
About Product-level Code from TOYOTA

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Agenda

- Proposal at previous AB (Jul, 2019)
 - Filling the gap between the current AGL UCB and production-level code ASAP
- About the software that Toyota disclose code
- Spec EG activity: Toward Spec 2.0

Proposal at previous AB (Jul, 2019)

Background

- In AGL's Advisory Board (AB), we proposed that we would like to fill the gap between the current AGL UCB and product-level code.

AGL Strategic Direction

- Discussion points
 - How to make AGL UCB closer to product ready
 - How to integrate contribution from product code (at least from Toyota soon)
 - Shift of spending development fund from Demo purpose to Product readiness
 - How to monitor progress of funded development, and navigate them efficiently



<Proposal-1>

Improvements of managing funding developments

- AGL governing body (AB, SC, SAT) should involve more on management of the funding development, especially in budget approval and progress/result evaluation.

<Proposal-2>

Filling the gap between the current AGL UCB and production-level code ASAP

- The gap should be filled as much as possible, and as soon as possible.
- Encourage members to contribute product-level code.
- Leverage the development find for the purpose.

Improvement of funding development (1/2)

1. Issues in management of AGL our sourcing

<Current situation>

	2018/4Q	2019/1Q	2019/2Q	2019/3Q	2019/4Q
Company-A	<p>★AB (Issue #1) Approved by amount of money</p>	<p>(Issue #2) No progress report</p>	<p>★AB (Issue #2) Result are not examined</p>	<p>★AB (Issue #3) Contents of funding is not discussed</p>	<p>★AB</p>



Improvement of funding development (2/2)

<Proposal of the improvements>

	2018/4Q	2019/1Q	2019/2Q	2019/3Q	2019/4Q
Company-A	★AB	☆SAT Check the progress at SAT	★AB ☆SAT Check the result at SAT	★AB Contents of funding should be discussed	★AB



Issues of gap for production (1/2)

2. Issues of the gap between AGL and product-level code

There are too much gap between AGL and product-level code (in API)

Cover ration = (# of AGL APIs) / (# of Product-level code APIs)

#	Function	Function detail	Cover ratio	Abstract of the Gap
1	App FW	① App FW	7%	Application lifecycle management
2	Services	① Voice recognition	4%	Voice control of services (Radio, Phone call, media player, etc.)
		② SW update	0%	SW update notification, download, install
		③ Comm. Mgmt.	48%	Routing though external devices, Priority control
		④ Modem	0%	MTU setting, Error handling, etc.
		⑤ Smartphone Connectivity	0%	Framework to deploy CarPlay, Android Auto, etc.
		⑥ Media player	15%	Integration in other services
		⑦ Radio	8%	Call preset station, regional specific station search (ex. RDS)
		⑧ TV	0%	DTV reception and control
		⑨ Bluetooth	8%	Hands-free (Call, Phone book search, answering), mailing and messaging
		⑩ Remote vehicle control	0%	Remote vehicle maintenance
		⑪ Vehicle info & control	15%	Vehicle control setting and display
3	Basic System	① Kernel and drivers	8%	System hardware resource control, power management, device lifecycle management
		② Diagnostics	0%	Logging and reporting hardware/application error
		③ Location (GPS)	80%	Location data handling
		④ Drawing	100%	Window manager, Display-out control
		⑤ Sound	100%	Routing sound, Sound output control

Issues of gap for production (2/2)

Resolution proposal #1:

Contribute the product-level code to AGL community

- If the contributed code is new code, use as a base of AGL community development.
- If the contributed code is overlapping existing AGL code, start to consider to integrate the functionality into AGL code.

Resolution proposal #2:

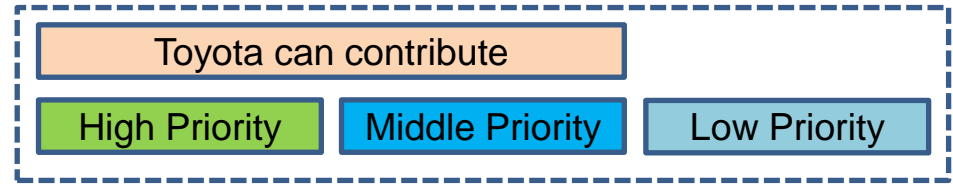
If no volunteer for the integration work, leverage the development fund.

- Ex.) Spec EG defines SoW based of discussions among company developing product-level code (OEM, Tier-1, etc.).

