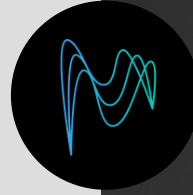


Linux in Cars - So What?

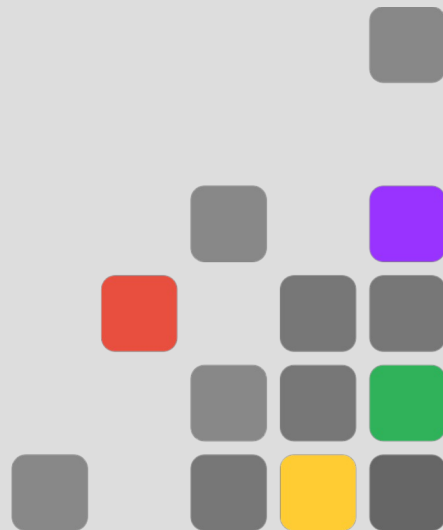
How can we address automotive use-cases with open source software?

Bio

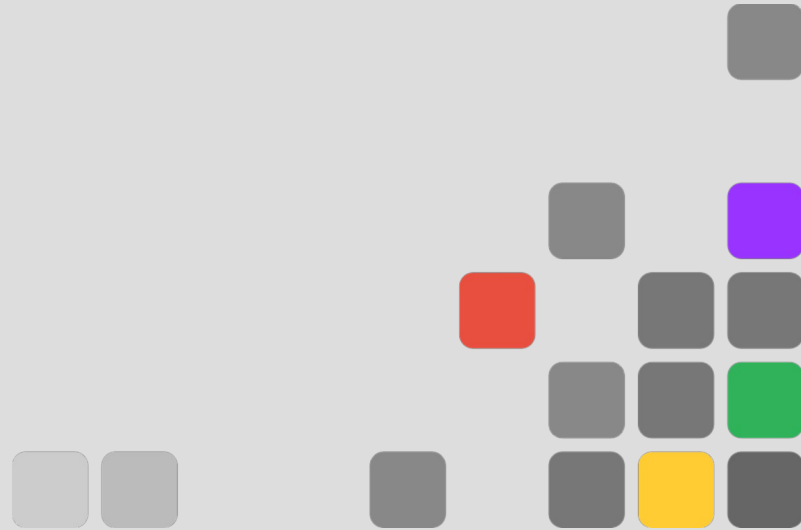
- Johan Thelin
- **Koderize** and **Mbition**
- Arranges **foss-north**
- Conference and Pod
- Qt, embedded Linux, Automotive, Licensing

