Introduction to Automotive Grade Linux

AGL Fall AMM 2016

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Community Manager, AGL , The Linx Foundation

LINUX FOUNDATION

AUTOMOTIVE GRADE LINUX

Automotive Grade Linux

Collaborating to build the car of the future through rapid innovation

http://AutomotiveLinux.org

Git Commits BB and CC

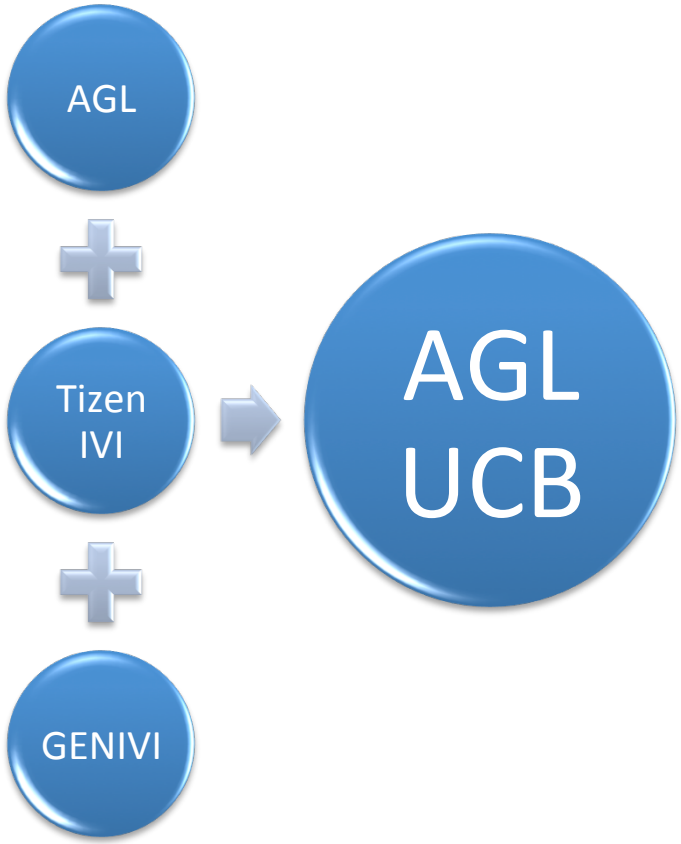
Commits	Name	Company
458	Jose Bollo	IoT.BZH
341	NuoHan Qiao	Fujitsu Ten
70	Stephane Desneux	IoT.BZH
64	Ran Cao	Fujitsu Ten
59	Manuel Bachmann	IoT.BZH
58	Jan-Simon Moeller	Linux Foundation
55	Fulip Ar Foll	IoT.BZH
35	Yanhua GU	Fujitsu Ten
34	Christian Gromm	Microchip
27	Yannick Gicquel	IoT.BZH
20	Tadao Tanikawa	Panasonic
15	Leon Anavi	Konsulko
7	Kotaro Hashimoto	Mitsubishi Electric
6	Yuta Doi	Witz
5	Stephen Lawrence	Renesas

Commits	Name	Company
5	Andre Magalhaes	Collabora
4	Phong Tran	Renesas
3	Anton Gerasimov	Advanced Telematics
3	Jens Bockage	Mentor
2	Carlos Alberto Perez	Igalia
2	Tomoki Sekiyama	Hitachi
1	Wataru Natsume	ADIT
1	Philippe Coval	Samsung
1	Tasuku Suzuki	Qt Company
1	Damian Hobson-Garcia	Renesas

*Since 15 Jan 2016

1260 Total Commits
18 Companies

AGL Distro “Unified Code Base”



- *First Release announced at CES Las Vegas in January*
- *Unifying the best of AGL, Tizen IVI and GENIVI into a single code base for the entire industry!*
- *Reduce fragmentation, focus on innovation and new features!*
- *Yocto/Poky based with AGL specific layers*

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Thanks for all the fish…

- AGL Releases:

AA – Agile Albacore – Jan 2016

BB – Brilliant Blowfish – July 2016

CC – Charming Chinook – Jan 2017

DD – Daring Dab – July 2017

Brilliant Blowfish

- Released July 15, 2016
- Upgrade to Yocto 2.0
- Additional BSPs
- IVI Audio Manager
- IVI Layer Manager
- Automated Test Improvements

Brilliant Blowfish

- Reference BSPs – Fully supported by manufacturer, CI, etc.
  - ✓ Renesas R-Car 2 - Porter board – **Full ALS demo**
  - ✓ QEMU – demo code available – not shown at ALS
- Community BSP – Best effort by AGL with minimal support
  - ✧ NXP – i.MX6 – SABRE – **ALS demo available**
  - ✓ NXP - i.MX6x – Wandboard – issues with graphics drivers
  - ✓ Intel - Minnowboard Max - demo code available – not shown at ALS
  - ✓ TI - Jacinto 6 - Vayu board – **ALS demo available**
  - ✧ QCOM – Dragonboard 610-c – no demo available
  - ✧ Raspberry PI – no demo available

Reference or Community BSP?