Note: Priority of filling the gap

Ex. Priority of Low grade products based on Browser

High Priority : For OEM Common (Standard Soft.)
 Middle Priority : For Common Grade
 Low Priority : For High Grade



#	Function	Coverage	Requirements with gaps	Assignment Idea	
1	App FW	① UI Tool-Kit	7%	GUI Library	Out of Scope
2	Service	① Browser	—	Security patch update	AGL(Fund)?
		② Smartphone cooperation	0%	SDL、(Contract required for Car Play、Android Auto)	AGL(Fund)?
		③ Arbitration	48%	Priority control (display, sound, communication)	AGL Member
		④ Vehicle information	15%	Display and setting for vehicle	AGL Member
		⑤ Bluetooth	8%	Hand free(incoming, Answering, Calling, Phonebook)、mail	AGL Member
		⑥ Re-programing	0%	Program update	AGL Member
		⑦ DCM	0%	Data communication control	AGL Member
		⑧ Radio	8%	Preset registration/Calling、Destination Func.	AGL Member
		⑨ Voice recognition	4%	Each service(Radio、TEL、MediaPlayer、etc.) control	AGL Member
		⑩ D-TV	0%	Receive and operation	AGL Member
		⑪ Media Player	15%	Basic operation、other service cooperation	AGL Member
		⑫ Remote Service	0%	Remote maintenance service	AGL Member
3	System	① Basic system	8%	Resource management、Power Management、Device management、etc.	Toyota
		② Location information	80%	Location information of GPS	Toyota
		③ Display system	100%	Window Management、Display output	
		④ Sound system	100%	Routing and output of sound	

Gap : Use API number of each function for product and AGL * Coverage =API number of AGL / API number of Product
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About the software that Toyota disclose

Relationship between AGL UCB code and Toyota product level code

The software that Toyota disclose today relate to the following components of AGL.

❑ Services Layer: Platform Service

- ✓ IPC
- ✓ Location Service
- ✓ Persistent Storage
- ✓ Resource Management
- ✓ Power Management
- ✓ Error Management
- ✓ Health Monitoring
- ✓ Network Management

❑ Operating System Layer

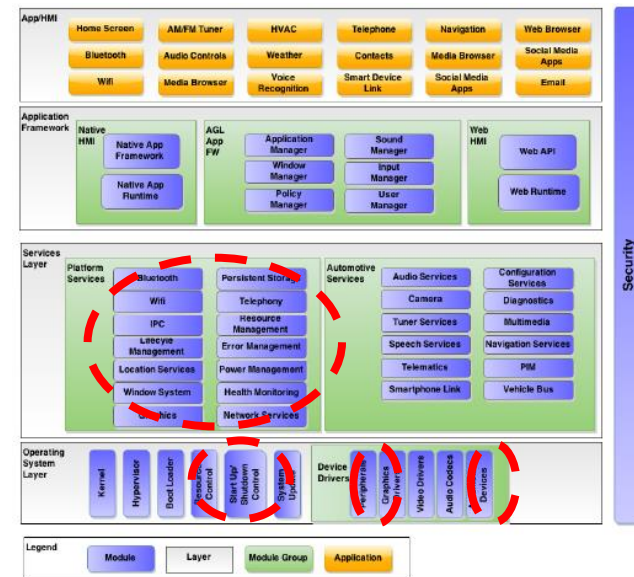
- ✓ Resource Control
- ✓ Startup/Shutdown Control
- ✓ Device Drivers: Peripheral / Automotive Device