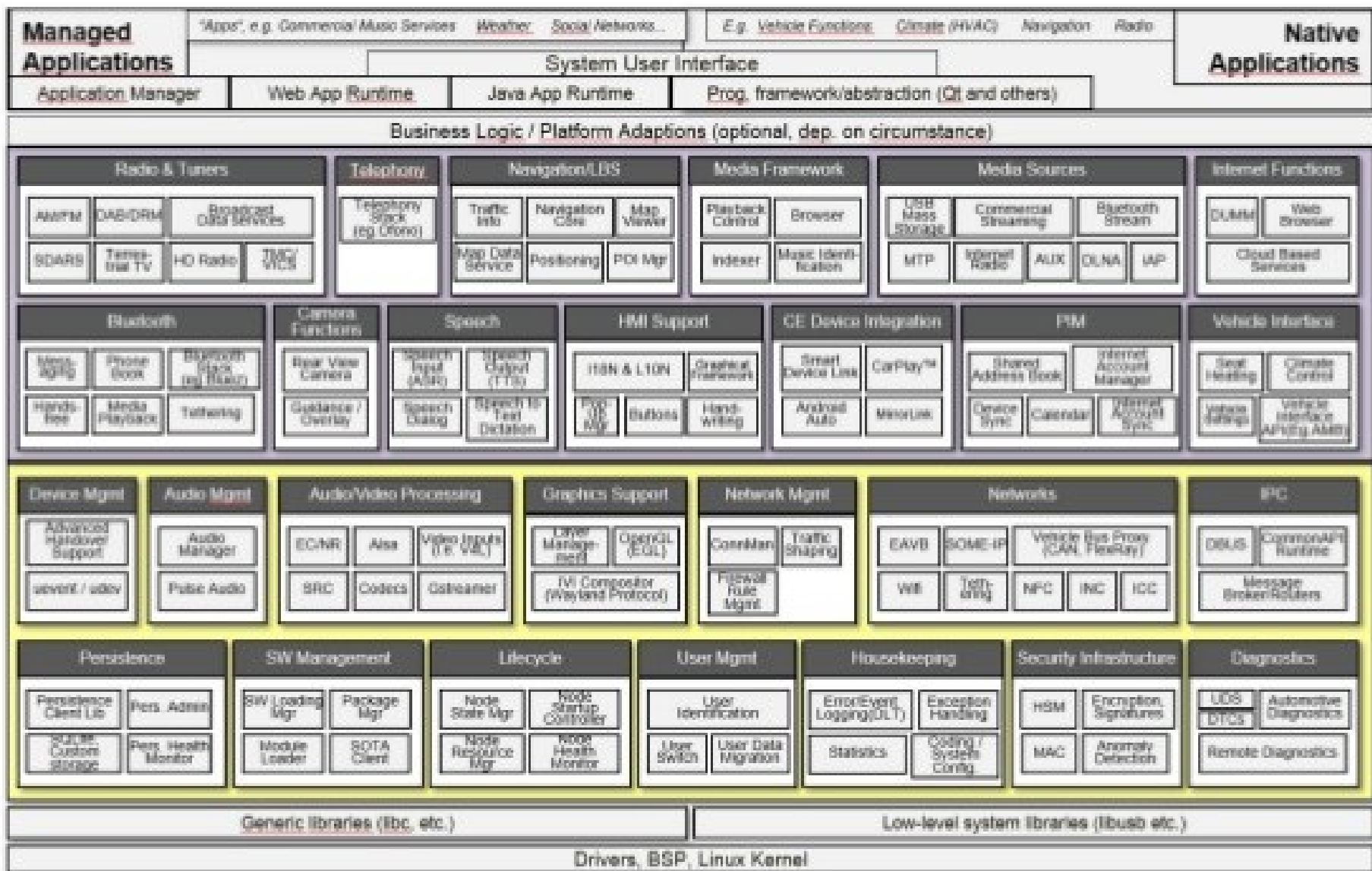


All opinions are my own



How does an infotainment system look?





Apps

Business Logic / Platform Adaptations (optional, dep. on circumstance)

