Contributing to Automotive Grade Linux and GENIVI Development Platform

Leon Anavi
Konsulko Group
leon.anavi@konsulko.com
Embedded Linux Conference 2017
21-23 February, Portland, Oregon
Agenda

- Automotive Grade Linux (AGL)
- GENIVI Development Platform (GDP)
- Contributing to AGL
- Contributing to GDP
Automotive Grade Linux

- Project of the Linux Foundation
- In-Vehicle-Infotainment (IVI) GNU/Linux distribution
- Based on the Yocto Project and OpenEmbedded
- Founded in 2014
AGL Members

**Platinum**
- DENSO
- Mazda
- Panasonic
- RENESAS
- SUZUKI
- TOYOTA

**Gold**
- HONDA
  - The Power of Dreams
- NTT DATA
  - NTT DATA MSE Corporation

**Silver**
- AISIN AW CO.LTD.
- Continental
- Mercedes-Benz
- DRIMAES
- FUJITSU TEN
- irideta
- MITSUBISHI ELECTRIC
- NISSAN
- Pioneer
- QUALCOMM
- WIND
AGL welcomes six new members:
@ARMEmbedded, DrimAES, @EB_Automotive, @RealVNC, @Telenav and @Tuxera #AutoLinux bit.ly/2kFn4nP
Top AGL Contributors

Top 25 AGL contributors in 2016 according to statistics from the Git repositories

<table>
<thead>
<tr>
<th>Commits</th>
<th>Name</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>533</td>
<td>Jose Bollo</td>
<td>IoT.BZH</td>
</tr>
<tr>
<td>166</td>
<td>NuoHan Qiao</td>
<td>Fujitsu Ten</td>
</tr>
<tr>
<td>146</td>
<td>Jan-Simon Moeller</td>
<td>Linux Foundation</td>
</tr>
<tr>
<td>102</td>
<td>Stephane Desneux</td>
<td>IoT.BZH</td>
</tr>
<tr>
<td>92</td>
<td>Jens Bocklage</td>
<td>Mentor Graphics</td>
</tr>
<tr>
<td>86</td>
<td>Tasuku Suzuki</td>
<td>Qt Company</td>
</tr>
<tr>
<td>85</td>
<td>Manuel Bachmann</td>
<td>IoT.BZH</td>
</tr>
<tr>
<td>70</td>
<td>Yannick Gicquel</td>
<td>IoT.BZH</td>
</tr>
<tr>
<td>64</td>
<td>Ran Cao</td>
<td>Fujitsu Ten</td>
</tr>
<tr>
<td>57</td>
<td>Tadao Tanikawa</td>
<td>Panasonic</td>
</tr>
<tr>
<td>55</td>
<td>Fulup Ar Foll</td>
<td>IoT.BZH</td>
</tr>
<tr>
<td>42</td>
<td>Leon Anavi</td>
<td>Konsulko</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Commits</th>
<th>Name</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>Anton Gerasimov</td>
<td>Advanced Telematics</td>
</tr>
<tr>
<td>35</td>
<td>Yanhua GU</td>
<td>Fujitsu Ten</td>
</tr>
<tr>
<td>22</td>
<td>Christian Gromm</td>
<td>Microchip</td>
</tr>
<tr>
<td>21</td>
<td>Ronan</td>
<td>IoT.BZH</td>
</tr>
<tr>
<td>20</td>
<td>SriMaldia</td>
<td>Alps</td>
</tr>
<tr>
<td>18</td>
<td>Naoto Yamaguchi</td>
<td>AisinAW</td>
</tr>
<tr>
<td>15</td>
<td>Karthik Ramanan</td>
<td>TI</td>
</tr>
<tr>
<td>13</td>
<td>Scott Murray</td>
<td>Konsulko</td>
</tr>
<tr>
<td>11</td>
<td>Kotaro Hashimoto</td>
<td>Mitsubishi Electric</td>
</tr>
<tr>
<td>9</td>
<td>Matt Porter</td>
<td>Konsulko</td>
</tr>
<tr>
<td>8</td>
<td>Dominig Ar Foll</td>
<td>Intel</td>
</tr>
<tr>
<td>8</td>
<td>Yuta Doi</td>
<td>Witz</td>
</tr>
<tr>
<td>8</td>
<td>Jian Zhang</td>
<td>Fujitsu Ten</td>
</tr>
</tbody>
</table>
AGL Core Technologies

Qt/QML HMI
HTML5
GStreamer
Weston
Wayland
SOTA Client & OSTree
DBus
systemd
Linux kernel

Security
AppFW, Cynara, SMACK
AGL Yocto/OE layers

- poky
- meta-agl
- meta-agl-demo
- meta-agl-devel
- meta-agl-extra
- meta-intel-iot-security
- meta-oic
- meta-qt5
AGL Supported Devices

