GStreamer & Rust

Fast, safe and productive multimedia software

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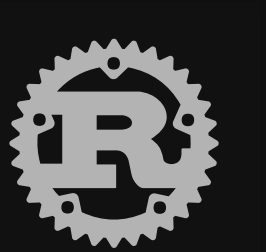
gstreamer

Centricular

Introduction

Who?

What?



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gstreamer

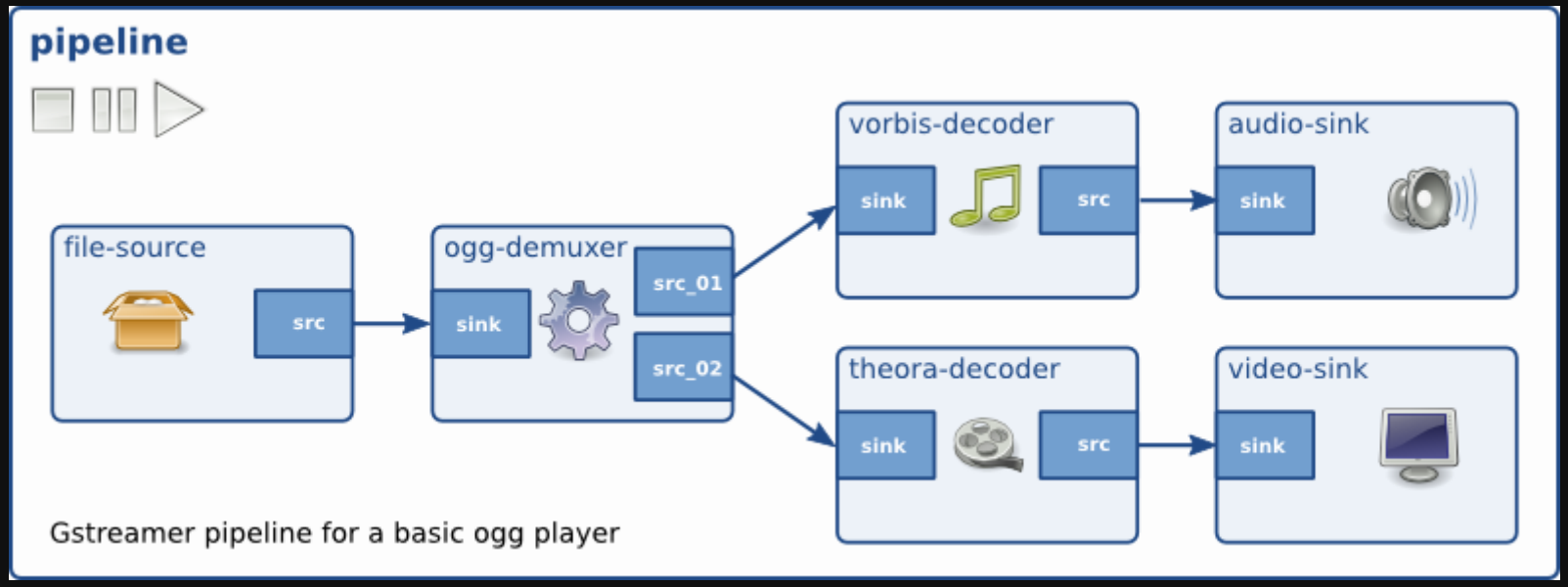
What is GStreamer?

https://gstreamer.freedesktop.org for more details

GStreamer

Pipeline-based, cross-platform multimedia framework

Media Pipelines



Philosophy

Toolbox for higher-level multimedia processing

Batteries included …

… and usable from many languages

But not ...

- Media player or playback library
- Codec and protocol library
- Transcoding tool
- Streaming server

... can be used to build all that!

GStreamer ❤ Rust

Why Rust?

Memory-safety, fearless concurrency
& modern language and tooling

Why Rust?

No runtime, no GC & zero-cost abstractions

Why Rust?

Ownership model maps perfectly to GStreamer's

Using GStreamer from Rust

Applications

Safe, idiomatic bindings to the GStreamer C API

- https://github.com/sdroege/gstreamer-rs
- Examples: gstreamer-rs/examples
- Tutorials: gstreamer-rs/tutorials

Plugins

Safe, plain Rust infrastructure for writing plugins

- https://github.com/sdroege/gst-plugin-rs
- Contains various examples
- Tutorials being written right now

The Future

Write more Rust & write less C

- more plugins (rust-av!),
- more useful applications

This is where **you** can get involved!

We're not going to rewrite GStreamer (yet)

It's the perfect time for writing your next GStreamer application or plugin in Rust

Rust experience so far

Don't be afraid of unsafe code if needed ...

... but wrap in safe abstractions

Don't be afraid of other people's code

Adding dependencies is easy,
and many things exist already

Don't be afraid of *performance penalties* for using higher-level abstractions

Write readable code and optimize later

Not all is perfect yet
... but the language is continuously improving

Wishlist

- Non-lexical lifetimes *
- SIMD *
- custom allocators *
- const generics & const fns +
- better cargo integration into other build systems +
- stable/defined ABI for shared libraries

Thanks

¿Questions?

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