- Reference board
  - BSP available as part of AGL Core Distribution
  - BSP maintained by board manufacturer
  - Documentation and Kick-start guide available for downloading and building code and running the AGL demo code.
  - SDK Released and maintained
  - Manufacturer provides at least two boards for AGL Continuous Integration and Automated Test (CIAT) infrastructure
  - Continuous Integration
    - Daily snapshot builds available from AGL Jenkins
  - Test and QA
    - Sponsoring company sets up test nodes in Lava
    - Full AGL CIAT test suite is run
    - Test results reported.
    - Expect >90% pass

Reference or Community BSP?

- Community board
  - Hobbyist boards that are not automotive specific
  - Older automotive specific boards that are no longer sponsored / maintained by the manufacturer
  - Best effort by the community
  - AGL will have “featured” community BSP(s) as proposed by the community and designated by the SAT
- See https://wiki.automotivelinux.org/agl-distro#supported_hardware for list of boards

Patch Releases

- Brilliant Blowfish 2.0.1 patch release available
- BB 2.0.2 will be available Week 37

Charming Chinook

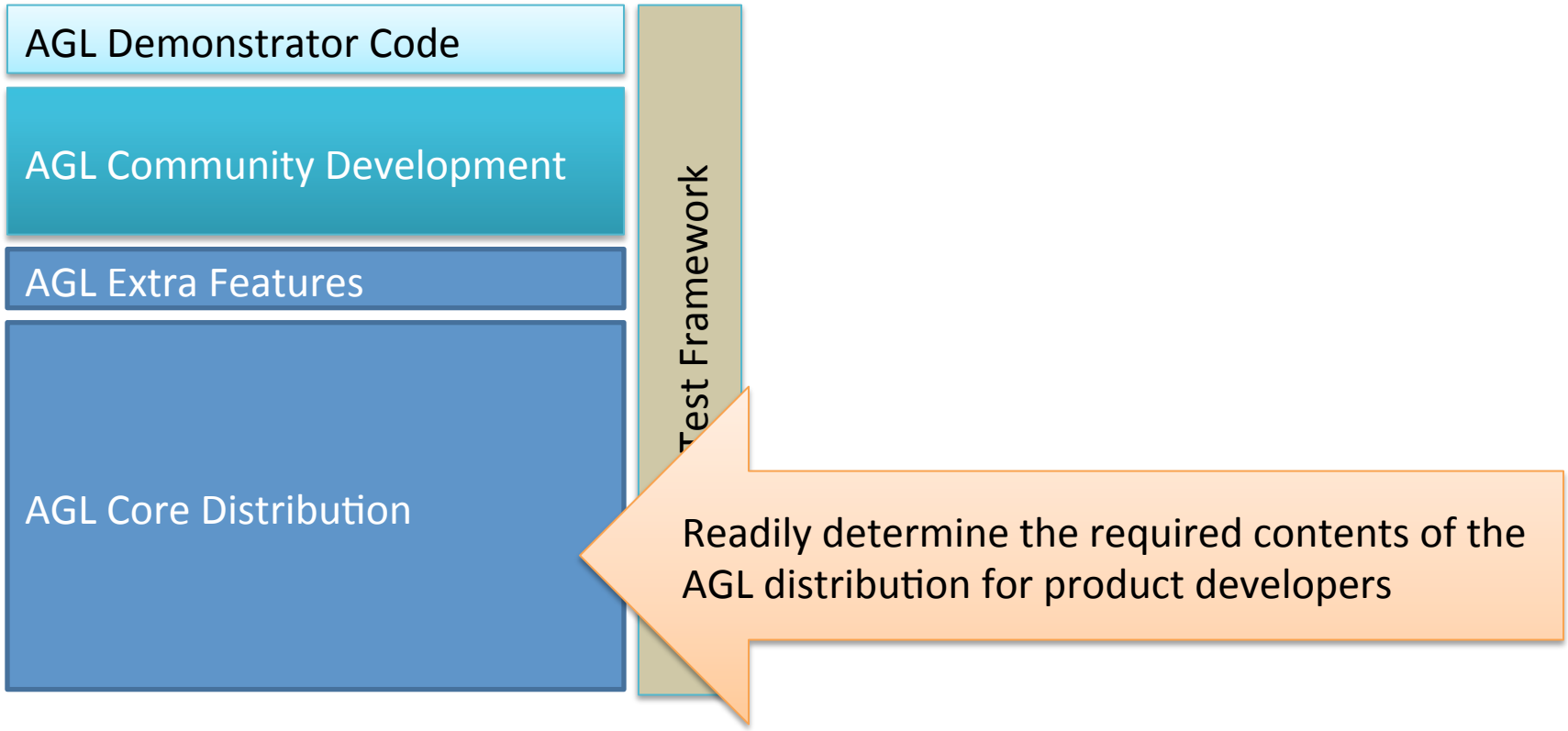
- Target December 15, 2017
- Yocto 2.1
- SDK available
- Reference AGL Apps
- AGL Compositor
- AGL Home Screen Reference App in Qt and HTLM5
- Device Profiles for Telematics, IC, ADAS
- IP Network Manager with WiFi and LTE