- Renesas Gen2 and Gen3 boards
- Minnowboard MAX/Turbot
- Intel Joule
- TI DRA7xx EVM (Vayu)
- Raspberry Pi 2/3
- Dragonboard 610-c
- i.MX6 SABRE
AGL Releases

- Electric Eel 5.0.0 - scheduled for Dec 2017
- Daring Dab 4.0.0 - scheduled for Jul 2017
- Charming Chinook 3.0.0 - Jan 2017
- Brilliant Blowfish 2.0.0 - Jul 2016
- Agile Albacore 1.0 - Jan 2016
- AGL Unified Code Base (UCB) - 4 Jan 2016
GENIVI Development Platform

- GENIVI Alliance
- Automotive open source project
- Based on the Yocto Project and OpenEmbedded
- Founded in 2009
GENIVI Members

- BMW Group
- Honda
- Hyundai
- Daimler
- Nissan
- PSA
- Renault
- SAIC
- Volvo
- DESSAV Automotive
- Hyundai Autron
- MOBIS
- LG
- Magneti Marelli
- Mitsubishi Electric
- Valeo
- Pioneer
- Cumulus
- W3C
- Bosch
- Visteon
- itemis
- IVIS
- Karamba Security
- KPI
- Linxmotion
- Luxoft
- Mapbox
- ACCESS
- Airbit.com
- AllGo
- Antena
- AppDirect
- ARKAMYS
- Arica
- Advanced Telematic
- Delphi
- Ave
- BlaingPoint
- Blackduck
- Beta
- CARFIT
- Cargis
- epam
- Ericpol
- Ericsson
- Epsagon
- Tata Telemotive AG
- Tata ELXSI
- Tinnos
- TomTom
- Tuxera
- Wind
- HERO
- Hortonworks
- iAU
- Igalia
- ICS
- Intive
- Iridea
- Wise
- Workforce
GDP Core Technologies

- Qt/QML HMI
- GStreamer
- Weston
- Wayland
- SOTA Client
- Dbus, CommonAPI, RVI
- systemd
- Linux kernel
GDP Structure

GENIVI Development Platform

HMI, Applications & Extras

GENIVI Baseline (meta-ivi)

Poky

BSP
GDP Yocto/OE layers

- poky
- meta-ivi
- meta-genivi-dev
- meta-oic
- meta-qt5
- meta-rvi
GDP Supported Devices

- Renesas Gen2 and Gen3 boards
- Minnowboard MAX/Turbot
- Raspberry Pi 2 & 3
GDP Releases

- GDP 12 - scheduled for April 2017
- GDP 11 - December 2016
- GDP 10 - not released
- GDP 9 - April 2016
- GDP 8 - not released
- GDP 7 - 2015
Software, Over The Air

- Complete open source suite for uploading, managing, transmitting, validating, and deploying software updates remotely to a fleet of vehicles
- Based on OSTree, "git-like" model for committing and downloading bootable filesystem trees
- Provides a server and a client component, integrated with the rest of the GENIVI system
AGL Developer Tools

- **Git & Repo**
- **Gerrit** [https://gerrit.automotivelinux.org/](https://gerrit.automotivelinux.org/)
- **Jenkins** [https://jenkins-new.automotivelinux.org/](https://jenkins-new.automotivelinux.org/)
- **JIRA** [https://jira.automotivelinux.org/](https://jira.automotivelinux.org/)
- **Wiki** [https://wiki.automotivelinux.org/](https://wiki.automotivelinux.org/)
- **New documentation site** [http://docs.automotivelinux.org/](http://docs.automotivelinux.org/)
Contributing to AGL

- Report an issue or a new feature in JIRA
- Modify the source code
- Include references to the JIRA issue in the Git commit messages
- Contribute to the upstream following the AGL Gerrit workflow
AGL Gerrit

- Free and open source web-based team code collaboration tool for code reviews
- Create an account at identity.linuxfoundation.org to get started
AGL Gerrit Workflow

AGL Gerrit Workflow

Reviewer Repo

Pending changes under review

Submit

Pull

Push

Developer Repo

Fetch

Approve

Gerrit

AGL repo
### Westen: Launch even without input devices

<table>
<thead>
<tr>
<th>author</th>
<th>Leon Anavi <a href="mailto:leon.anavi@konsulko.com">leon.anavi@konsulko.com</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>committer</td>
<td>Jan-Simon Moeller <a href="mailto:jsmoeller@linuxfoundation.org">jsmoeller@linuxfoundation.org</a></td>
</tr>
<tr>
<td>commit</td>
<td>f6320f5660db15a207f69fbe2ea6e837bd832b34</td>
</tr>
<tr>
<td>tree</td>
<td>21988012108f4a816a5447db253a339e395cf45b</td>
</tr>
<tr>
<td>parent</td>
<td>557b015963c8f0b54b0a772559252b101d9012eb</td>
</tr>
</tbody>
</table>

** westen: Launch even without input devices

Launch Weston even if there are no input devices such a keyboard or a mouse.

