

libratbag

a way to configure your input devices



whoami

- Filipe Laíns
- Likes beer!
- Student (2nd year Computer Engineering)
- Arch Linux packager

ToC

- What is libratbag?
- Status of the project
- Future?
- HID protocol
- libratbag driver structure
- Questions

libratbag

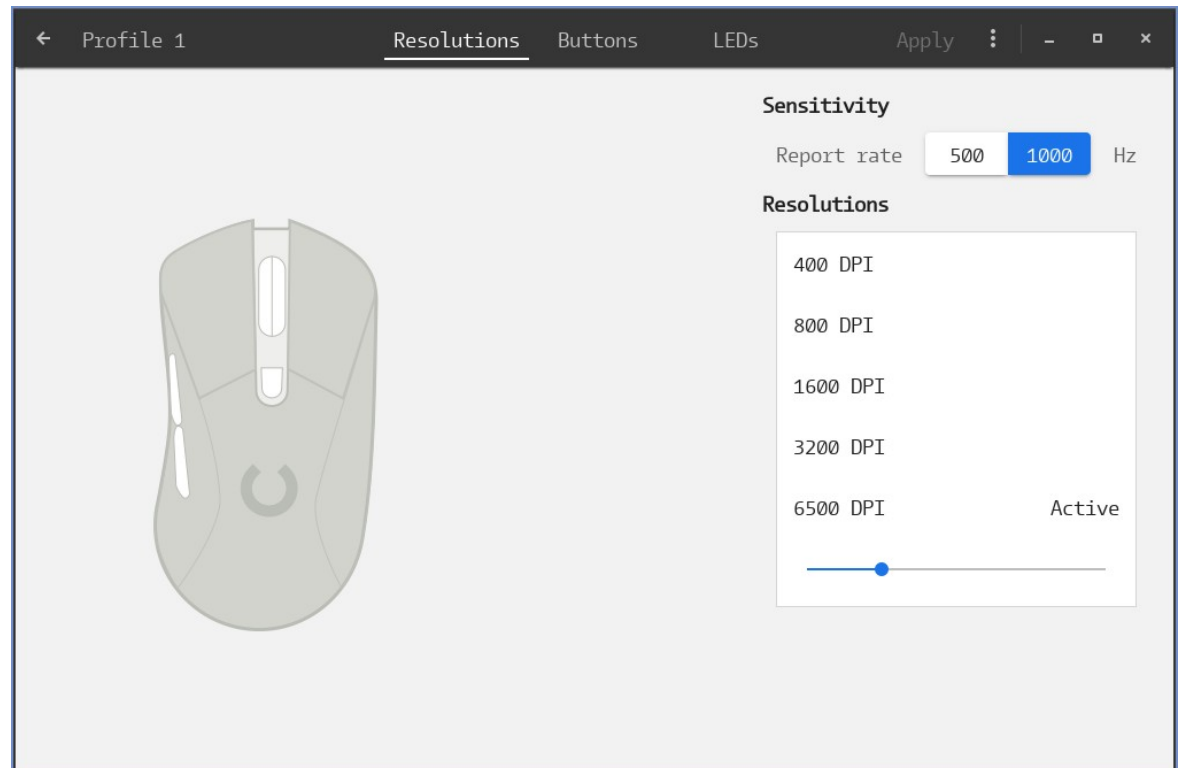
- DBus daemon to configure input devices (mostly gaming mice)
- Created in 2015
 - Benjamin Tissoires (kernel HID subtree)
 - Peter Hutterer (libinput, libevdev, etc)
- Vendor agnostic
 - Etekcitec (1 device)
 - G.Skill (1 device)
 - Logitech (53 devices)
 - Roccat (2 devices)
 - Steelseries (7 devices)

libratbag

- What can you configure?
 - Resolutions (DPI)
 - Report rate
 - Buttons (macros)
 - LEDs

libratbag

- Clients
 - ratbagctl (CLI, mostly intended for debug)
 - Piper (GTK)



libratbag (status)

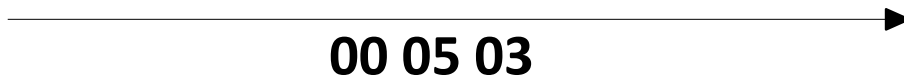
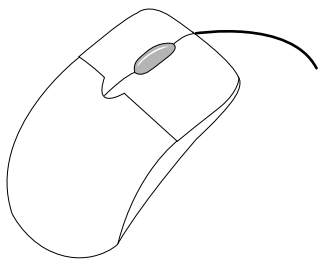
- It works
- No stable API yet
- Issues?
 - Limited time
 - Hard to maintain
 - Can be complex
 - Limited access to hardware

libratbag (future)

- Continuous Integration (CI)
 - Device emulation
 - We have a working prototype!
- Color synchronization
 - libratbag vs external daemon