Services

Radio & Tuners

Teleshopping

Navigation/ GPS

Media Framework

Media Services

Internet Functions

Bluetooth

Camera Functions

Speech

HMI Support

CE Device Integration

PM

Vehicle Interface

Device Mgmt

Audio Mgmt

Audio/Video Processing

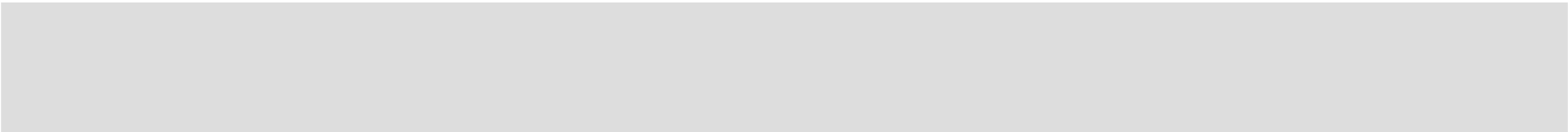
Graphics Support

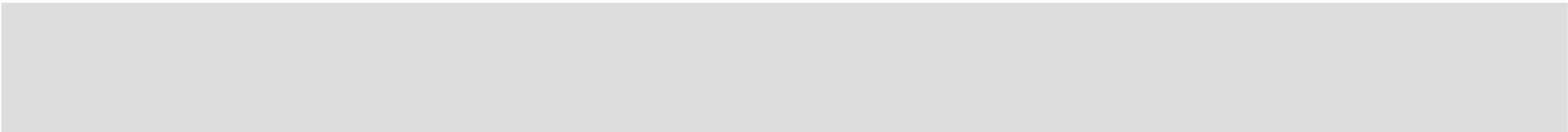
Network Mgmt

Networks

IPC

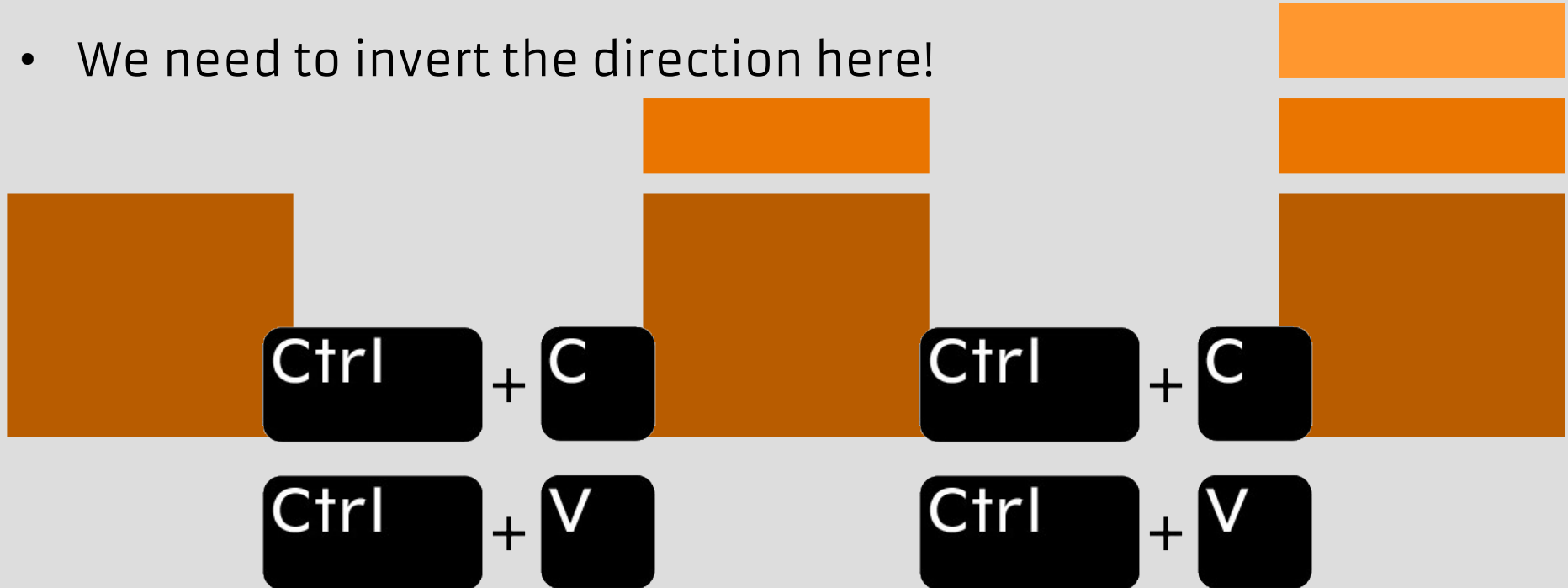
Base Platform





Why is this?

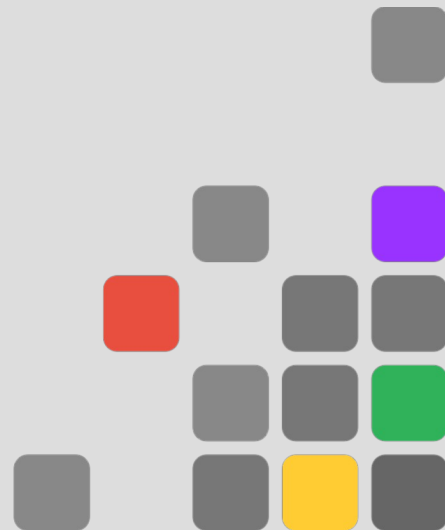
- Requirements are just piled on
- And open source does not fit requirements
- We need to invert the direction here!



Why is this a problem?

- Not-invented-here driven development is very expensive
- Vendor lock-in
- Maintenance
- Access to smart people outside of automotive

What actors are there?



