FOSS For Automotive Developed In The Open Becomes Real GDP

ELCE
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Software Engineer / Principal Consultant - FOSS / GDP maintainer
Konsulko Group / Codethink Ltd / GENIVI community

Speakers: chbae, leon-anavi & toscalix

- Changhyeok Bae (chbae)
  - GDP Maintainer (community). Research Engineer at LG Electronics.
  - Experienced OpenEmbedded/Yocto developer.
- Leon Anavi (leon-anavi)
  - GDP contributor. Software Engineer at Konsulko Group.
  - Automotive IVI solution expert.
- Agustín Benito Bethencourt (toscalix)
  - GDP team lead. Principal Consultant - FOSS at Codethink Ltd.
  - Experienced in managing people & programs/projects in the open.

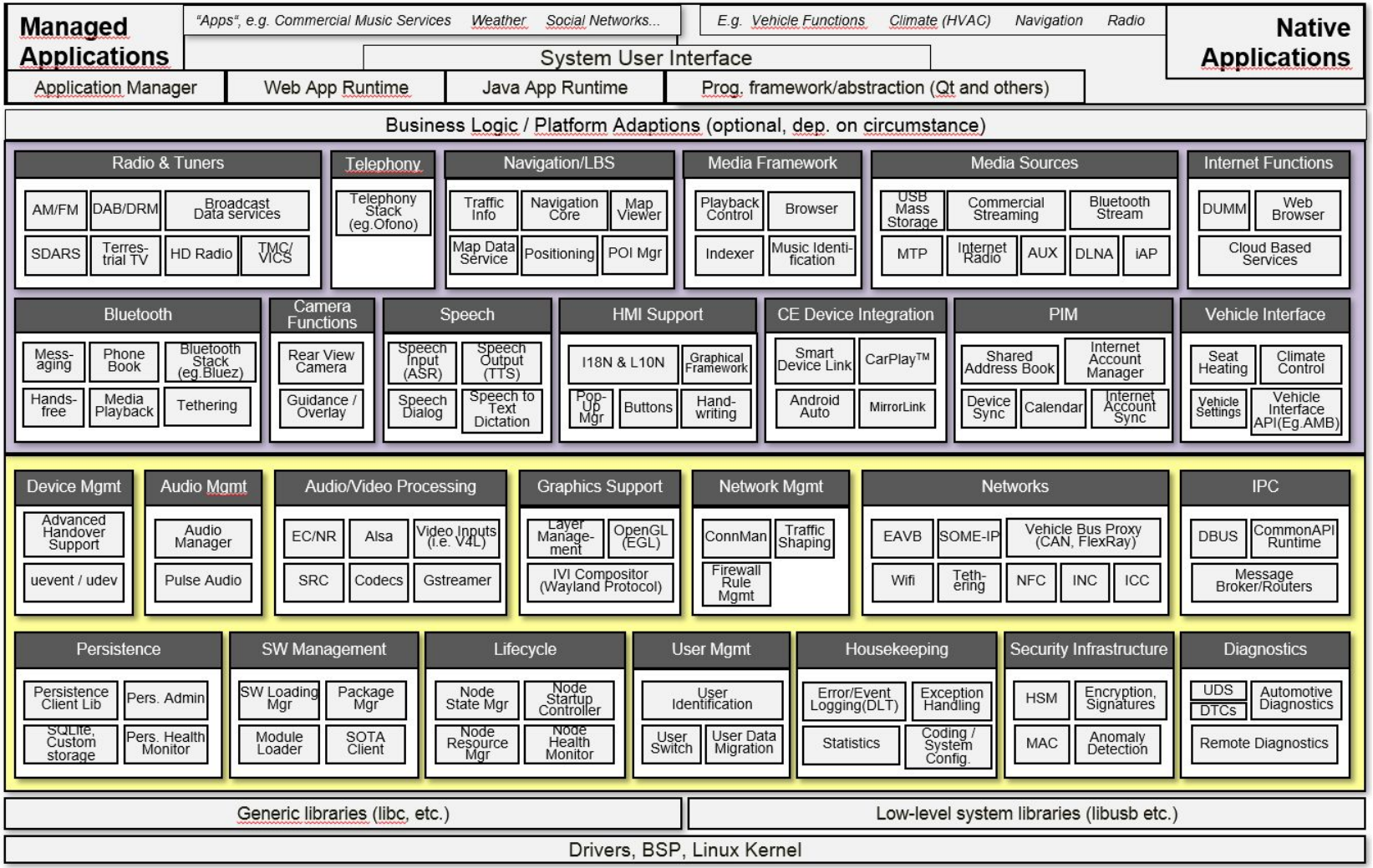
Who is the GENIVI Alliance

The GENIVI Community is currently represented by 140 member companies…

… committed to driving the broad adoption of specified, Open Source, In-Vehicle Infotainment software.

What does GENIVI Alliance do?

- Development of FOSS components for automotive.
- Delivery of Linux Based systems for automotive.
- Automotive Industry Specifications and GENIVI Compliance Program.
- Organization and participation in industry events.
- Open Source awareness within the automotive industry.


Managed Applications
"Apps", e.g. Commercial Music Services Weather Social Networks...
E.g. Vehicle Functions Climate (HVAC) Navigation Radio
Native Applications
System User Interface
Application Manager
Web App Runtime
Java App Runtime
Prog. framework/abstraction (Qt and others)
Business Logic / Platform Adaptions (optional, dep. on circumstance)
Radio & Tuners
AM/FM
DAB/DRM
Broadcast Data services
SDARS
Terres-trial TV
HD Radio
TMC/ VICS
Telephony
Telephony Stack (eg.Ofono)
Navigation/LBS
Traffic Info
Navigation Core
Map Viewer
Map Data Service
Positioning
POI Mgr
Media Framework
Playback Control
Browser
Indexer
Music Identi-fication
Media Sources
USB Mass Storage
Commercial Streaming
Bluetooth Stream
MTP
Internet Radio
AUX
DLNA
iAP
Internet Functions
DUMM
