Linux in Cars - So What?

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

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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?
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
- Maintainance
- Access to smart people outside of automotive
What actors are there?
The Landscape

- Since 2009
- Expert Groups
- Components
- Dev Platform
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- Since 2017 (20)
- Google + OEMs
- Infotainment focus
The Suppliers

OEM

T1

T2

T2

OEM

T1

T2

T2

OEM

T1

T2

T2
What is holding us back?
Scratch your own itch
What can be done?
Challenges

- Screen dimensions and orientations
- Media routing
- Functional safety
- Co-existence with Android, QNX, etc
- Start-up timing
- Collaboration between screens and users
Challenges

Screen dimensions and orientations
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

?000ms
Full infotainment

Legal!
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
  – ...

Thank you for listening!

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