The Landscape



GENIVI®

- Since 2009
- Expert Groups
- Components
- Dev Platform

The Landscape



- Since 2009
- Expert Groups
- Components
- Dev Platform



- Since 2016
- Expert Groups
- Dev Platform
- Components

The Landscape



- Since 2009
- Expert Groups
- Components
- Dev Platform

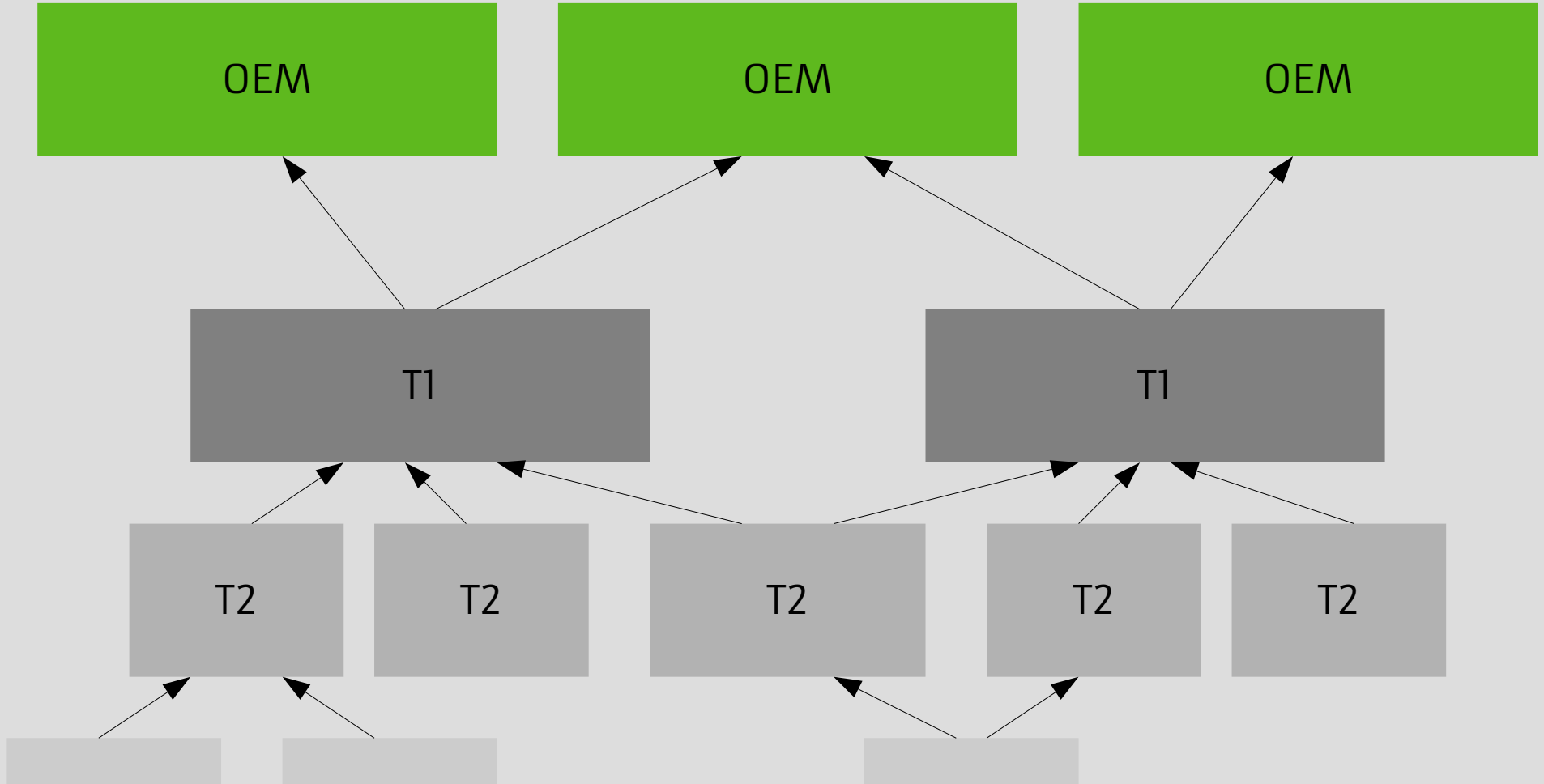


- Since 2016
- Expert Groups
- Dev Platform
- Components

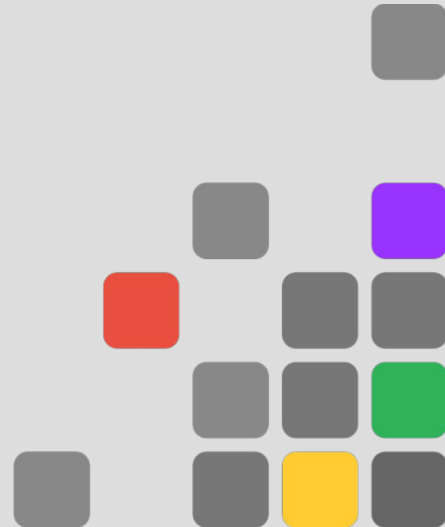
- Since 2017 (20)
- Google + OEMs
- Infotainment focus



The Suppliers



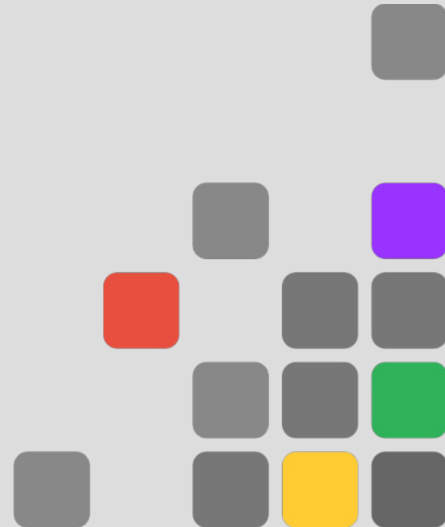
What is holding us back?





