GStreamer & Rust

Fast, safe and productive multimedia software

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Introduction
Who?
What?
What is GStreamer?

https://gstreamer.freedesktop.org for more details
GStreamer
Pipeline-based, cross-platform multimedia framework
Media Pipelines

Gstreamer pipeline for a basic ogg player
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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