

Managing band-related tasks using only free software and GNU/Linux - a personal experience

Peter

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Audio formats

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Conclusio

Managing band-related tasks using only free software and GNU/Linux - a personal experience

Peter B.

The band XBloome

April 17th, 2010



Overview

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What is this presentation about?

The life and adventures of the band XBloome - which happened to have a ${\sf GNU/Linux}$ user as their drummer

Today's topics

- Audio recording
- Graphics / Artwork / Printing
- Website
- Licensing

XBLOOMe

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Things to be aware of:

- I am not a trained audio engineer
- I am not a trained graphic designer
- We did not record in a studio, and we used "affordable" equipment

XB1200Me

At the beginning there was...

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From left to right: Fear, Uncertainty and Doubt.

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From left to right: Fear, Uncertainty and Doubt. Oh: And me!



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The wishlist:

 Making electronic music without requiring tons of cracked versions.



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The wishlist:

- Making electronic music without requiring tons of cracked versions.
- ...maybe even requiring only a free operating system?

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The wishlist:

- Making electronic music without requiring tons of cracked versions.
- ...maybe even requiring only a free operating system?
- ...and even record, mix and master that music in excellent sound-quality with Free Software?



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The wishlist:

- Making electronic music without requiring tons of cracked versions.
- ...maybe even requiring only a free operating system?
- ...and even record, mix and master that music in excellent sound-quality with Free Software?
- ...AND go even further and create graphics, artwork, banner and a CMS-driven website - also, exclusively using Free Software?



XBLOOMe The dream / plan

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"I think it's possible. Geek to the rescue!"





XB LOOME

The goal: Let's rock!

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- Tools
 - JACK / qjackctl
 - Ardour
 - Plugins
 - JAMin
 - FMIT
- Multitrack Audio interface
- Audio formats
 - Recording
 - Archive / Remix
 - Listening
- Audio example

Tools: JACK

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About JACK:

"JACK is a system for sending audio between applications as well as allowing them to all share an audio interface.

Each application is run in exact sample sync with each other, and the entire system is designed to run at very low latencies (as low as your hardware will allow)" $^{\rm 1}$

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Required for multichannel recording/playback.

Latency: How low can you go?

- Realtime kernel
- Realtime for non-root user: Configure /etc/security/limits.conf^a
- Even without a non-realtime kernel, I've managed 6ms latency on my studio setup

^ahttp://jackaudio.org/faq



Tools: qjackctl

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"Provides a simple GUI dialog for setting several JACK daemon parameters, which are properly saved between sessions, and a way control of the status of the audio server daemon. With time, this primordial interface has become richer by including a enhanced patchbay and connection control features." ²



Not necessary, but comfortable.

²http://qjackctl.sourceforge.net/



Tools: qjackctl

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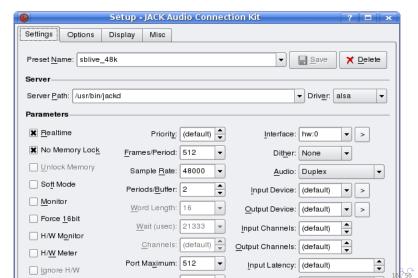
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Configure parameters of jackd:





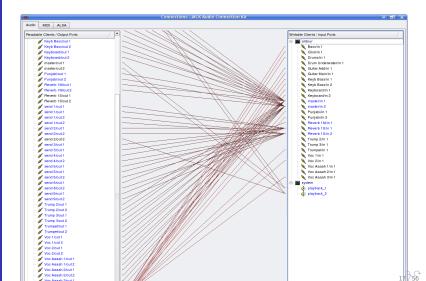
XBLOOMe Tools: gjackctl

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Tools

Manage connections of jack clients:





Tools: Ardour

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Feature overview

- Unlimited number of channels
- Non-destructive editing ((cross)fades, duration, ...)
- Channel send/inserts
- Mixbusses
- Audio plugin support
- Control surface support (e.g. Behringer BCF2000)
- Click
- Automation (volume, pan, effect parameter, ...)
- Mixer groups
- And countless more...

Everything a modern DAW has to offer!

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Everyday recording/mixing usage

- Multitrack recording
- Effect handling (per channel/mixbus)
- Input/output mapping
- (Cross)fades

Oh, by the way: XBloome is paying for most of the Free Software we're using.

And it's still cheaper than using proprietary stuff!