Charming Chinook

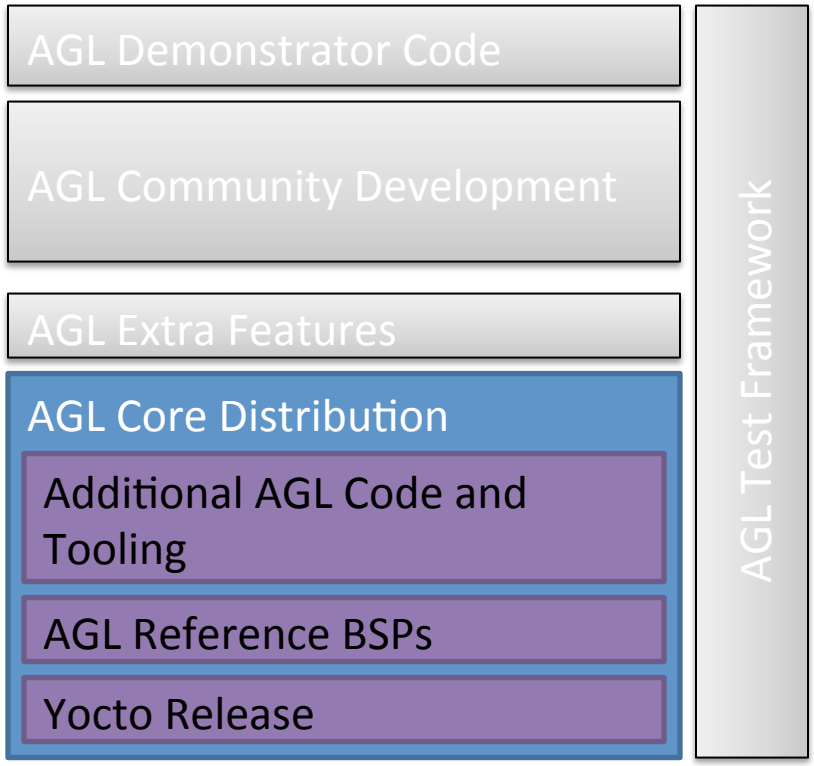
- Timeline
  - Yocto 2.1 (Kergoth) merged to master
  - Master open for feature integration
  - Core Distribution Feature Freeze 01 Nov 2016
  - RCs every 2 two weeks after that
  - Release 31 Dec

