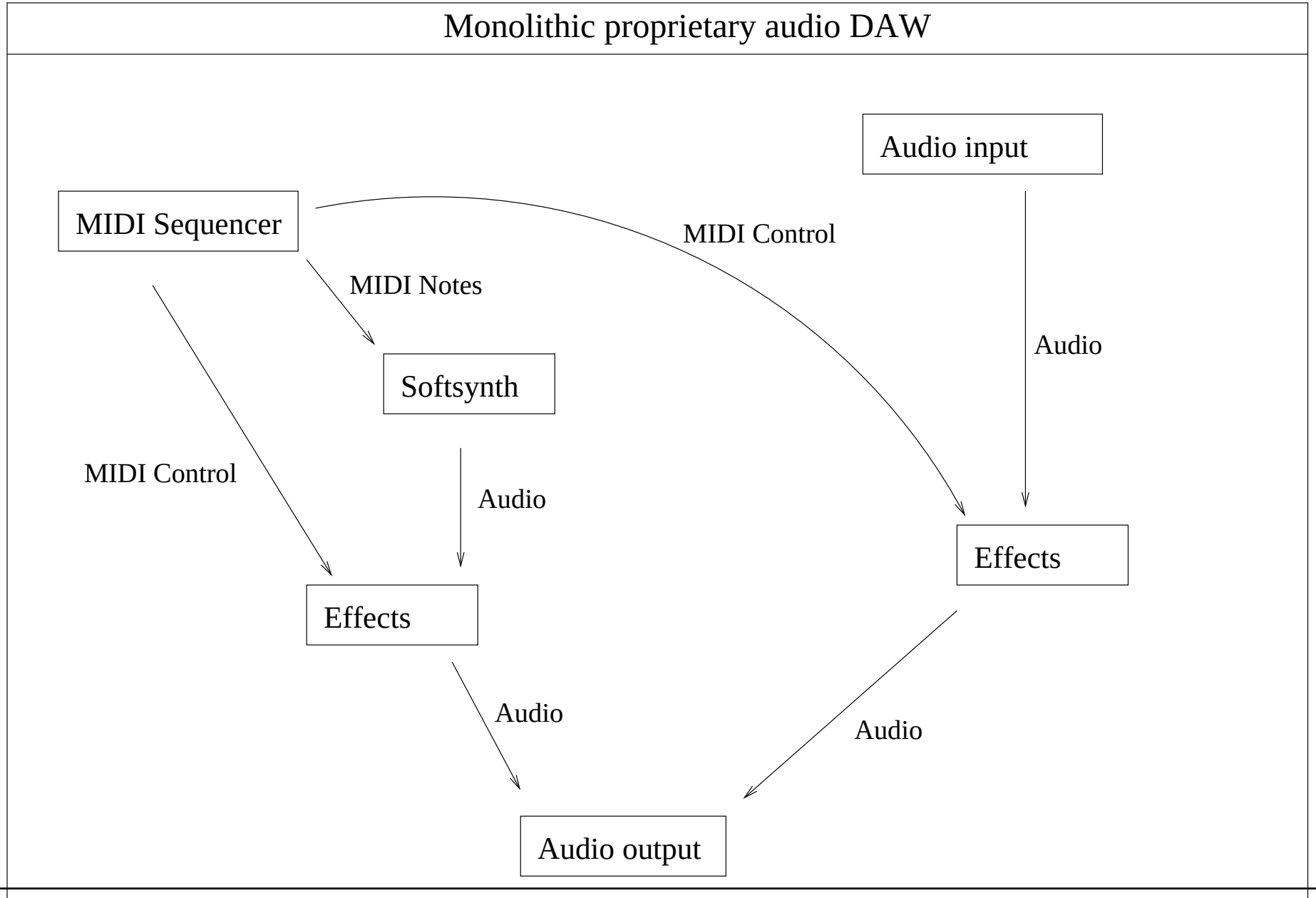
LADCCA - Linux Audio Developer's Configuration and Connection API

- Session management system specifically for JACK and ALSA apps
- Saves and restores state of applications and also ALSA and JACK connections
- Brings together the rest of the APIs to enable similar working practices as the proprietary world

The GNU/Linux Audio Software World



The Proprietary Audio Software World



The Commercial Side

- Recording industry recognition
- Ardour 1.0
- GNU/Linux in embedded audio systems
- On-line consultant database

The Future

- Ardour 2 (MIDI support)
- XAP and LADCCA progression
- Recording industry support

Thank you