HID protocol

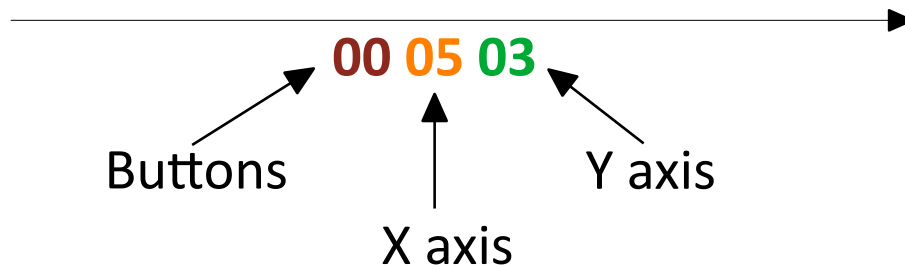
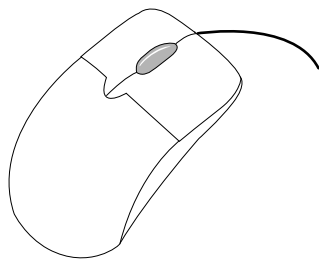
- Human Interface Device
 - Defined in the USB spec
- Used by input devices (mice, keyboards, etc.) to interface with the host



HID protocol

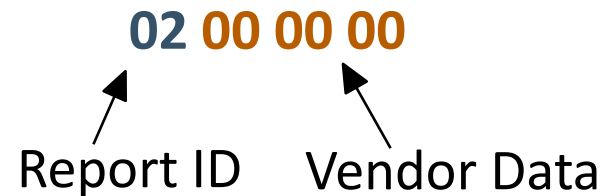
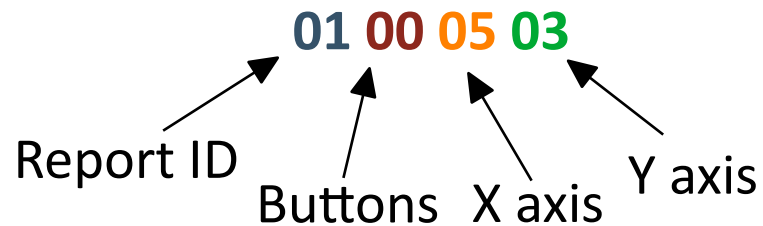
- Report descriptors
 - Describe the format of the packets to be sent to the host

```
report_descriptor = [  
    0x05, 0x01,      # Usage Page (Generic Desktop)  
    0x09, 0x02,      # Usage (Mouse)  
    0xa1, 0x01,      # Collection (Application)  
    0x09, 0x02,      # Usage (Mouse)  
    0xa1, 0x02,      # Collection (Logical)  
    0x09, 0x01,      # Usage (Pointer)  
    0xa1, 0x00,      # Collection (Physical)  
    0x05, 0x09,      # Usage Page (Button)  
    0x19, 0x01,      # Usage Minimum (1)  
    0x29, 0x03,      # Usage Maximum (3)  
    0x15, 0x00,      # Logical Minimum (0)  
    0x25, 0x01,      # Logical Maximum (1)  
    0x75, 0x01,      # Report Size (1)  
    0x95, 0x03,      # Report Count (3)  
    0x81, 0x02,      # Input (Data,Var,Abs)  
    0x75, 0x05,      # Report Size (5)  
    0x95, 0x01,      # Report Count (1)  
    0x81, 0x03,      # Input (Cnst,Var,Abs)  
    0x05, 0x01,      # Usage Page (Generic Desktop)  
    0x09, 0x30,      # Usage (X)  
    0x09, 0x31,      # Usage (Y)  
    0x15, 0x81,      # Logical Minimum (-127)  
    0x25, 0x7f,      # Logical Maximum (127)  
    0x75, 0x08,      # Report Size (8)  
    0x95, 0x02,      # Report Count (2)  
    0x81, 0x06,      # Input (Data,Var,Rel)  
    0xc0,           # End Collection  
    0xc0,           # End Collection  
    0xc0,           # End Collection  
]
```



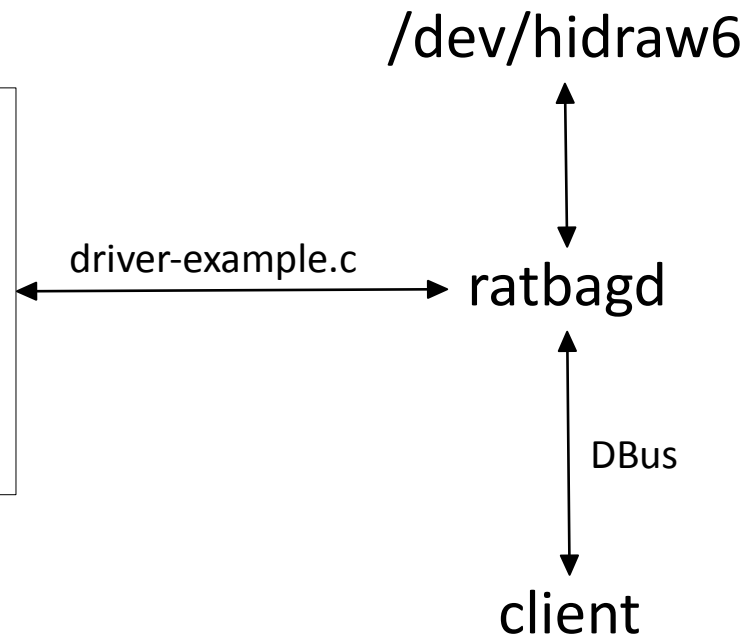
HID protocol

- Vendor messages
 - Allows the device to send arbitrary messages to the host



libratbag drivers

```
struct ratbag_driver example_driver = {  
    .name = "Example Driver",  
    .id = "example_driver",  
    .probe = example_probe,  
    .remove = example_remove,  
    .commit = example_commit,  
};
```



Questions?