CODE STRUCTURE

Software Configuration Requirements

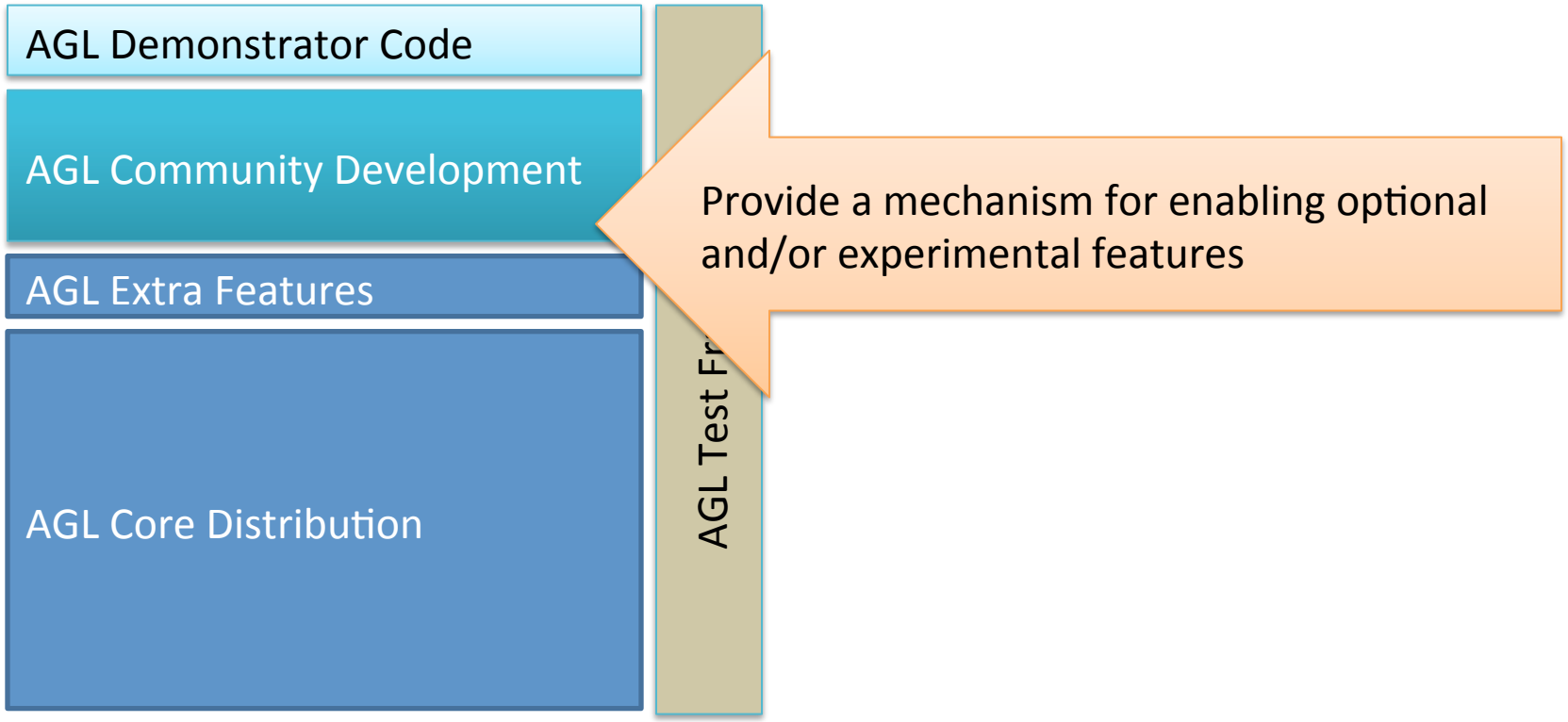


AGL Core Distribution

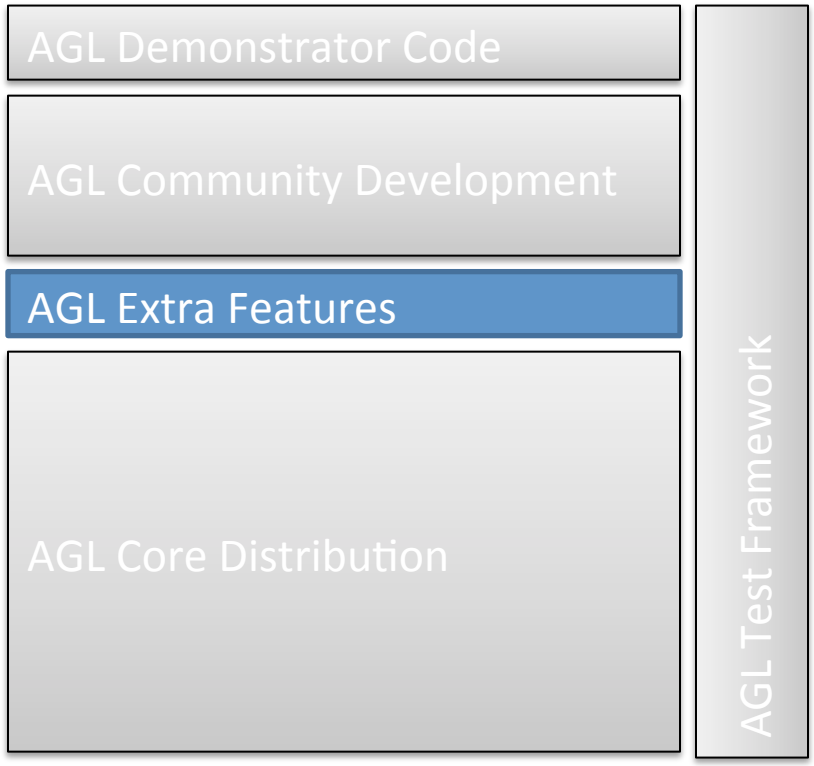


- Stable Yocto release
- Reference BSPs fully supported by the board manufacturer or chip vendor
- Documentation and tooling for building and deploying reference BSPs
- Tooling to allow selection of optional features in the core build
- Test results provided using AGL Test Framework
- Fully supported with updates for at least 6 months
- Defined by Yocto layer – meta-agl