Tools: Plugins

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LADSPA

"LADSPA is a standard that allows software audio processors and effects to be plugged into a wide range of audio synthesis and recording packages." ^a

^ahttp://www.ladspa.org/

LV2

"LV2 is a standard for plugins and matching host applications, mainly targeted at audio processing and generation.

LV2 is a simple but extensible successor of LADSPA, intended to address the limitations of LADSPA which many applications have outgrown." ^a

^ahttp://lv2plug.in/

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VST, Audio Units

Technically possible, but non-free...

DirectX

Not sure if even technically possible...

But you don't really need them, anyway. :)

Tools: Plugins / LADSPA

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Tools

Classical ones, out-of-the-box

Compressor: SC

Equalizer: TAP, Multiband EQ

Reverb: Freeverb. GVerb

Limiter: Fast Lookahead Limiter

Nice to have

- Calf audio plugin pack^a
- Autotalent^b
- Invada plugins^c

^ahttp://calf.sourceforge.net/

^bhttp://web.mit.edu/tbaran/www/autotalent.html

^chttp://www.invadarecords.com/Downloads.php?ID=00000263

Tools: Plugins / LADSPA

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The most important plugin sets come in the default distro repositories:

- swh-plugins
- tap-plugins

For a list of plugins included in those default packages, see:

- http://plugin.org.uk/ladspa-swh/docs/ladspa-swh.html
- http://tap-plugins.sourceforge.net/



Tools: JAMin

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"JAMin is the JACK Audio Connection Kit (JACK) Audio Mastering interface. JAMin is an open source application designed to perform professional audio mastering of stereo input streams." ³





Tools: Free Music Instrument Tuner (FMIT)

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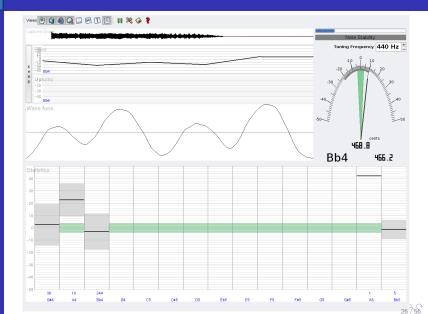
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Tools: Free Music Instrument Tuner (FMIT)

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Features

- Tuning scales
- Microtonal tuning
- Harmonic ratios
- Wave shape
- Discrete Fourier Transform view
- Volume history
- ...

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^ahttp://home.gna.org/fmit/



Multitrack audio interface

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I'm using a *Terratec Producer Phase88* for example:



...and FFADO to use it with JACK:

FFADO

"The FFADO project aims to provide a generic, open-source solution for the support of FireWire based audio devices for the Linux platform. It is the successor of the FreeBoB project." ^a

^ahttp://www.ffado.org/

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Audio formats

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Recording: WAV (min. 48kHz/24bit)

Archive / Remix tracks: FLAC, WavPack

Listening: Ogg/Vorbis, MP3

Note: FLAC is more widespread than WavPack, but it can't handle 32bit float, so you have to use WavPack for this.

Audio example

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I hope I can play sound in here...
...and I hope it sounds good!

Graphics / Artwork / Printing: Overview

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- Tools
 - GIMP
 - Inkscape
 - Scribus
 - Krita
 - OpenOffice.org Draw
- Preparing for print
 - Templates and final format
 - CMYK & ICC

Tools: GIMP

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"GIMP is the GNU Image Manipulation Program. It is a freely distributed piece of software for such tasks as photo retouching, image composition and image authoring." ⁴





Tools: Inkscape

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"An Open Source vector graphics editor, with capabilities similar to Illustrator, CorelDraw, or Xara X, using the W3C standard Scalable Vector Graphics (SVG) file format." ⁵



Tools: Scribus

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"Scribus is an Open Source program that brings award-winning professional page layout to Linux/UNIX, Mac OS X, OS/2 Warp 4/eComStation and Windows desktops with a combination of 'press-ready' output and new approaches to page layout." ⁶





Tools: Scribus

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Screenshot of designing our new CD inlay with Scribus:



Tools: Krita

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"Krita is a creative sketching and painting application based on KOffice technology." ⁷



Tools: OpenOffice.org Draw

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Part of the Office suite OpenOffice.org.

Earlier XBloome layouts were made using it, but it is not the best choice for professional layout, and lacks CMYK support.