Example of missing features in AGL

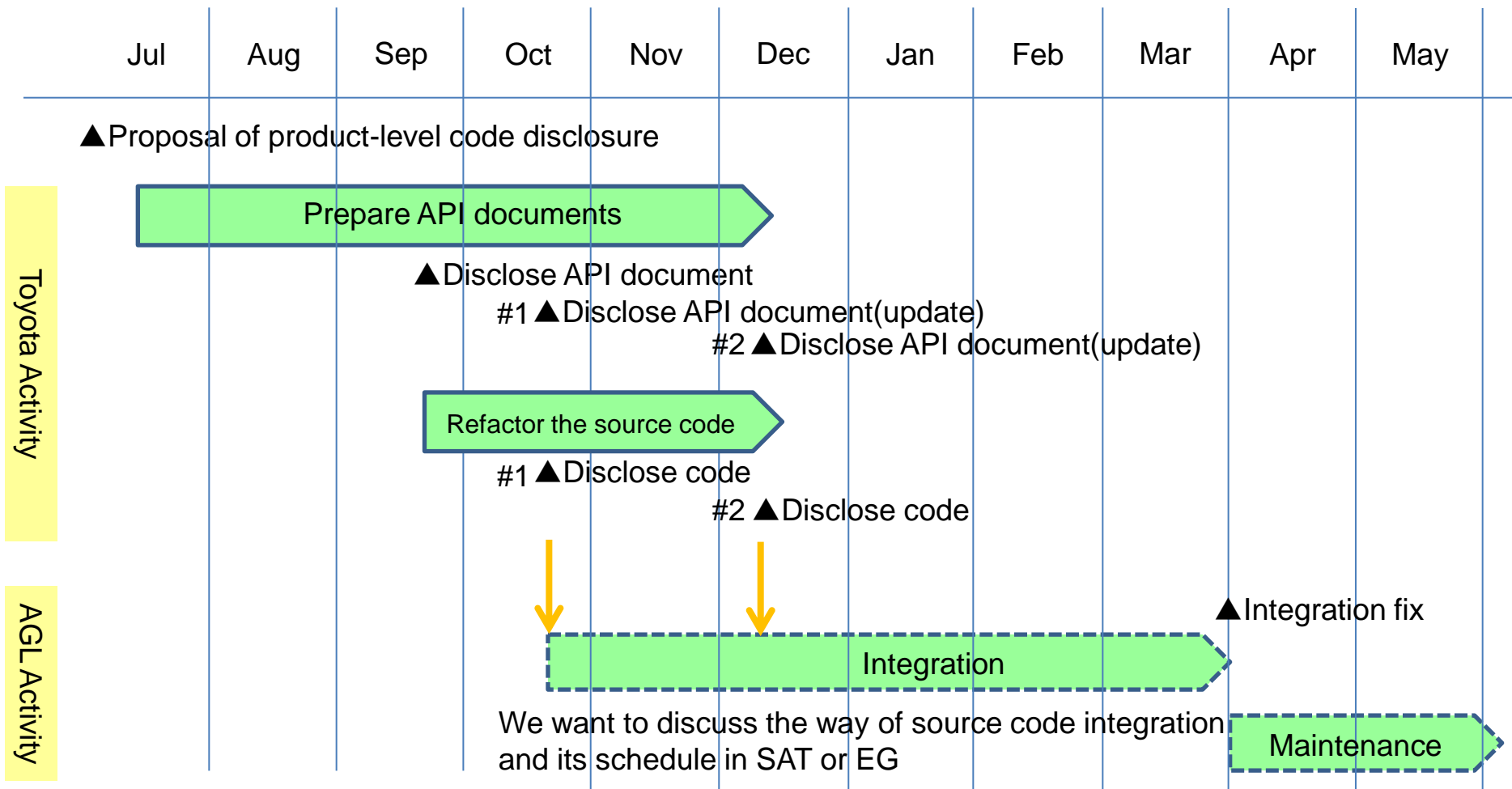
1. Shutdown processing
 - Low power consumption when ACC-OFF
2. Data backup
 - Maintain user usage
3. Resource monitoring
 - Prevention of system stop or reset

Example of similar features in AGL

1. Touch-Panel input control
2. Location Service
3. Task manager



Schedule for the activity



#1 : 7 modules of all 22 modules

#2 : All 22 modules

Explain function overview

- Explain features
 - Feature overview
 - Relation diagram
 - Use cases

Please refer other document: BaseSystem_Features.pdf

- API Introduction

<https://confluence.automotivelinux.org/display/TC/API+Documents>

Request

■ To Walt

- Please assign the appropriate person to review API documents and source code that we disclose from now on.

■ To Reviewers

- We would like you to review the software (documents and source code) in terms of following points
 - Some of the software is not in current AGL UCB. Therefore, please check that these software from us is acceptable to merge in AGL or not.
 - On the other hand, some software is similar to current AGL UCB. For these software, we would like you to propose
 - A: Replace AGL to Toyota software
 - B: Co-exist both AGL and Toyota Software
 - C: Reject to merge Toyota software
 - Also, please let us know the detail reason for above two terms.

Spec EG activity: Toward Spec 2.0

■ Background and Current Status

- We propose to update spec document from version 1.0 to 2.0
- So, we requested to several OEMs to extract the requirements for AGL software in F2F @ Spain (May, 2019)
- However, there were no new requirements from OEMs.

■ Re-Plan

- We will proceed in other way to update spec documents.
- Toyota will first propose the new requirements based on the software we disclose