Software Configuration Requirements

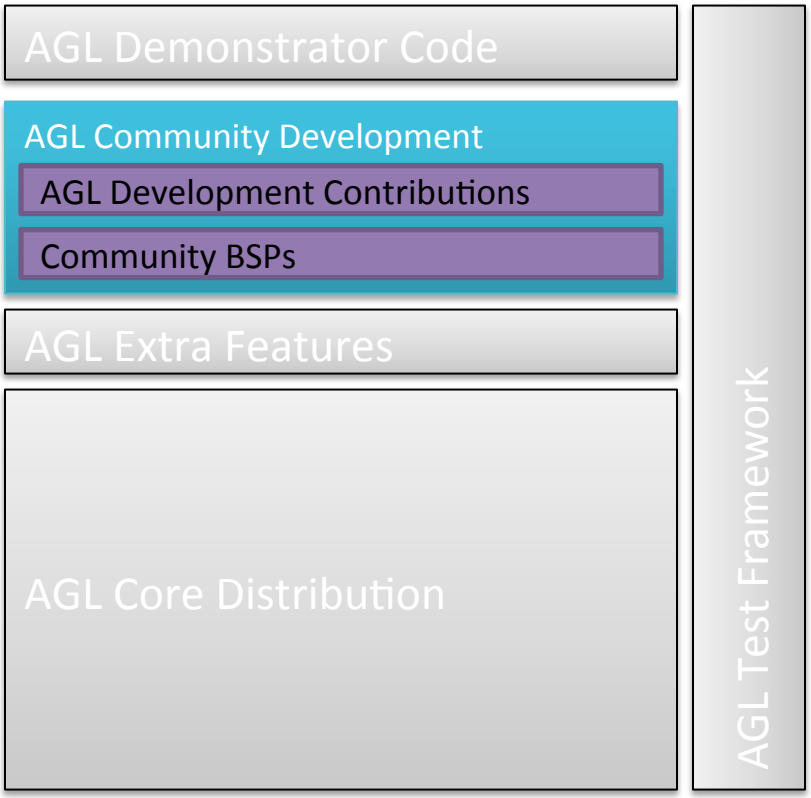


AGL Extra Features



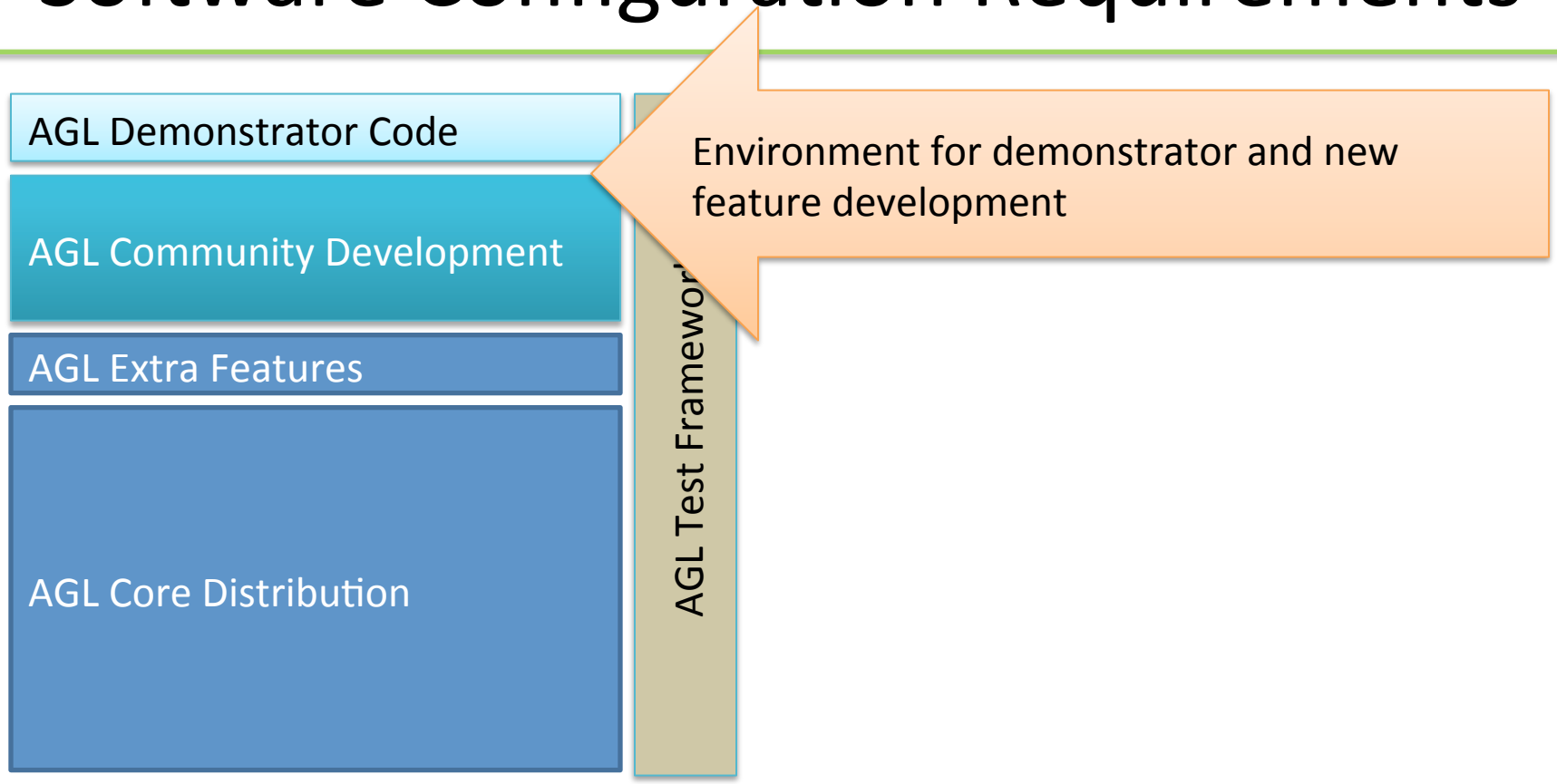
- Builds on AGL Core Distribution
- Features are fully tested and supported as part of AGL release
- AGL environment set up provides extra features that may be enabled by device creators
- Device profiles (e.g., Telematics, ADAS) will be provided in AGL Extra Features
- Yocto layer – meta-agl-extra