Web Browser
Cloud Based Services
Bluetooth
Mess-aging
Phone Book
Bluetooth Stack (eg.Bluez)
Hands-free
Media Playback
Tethering
Camera Functions
Rear View Camera
Guidance / Overlay
Speech
Speech Input (ASR)
Speech Output (TTS)
Speech Dialog
Speech to Text Dictation
HMI Support
I18N & L10N
Graphical Framework
Pop-Up Mgr
Buttons
Hand-writing
CE Device Integration
Smart Device Link
CarPlay™
Android Auto
MirrorLink
PIM
Shared Address Book
Internet Account Manager
Device Sync
Calendar
Internet Account Sync
Vehicle Interface
Seat Heating
Climate Control
Vehicle Settings
Vehicle Interface API(Eg.AMB)
Device Mgmt
Advanced Handover Support
uevent / udev
Audio Mgmt
Audio Manager
Pulse Audio
Audio/Video Processing
EC/NR
Alsa
Video Inputs (i.e. V4L)
SRC
Codecs
Gstreamer
Graphics Support
Layer Manage-ment
OpenGL (EGL)
IVI Compositor (Wayland Protocol)
Network Mgmt
ConnMan
Traffic Shaping
Firewall Rule Mgmt
Networks
EAVB
SOME-IP
Vehicle Bus Proxy (CAN, FlexRay)
Wifi
Teth-ering
NFC
INC
ICC
IPC
DBUS
CommonAPI Runtime
Message Broker/Routers
Persistence
Persistence Client Lib
Pers. Admin
SQLite, Custom storage
Pers. Health Monitor
SW Management
SW Loading Mgr
Package Mgr
Module Loader
SOTA Client
Lifecycle
Node State Mgr
Node Startup Controller
Node Resource Mgr
Node Health Monitor
User Mgmt
User Identification
User Switch
User Data Migration
Housekeeping
Error/Event Logging(DLT)
Exception Handling
Statistics
Coding / System Config.
Security Infrastructure
HSM
Encryption, Signatures
MAC
Anomaly Detection
Diagnostics
UDS
DTCs
Automotive Diagnostics
Remote Diagnostics
Generic libraries (libc, etc.)
Low-level system libraries (libusb etc.)
Drivers, BSP, Linux Kernel

GENIVI Delivery

- **Baselines**: outcome of the compliance program.
  - Yocto baseline (meta-ivi).
  - Baserock baseline.
- **Master**: rolling release: focused on auto system devs
- **GDP**: GENIVI Development Platform for apps devs.
- New initiatives.
  - GDP spins: community driven systems based on Master
  - GDP SDK: development tools

Why Master?