Templates and final formats

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Print shops often provide layout templates for download, but in proprietary formats (Indesign, CoreDraw, . . .). :(

Not really a problem, since it's often only necessary to know the correct measurements.

They can then easily be entered in Scribus, in order to create a free template.

Upload the "patch" upstream, if possible. If not, just put it somewhere on the web.



Templates and final formats

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Which formats to send to a print shop?

- For text-focused documents: PDF
- For images, use TIFF

CMYK

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Challenges

- GIMP still can't handle CMYK, yet
- Inkscape also can't handle CMYK, yet
- ICC profiles



CMYK: Convert using Krita

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Krita is quite handy for converting to/from different colorspaces (e.g. RGB to CMYK):



ICC profiles

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- European Color Initiative (ECI)^a
 - License unclear.
- Adobe^b

Downloadable profiles

• Warning: License is non-free (as in "free speech")!

For more information, take a look at "OpenICC" 8

^ahttp://www.eci.org/doku.php?id=de:downloads

^bhttp://www.adobe.com/support/downloads/detail.jsp?ftpID=3680



Printing example: Banner

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- Design and drawing: Vector graphic in Inkscape
- Export as raster image with proper resolution (≥ 300 dpi)
- Using Krita to convert to CMYK
- Save as CMYK-TIFF
- Send to print shop





Website: Overview

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- Artwork & examples
- Ogg/Vorbis vs. MP3



Website: Artwork

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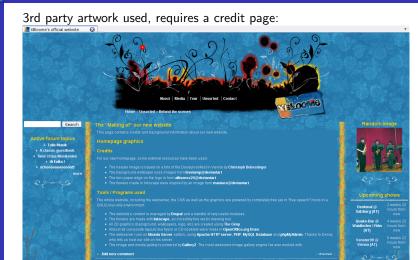




XBLOOME 3rd party artwork

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Artwork examples

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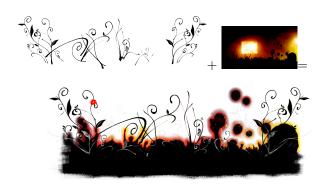
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Ogg/Vorbis vs. MP3

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Difficult issue!

How to deal with it?

- Offer both formats for download
- Provide information about "what's wrong with MP3"
- Offer links/HowTos about playing Open Standards



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In order to offer work under a free license, you must...

...declare your licensing

- Just putting it on the web for download ain't enough
- Lack of license information defaults to: "no touchy!"
- Properly tag all material somehow: e.g. ID3 tags, note on prints or download page

Licensing: Creative Commons

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Creative Commons license⁹:

Difficult issue for music:

CC-BY-SA vs. CC-BY-SA-NC?

We're currently using "CC-BY-SA-NC" for our work. Why non-commercial? Why not just CC-BY-SA?

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Creative Commons license⁹:

Difficult issue for music:

CC-BY-SA vs. CC-BY-SA-NC?

We're currently using "CC-BY-SA-NC" for our work. Why non-commercial? Why not just CC-BY-SA?

To be honest: I'm just not sure if the audio world is ready for *CC-BY-SA*, yet.

Free licensing: Experiences

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- "What? Are you crazy? You can't give your stuff away for free!"
- But in fact: we gained more by doing so!
- CD sales: We're informing everyone when they ask us for a CD. that they have the option of freely downloading it on the web and that they are allowed to make copies of the CD. Noone (!) ever refused to buy a CD, because of that.
- Being open also inspires others to work together with you
- Free licenses = Less hassle

Free licensing: Benefits

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Free licenses = less hassle

- No work with preventing "illegal" downloads.
- No work with preventing "illegal" sharing.
- No artificial barriers for people to share and spread your work.
 They're promoting you!
- ...

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What did we learn?

- We have not lost a single cent due to free licensing, but gained a
 wider audience and our work was used in more 3rd party projects
 (video, remix, sampler CDs, ...) than that of most other "local
 and rather unknown" bands in our area.
- We've successfully produced high-quality albums, artwork, etc. with Free Software
- If I was able to create stuff with that quality, think about what a skilled person could do!
- Sharing know-how and experience without forcing others to use (usually cracked) proprietary software is good.
- Free Software does the job already, but not many people dare to give it a try

So YES, it's already possible to live a band's life and be free!

X<mark>BF00M6</mark>

Thank you, and goodbye!

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Additional information:

- www.xbloome.com
- www.fsfe.org
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