AGL Community Development

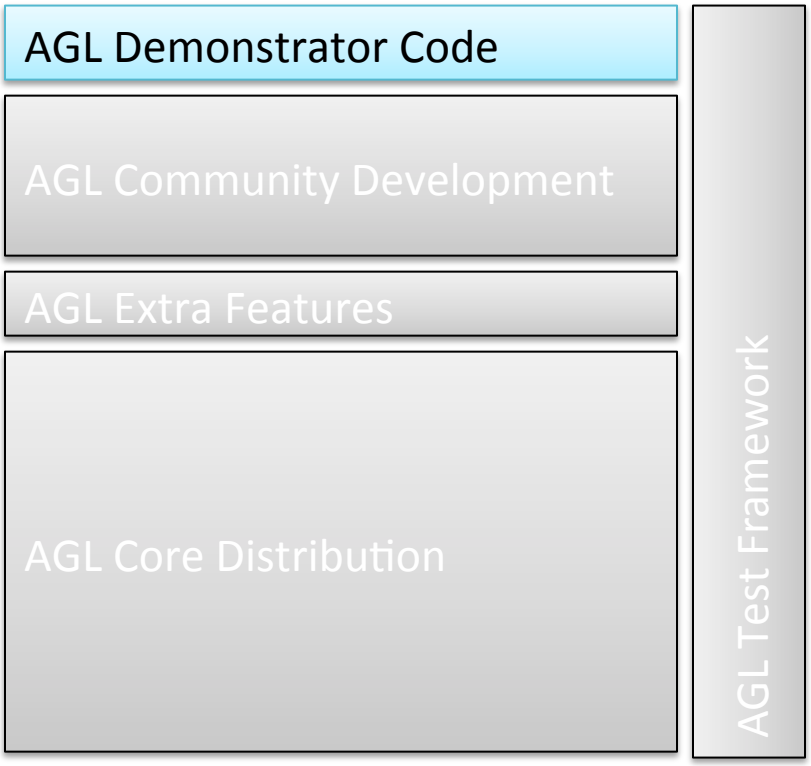


- Place for developing code that may eventually make it into AGL Core or Extra Features
- Snap shot builds for experimental features to facilitate collaboration
- Community BSPs without official support
- Snap shot builds may be provided for Community BSPs
- No formal QA – basically whatever the community can provide
- Defined by Yocto layer – meta-agl-devel