- Where collaboration takes place.
- Latest automotive software available.
  - In OSS for automotive, GENIVI is upstream.
- Targets FOSS auto system devs. & GDP contributors.
- Build GDP from scratch for your favourite target or customise your build.

What is Master?

- Rolling release with the latest integrated software for automotive.
- Central integration point.
- Yocto (poky) based.
- Two main repos:
  - genivi-dev-platform
  - meta -genivi-dev

Why GDP?

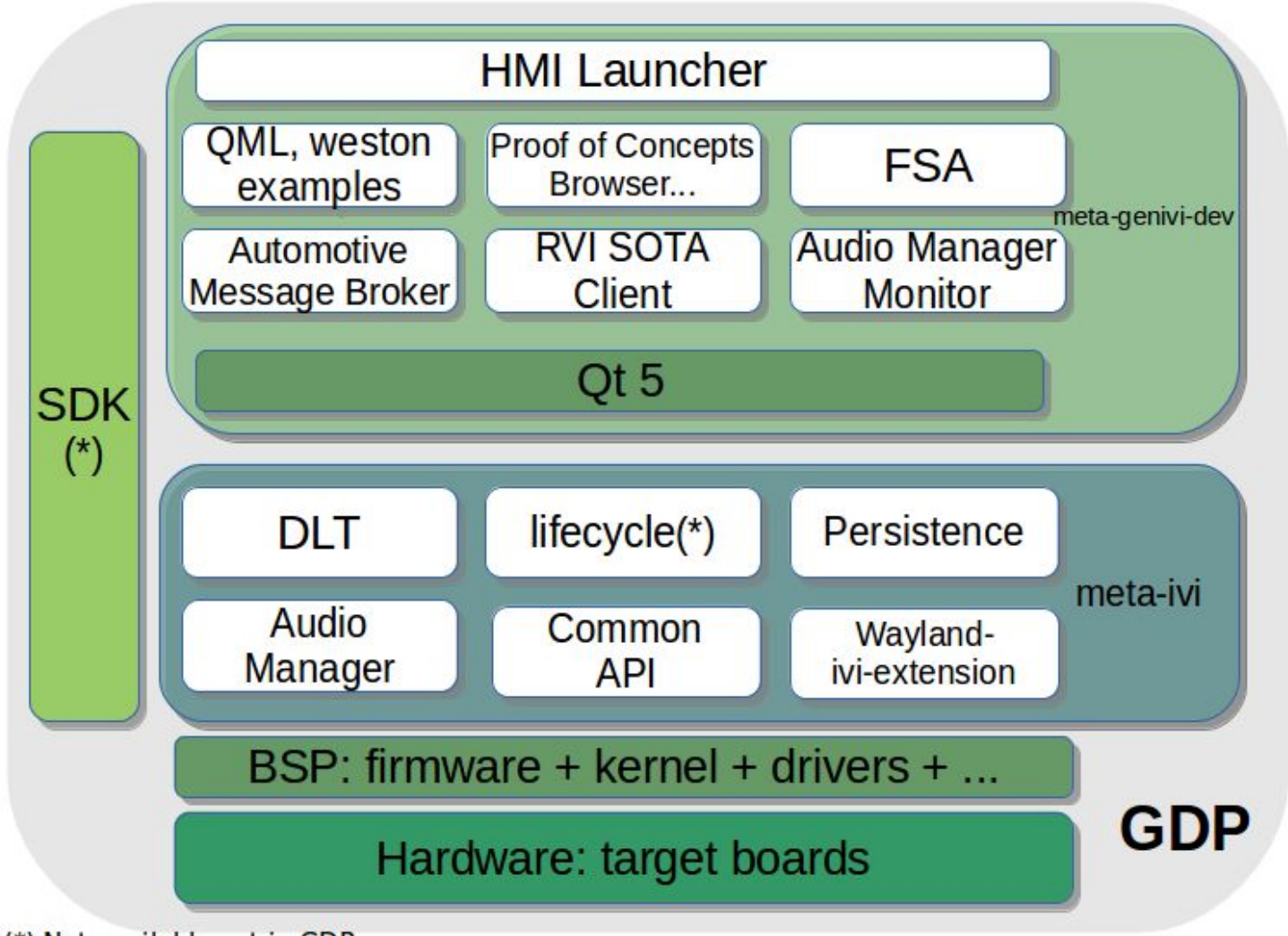
- It brings GENIVI components for automotive to the masses, including meta-ivi.
- Ideal for app developers and automotive newbies.
- Up to date stable software.
- Easier to consume and improved stability.