**Bug-AGL: SPEC-297**

**Change-Id:** I3187b310b1024ef77d4696a06b325bface5de2b3

**Signed-off-by:** Leon Anavi <leon.anavi@konsulko.com>

```bash
meta-agl/recipes-graphics/wayland/weston/0001-compositor-drm.c-Launch-without-input-devices.patch
meta-agl/recipes-graphics/wayland/weston_1.9.0.bb
```
AGL Example

weston: Launch even without input devices

```
author    Leon Anavi <leon.anavi@konsulko.com>
Mon, 24 Oct 2016 14:24:57 +0200 (15:24 +0300)
committer Jan-Simon Moeller <jsmoeller@linuxfoundation.org>
Mon, 24 Oct 2016 17:03:47 +0200 (15:03 +0000)
commit    f6320f5660db15a207f69fbeb2ea6e837bd832b34
tree      21988012108f4a816a5447db253a339e395cf45b
parent    557b015963c8f0b54b9aa772595252b101d9012eb
```

Launch Weston even if there are no input devices such a keyboard or a mouse.

**Bug-AGL: SPEC-297**

**Change-Id: I3187b310b1024ef77d4696a06b325bface5de2b3**

Signed-off-by: Leon Anavi <leon.anavi@konsulko.com>

```
meta-agl/recipes-graphics/wayland/weston/0001-compositor-drm.c-Launch-without-input-devices.patch
meta-agl/recipes-graphics/wayland/weston_1.9.0.bb
```
AGL Communication Channels

- **AGL mailing list**
  
  https://lists.linuxfoundation.org/mailman/listinfo/automotive-discussions

- **Weekly Developer Call**

  *(Tuesday 14:00 - 15:00 UTC)*

  https://wiki.automotivelinux.org/dev-call-info

- **IRC**

  channel #automotive on freenode.net
GENIVI Developer Tools

- **Git**
- **GitHub** [https://github.com/genivi](https://github.com/genivi)
- **GoCD** [http://go.genivi.org/](http://go.genivi.org/)
- **JIRA** [https://at.projects.genivi.org](https://at.projects.genivi.org)
- **Wiki** [https://at.projects.genivi.org](https://at.projects.genivi.org)
Contributing to GDP in GitHub

- Report an issue or a new feature in JIRA
- Fork the project in GitHub
- Modify the source code
- Include references to the JIRA issue in the Git commit messages
- Create a GitHub pull request
Contributing to GENIVI Projects in GitHub

1. Fork
2. Edit
3. Commit
4. Push
5. Create GitHub Pull Request

Repeat until you make the maintainer happy.
**weston: Launch DRM backend without input devices**

Allow launching Weston 1.11 with DRM backend even without input devices such as a keyboard, a mouse or a touchscreen. This fix is convenient for demonstrations and it is useful for Raspberry Pi 2 and 3 as well as other devices which rely on DRM backend.

[GDP-149] Weston and HMI apps are not launched without input devices on Raspberry Pi

Signed-off-by: Leon Anavi <leon.anavi@konsulko.com>

`master (#50)  v11.0`

[leon-anavi] committed with [zeenix](mailto:zeenix@konsulko.com) on Dec 14, 2016
weston: Launch DRM backend without input devices

Allow launching Weston 1.11 with DRM backend even without input devices such as a keyboard, a mouse or a touchscreen. This fix is convenient for demonstrations and it is useful for Raspberry Pi 2 and 3 as well as other devices which rely on DRM backend.

[GDP-149] Weston and HMI apps are not launched without input devices on Raspberry Pi

Signed-off-by: Leon Anavi <leon.anavi@konsulko.com>

master (#50) v11.0

leon-anavi committed with zeenix on Dec 14, 2016
Contributing to meta-ivi

- GENIVI components and their dependencies based on a time-based snapshot of a version of the GENIVI compliance specification

- Sign-off the Git commit messages and submit them against meta-ivi mailing list with `git send-email`, for example:

  ```bash
  git format-patch -s --subject-prefix='meta-ivi'][PATCH' origin
  git send-email --to=yong-il.joh@windriver.com --cc=genivi-meta-
  ivi@lists.genivi.org <generated patch>
  ```
GDP Communication Channels

- **GDP mailing list**
  
  https://lists.genivi.org/mailman/listinfo/genivi-projects

- **GDP Open Call**
  
  *(Wednesday 16:00 - 17:00 UTC)*

  https://genivi.webex.com/genivi/j.php?
  MTID=m2a4a435af8b3f0db1846a62a8df6544815

- **IRC**
  
  channel #automotive on freenode.net
Thank you!

- [http://www.slideshare.net/leonanavi/contributing-to-agl-and-gdp](http://www.slideshare.net/leonanavi/contributing-to-agl-and-gdp)