Software Configuration Requirements

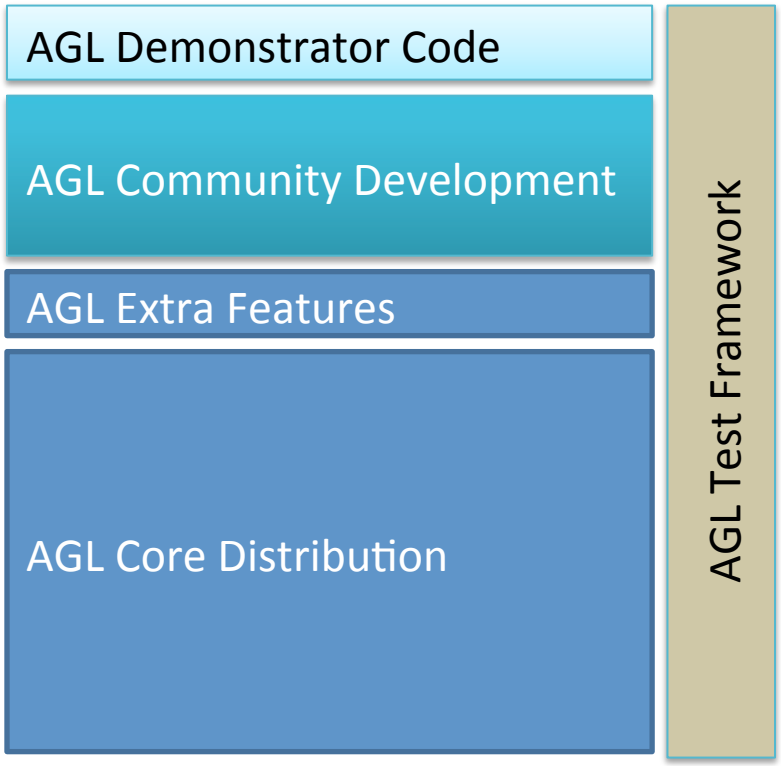


AGL Demonstrator Code



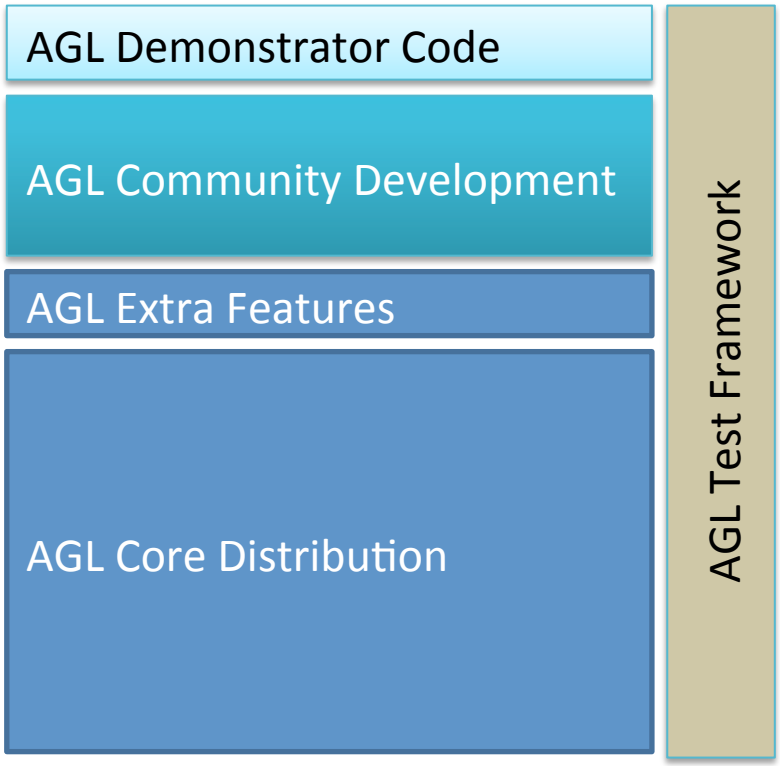
- Code developed to demonstrate specific features and/or releases of AGL
- CES 2017
- Automotive Linux Summit 2016
- Intended for “one shot” development
- Provided “as-is”
- Yocto layer – meta-agl-demo

