GStreamer & Rust: An Update

GStreamer Conference 2019

1 November 2019, Lyon

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Who?

What?

Why Rust?

Status of the bindings

What is bound?

- All of core, almost all library API
- Subclassing support for all important base classes
- Many examples and ported tutorials
- Basically complete now!

Updates Since Last Year

- 0.13 and 0.14 releases
  - various bugfix releases
  - Update to 1.16 API
- New API and subclassing support for more base classes
- API cleanup and polishing
  - Minor breaking API changes

Moved to GStreamer GitLab

... from my personal GitHub

- New location
  - https://gitlab.freedesktop.org/gstreamer/gstreamer-rs
  - https://gitlab.freedesktop.org/gstreamer/gst-plugins-rs

Subclassing

- For writing plugins, element/etc subclasses
- Integrated into the bindings directly now
- Allows for much nicer API
  - Check gstreamer-rs subclass example
  - Check gst-plugins-rs tutorial plugin

New Supported Base Classes

- Audio/video encoder/decoder
- Baseparse
- Clock, SystemClock
- DeviceProvider, Device
- Preset, TagSetter interfaces
- Added some missing virtual methods

New Libraries

- GStreamer Editing Services
  - With example application
- Check library
  - Test clock and harness
  - Used in various tests already

New API

- Memory, Allocator bindings
- Wayland & X11 Support in the GL library
- Custom logging functions

Improved Error Handling

- Fewer `bools` and `Options`, more `Results`
  - Enforces error handling
  - Standard idiomatic Rust error handling
- `FlowReturn` and similar enums split
  - `Result<FlowSuccess, FlowError>`

UniqueAdapter, UniqueFlowCombiner

- Wrappers that hide reference counting
- Allow Rust ownership & mutability handling
- Allow for more safe bindings
  - e.g. Adapter mapping

Overflow Checks

- Arithmetic operations on `ClockTime`, etc.
- Map to `None` value on overflows
  - `-1` / `GST_CLOCK_TIME_NONE` in C
- Allows for safer calculations

New Plugins

- CDG decoder/parser
  - Karaoke video format
- MCC/SCC parser and encoder
  - Closed Caption file format

New Plugins

- Fallbackswitch
  - Automatic fallback to another input
- Lewton Vorbis Decoder
- rav1e AV1 encoder
  - Fastest available AV1 encoder

New Plugins

- Amazon S3 Sink/Source
- libsodium encrypter/decrypter

New Plugins

- Thread Sharing
  - See my talk from last year
  - Includes new rtpjitterbuffer element
  - Bigger refactoring pending

Future

Packaging and Distribution

- cerbero for 1.18
  - WIP: https://gitlab.freedesktop.org/gstreamer/cerbero
- Linux distros
  - Arch: has, Debian: in progress
  - others...?

Make Plugins Feature-Complete

- reqwest HTTP source almost there
  - Almost feature-equivalent with souphttpsrc
- FLV demuxer
- Various minor features in other plugins

New Plugins

- dav1d AV1 decoder
  - WIP: https://gitlab.freedesktop.org/gstreamer/gst-plugins-rs/merge_requests/186
- claxon FLAC decoder
  - WIP: https://gitlab.freedesktop.org/gstreamer/gst-plugins-rs/merge_requests/187
- Wrappers around other existing Rust libraries

More Plugins, More Apps

- Bindings-wise nothing really missing
- Use it widely!

Thanks! Questions?

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