What is GDP?

- Acronym of GENIVI Development Platform
- FOSS and open delivery project.
- Published as binaries.
- GDP is based on Master (snapshot + stabilization).
- Available for several development boards & QEMU.
- Current stable version (GDP-ivi9)
  - Latest release: GDP 11 RC2.

GDP in detail

GDP block diagram...



(*) Not available yet in GDP

People behind Master & GDP

Delivery

- GDP maintainers
  - **Changhyeok Bae**, community.
  - **Robert Marshall**, Codethink Ltd.
  - **Tom Pollard**, Codethink Ltd.
  - Community testers.
- Other key people:
  - Meta-ivi & Renesas BSP maintainers, community management, devops/IT service, PMO, delivery team lead, GENIVI architect, LRT team …

Development

- GENIVI Expert Groups
- Community contributors

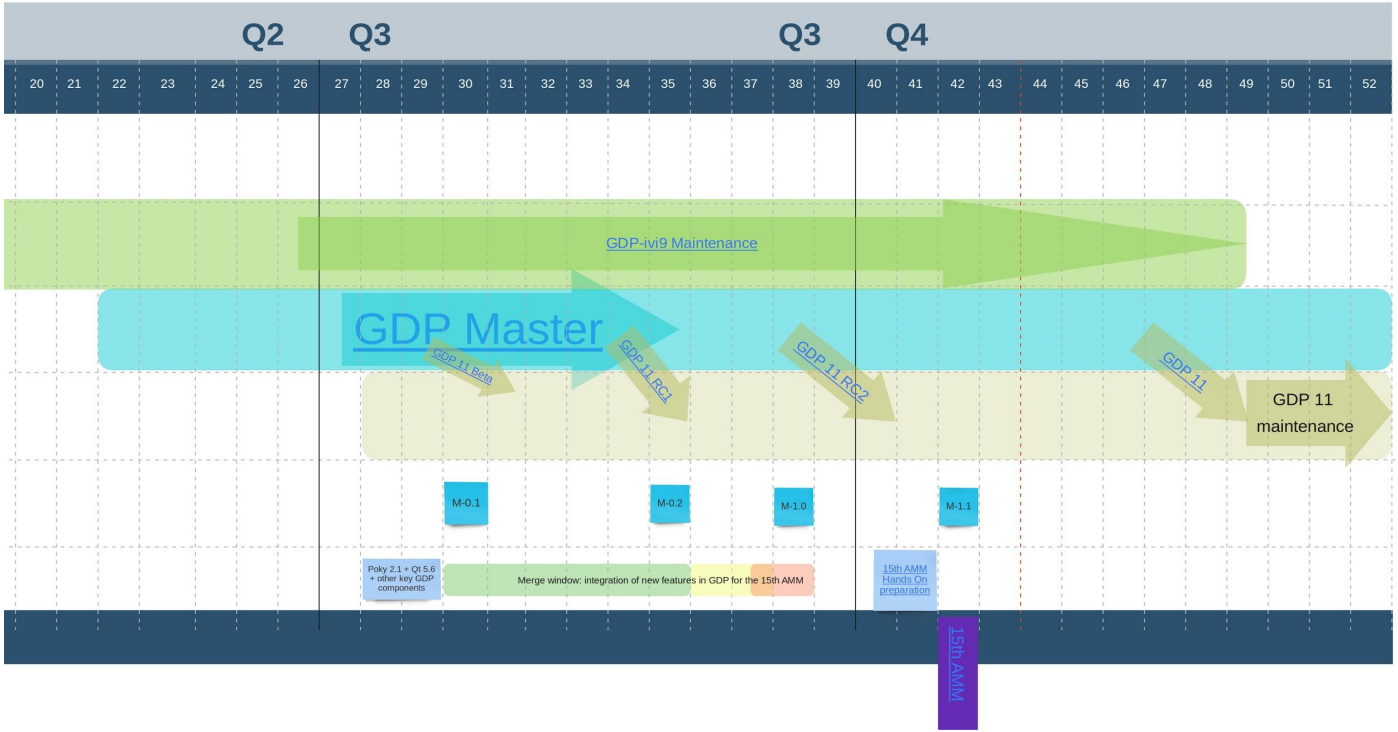
GDP tools

Tools GDP project uses today:

- GitHub: git repositories and code review.
- JIRA: bug tracker and task management tool.
- Confluence: wiki and blog.
- go.cd: integration/delivery mgnt.
- Mailman: genivi-projects@lists.genivi.org
- IRC: #automotive at irc.freenode.net

GDP roadmap

GDP 11 Timeline



GDP 11 RC2, the latest release

- Released on October 4th 2016. Download it!
- Demoed for the first time at ELCE.
- GDP 11 RC2 highlights:
  - Software: Yocto 2.1, Qt 5.6, AM 7.0, wayland-ivi-extension 1.10.9 (1.11 pre-release), meta-ivi 11…
  - Ports: QEMU, RPi2 & RPi3, Intel Minnowboard MAX/Turbot and Dragonboard 410c. Also build GDP for Renesas Porter & Silk from scratch.

Example of a contribution to GDP: GENIVI SOTA Project

- A complete suite for uploading, managing, queueing, transmitting, validating, and deploying software updates remotely to a fleet of vehicles