Release Management



- Twice per year release of AGL Distribution includes
  - AGL Core Distribution and Extra Features
  - All code and tooling with test results
  - Full test results for reference BSPs
  - As-Is demo code, Community Developed features, and BSPs
- Support biannual releases with code fixes for six months
- Long term support (2+ years) for selected releases
- Daily snapshot builds for specific configurations
- Pre-release candidates to allow developer collaboration and coordinated testing

AGL Yocto Layers



meta-agl-demo

meta-agl-devel
- meta-agl-sota
- meta-<BSP>

meta-agl-extra
- meta-iot-appfw
- meta-qt5

meta-agl
- meta-agl
- meta-agl-bsp
- meta-ivi-common
- meta-agl-security

- meta-poky
- meta-oe
- meta-<BSP>

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Get The Code

- Pre-built binaries and source tar balls available
  - https://www.automotivelinux.org/software/download
- Latest Source Code and Build Instructions
  - https://wiki.automotivelinux.org/agl-distro/source-code

Build Options

- Once you have the repos set up use
  $ source meta-agl/scripts/aglsetup.sh –h
- To determine available boards and build options
- Example – Build QEMU AGL Demo

  $ source meta-agl/scripts/aglsetup.sh -m qemux86-64 agl-demo agl-netboot agl-appfw-smack

  $ bitbake agl-demo-platform

Summary

Source Location	Layer	QA Performed	Release Support	Daily Build and CI Builds
Staging (or remote)	Meta-agl-demo	N	N	Y
Staging (or remote)	Meta-agl-devel	N	N	Y
Src (or remote)	Meta-agl-extra	Y	Y	Y
Src (or remote)	Meta-agl	Y	Y	Y

- Examples
  - ALS and CES Demo apps belong in meta-agl-demo
  - Meta-agl-sota belongs in meta-agl-devel
  - Meta-iot-appfw belongs in meta-agl-extra

Getting Involved with AGL

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Getting Involved

- AGL Wiki
  - https://wiki.automotivelinux.org/
- Single sign-on for AGL sites including Jira, git, gerrit, DOORS NG, and the AGL Wiki
  - Uses LF Identity
- Mail list for technical discussions
  - https://lists.linuxfoundation.org/mailman/listinfo/automotive-discussions
- IRC for technical discussions
  - #automotive on freenode.net

Getting Involved

- Most subsystems in need of developers and maintainers particularly user space
- Application developers needed
- Weekly developer calls on Tuesdays at 13:00 UTC
  - Info at https://wiki.automotivelinux.org/dev-call-info
- Check Jira for open issues and tasks that need to be done
  - https://jira.automotivelinux.org/

Contribution Process

- Code development process is documented
  - https://wiki.automotivelinux.org/agl-distro/contributing
- Process continues to evolve as we mature

Git and Gerrit

- AGL uses git for version control and gerrit for code reviews
- Code and patch submissions are via gerrit and use the gerrit review and merge process
- These can be found at
  - https://gerrit.automotivelinux.org
  - https://git.automotivelinux.org

Continuous Integration

- Using Jenkins for Continuous Integration
- Patches
  - All changes submitted to gerrit are built immediately by Jenkins.
  - Successful build gives +1 to new code in Gerrit
  - Build failure -1 in gerrit
- Daily Snapshot builds
  - Available for reference BSPs
  - May add community BSPs later this year
  - https://download.automotivelinux.org/AGL/snapshots/master/

Automated Test

- Fuego (LTSI Jenkins Test Automation) being integrated into process
- More information
  - https://wiki.automotivelinux.org/agl-testframework

Summary

- Brilliant Blowfish 2.0.1 patch release available
- BB 2.0.2 will be available Week 37
- Additional F2F Meetings being planned for Charming Chinook
- Daring Dab – July 2017

Schedule F2F Workshops

- Recommend at least every six weeks
- Jul 12 -14 Tokyo (ALS)
- Sep 7 – 8 Munich (AGL AMM)
- Oct 14 - Berlin or nearby (after ELC-E)
- Nov 17 – 18 – Yokohama (Finalized)
- Dec 15 – 17 Japan, TBD (Final CES integration)
- Ship demo to Las Vegas to arrive by Jan 3, 2017

Q&A

Tweet questions to @VStarWalt

THANK YOU

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