Scratch your own itch

What can be done?



Challenges

Screen dimensions
and orientations

Start-up timing

Media routing

Functional safety

Collaboration
between
screens and users

Co-existence with
Android, QNX, etc

Challenges

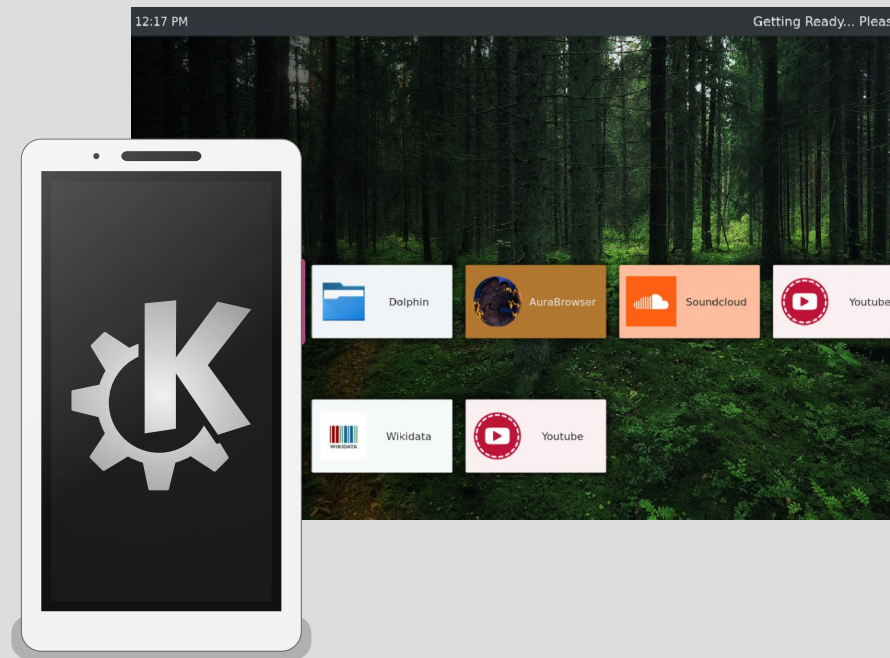
Screen dimensions and orientations

The text 'KIARIGAMI' is rendered in a bold, white, sans-serif font with a 3D effect. Each letter has a dark gray shadow cast to its right and a lighter gray shadow cast below it, giving it a sense of depth. The text is centered horizontally and spans across a horizontal band that is split into a light gray upper half and a white lower half.

Challenges

Collaboration between screens and users

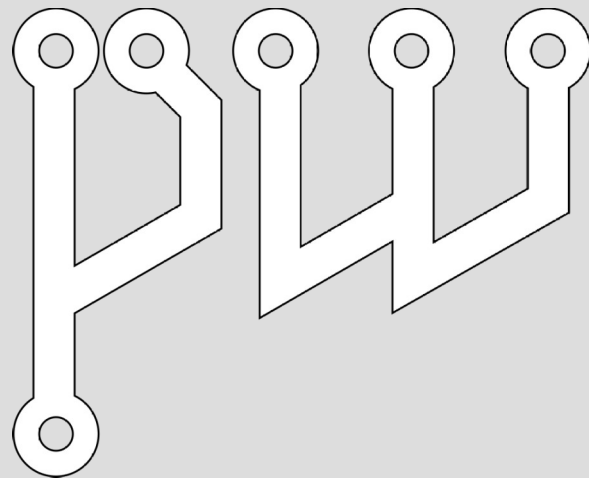
- KDE Connect
- Plasma Bigscreen
- Take it even further!
- Casting, sharing, moving...



Challenges

Media routing

- Build the flexible audio and media routing frameworks
- Audio ducking / prioritization / streaming
- Bindings to underlying infrastructure
- Related to collaboration between screens



Challenges

Start-up timing



0ms

Power on



?00ms

Boot splash
animation

Sounds from
now on



2000ms

Rear-view
camera

Legal!



?000ms

Full
infotainment

Challenges

Co-existence with Android, QNX, etc

- Hypervisors
- Sharing video, audio, devices
- Sharing "state"
 - Contacts, etc

Functional safety

- Generally handled through hardware layers
 - Virtual framebuffers
- Qt safe renderer

Challenges

There is much, much more!

More!

- Keep on being awesome!
- Keep building infrastructure
 - KDE Frameworks
 - Kirigami
 - Meta-kf5
 - Documentation
 - ...





4 - 11 September 2020

Thank you for listening!

hello@e8johan.se