- Server + Client
- Open source repositories in GENIVI GitHub

Example of a contribution to GDP: SOTA Client

- SOTA client implementation written in the Rust programming language
- Remote Vehicle Interaction (RVI) and/or HTTPS communication based on JSON-RPC
- Integration of RVI SOTA Client in Automotive Grade Linux (AGL) and GENIVI Development Platform (GDP) through Yocto/OE recipes and layer meta-rust

Example of a contribution to GDP: SOTA Client in GDP

- Layer meta-rust provides recipes for building Rust and Cargo: Yocto/OE layer for Rust
- Recipe rvi-sota-client_git.bb in layer meta-genivi-dev which builds and deploys RVI SOTA client and its systemd service
- RVI SOTA Client
  - https://github.com/advancedtelematic/rvi_sota_client.git
  - https://github.com/GENIVI/rvi_sota_client.git

Future of GDP

- GDP 11 to be released before end of 2016
  - New App. Launcher (developed by ICS) with new demo apps.
  - 15th GENIVI AMM, SFO, CA, US. Oct 18th 2016
    - App launcher preview + GDP Hands on Session
- New deliverables:
  - SDK proof of concept + GDP spin for Qt Developers.
- First steps:
  - Towards automated acceptance testing.
  - Measure release impact.

Future of GDP

But above all…

More focus on automotive developers.

Check the latest GDP news.

Interesting links

- www.genivi.org
  - GENIVI FAQ
  - GDP latest GDP news
- GDP Master
  - genivi-dev-platform
  - meta-genivi-dev
- Download:
  - GDP-11 RC2
  - GDP-ivi9
- Get involved:
  - Get the sources
  - Contribution policies
  - Report bugs
- Follow up
  - Delivery status reports
  - GDP overview (weekly)
  - GDP Out There

Questions?

Call for testing

GDP 11 RC2