### Status Update : Architecture Overview

- The following points have been aligned with Cluster Tier-1 WG and Technical WG.
  - 1. Architecture Overview
  - 2. IC-Service Interface
  - 3. IC-EG Scope
  - 4. Use Case and Data Flow
- Open Points  $\rightarrow$  to be discussed and aligned with Cluster Tier-1 WG and Technical WG.
  - 1. Function Block Assignment
  - 2. Implementation Model

#### **Function Block Assignment – Draft Proposal**

Cluster function shall be separated based on their required QM level.

- 1. Traditional applications shall be assigned onto the Cluster Container.
- 2. Modern applications shall be assigned onto the Other Container.
- 3. Hard real time applications should be assigned outside of the Cluster Container.

Other Container	IVI Container	Cluster Container	Safety Function
ACC Energy ECO Flow ECO Warning Traffic Turn by User Maintenance etc.	BT     USB     WIFi     Touch Display       Sound Manager     Display Manager     Radio     Audio       Video     SDL     CarPlay     Android Auto       HFP     Tuner     Rear Control     Camera     etc	SPEED TACHO TEMP Shift Telltale Fuel etc.	FUEL Alarm Backlight ODO/Trip DIAG DTC System CAN-NM EOL LIN CAN etc. Safety Monitor
Container host	Manager		
Linux Kernel			RTOS / Non-OS
SoC			MCU

#### **Implementation Model – Open Point**

The following points needs to be clarified and aligned with Cluster Tier-1.

- 1. Implementation model of IC-Service and the other components.
- 2. API and Interface method of IC-Service.
- ightarrow It shall be defined with IC-EG Technical Working Group.





## Status Update : Test Spec

- The following points have been aligned with Cluster Tier-1 WG and Technical WG. 1. Contribution Scheme
  - 2. Scope of Test Spec
- Open Points → to be discussed and aligned with Cluster Tier-1 WG and Technical WG.
   1. How to achieve QM





### Status Update : Architecture Overview

- The following points have been aligned with Cluster Tier-1 WG and Technical WG.
  - 1. Architecture Overview
  - 2. IC-Service Interface
  - 3. IC-EG Scope
  - 4. Use Case and Data Flow
- Open Points  $\rightarrow$  to be discussed and aligned with Cluster Tier-1 WG and Technical WG.
  - 1. Function Block Assignment
  - 2. Implementation Model





# Status Update : CAN

- Goal
  - 1. To confirm whether or not IC requirements can be satisfied by a configuration using a sub CPU by transferring CAN processing conventionally performed by the sub microcomputer to the sub CPU of a main microcomputer.
  - 2. No commercial OS is available, so NuttX is ported to the sub-CPU for evaluation.
  - 3. As for CAN on the main microcomputer side, the use of SocketCAN is assumed, and lib which can be used in general from each application is examined and created.
- Current status
  - 1. Completed porting NuttX to CR7 of R-CAR H3
  - 2. Boot of NuttX from U-boot completed
  - 3. Porting CPU communication between NuttX and Linux
- Future work
  - 1. System Configuration of Linux/NuttX CAN
  - 2. NuttX CAN Driver Creation
  - 3. Creating a Linux Virtual CAN Driver
  - 4. Linux CAN lib study/creation
- Future work

The EVIS-BOARD is not equipped with CAN's HW IF and CAN communication cannot be

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# Status Update : Cluster container and Window manager

### • Purpose

1. Provides an architecture that can achieve Cluster quality

2. Creation of a system that allows each OEM to absorb different specifications

### • Activity status

Continuing to explore the specific architecture of the Cluster Container, including the Cluster Service.

Cluster Containers will feature a graphical user interface, services (logic), and vehicle data analysis.

The challenge is to define a specific implementation model. The proposal content is being arranged including the application/new development of OSS. At the same time, the Graphics/Window architecture is under consideration

### • Future work/Schedule

Fix the architecture, fix the definition of the implementation model early and move to the implementation phase.





## Status Update : QM

#### • Purpose

Achieve functional safety QM process for AGL-equipped meters

#### • Activity status

- 1. ELISA Project \* For details of ELISA activities, see ELISA Task
- Based on the concept of Cluster Tier 1 for QM, we conducted a web survey of each company's development process to summarize the concept of IC EG. Created and commissioned to Cluster Tier 1 members. I am asking the company that I am asking for an answer by the end of March.

#### • Future work/Schedule

As a process WG, MTG will be held every Thursday with related members to discuss both the process and the required deliverables.





# Status Update : IVI privilege container

#### • Purpose

Basic IVI functionality for AGL-equipped meters

### • Activity status

This container is expected to contain multiple features and services, including privileged features (HW control including Sound, etc.). We have decided with affiliated companies how to cooperate with the existing AGL IVI side. It is necessary to determine the functions/services of the IVI privilege container to be covered by the IC EG.

• Future work/Schedule Described in the above activity status





# Status Update : IVI privilege container

#### • Purpose

- 1. Improved AGL appeal with current demo design changes
- 2. High level leveling of performance (SoC, OS) required to realize Cluster specifications

#### • Activity status

Examination of feasibility as a meter (Sufficient display elements, performance, etc.), and examination of a design concept that can appeal AGL. The design of the first draft has been made. The design and styling concept are described on the next page.

#### • Future work/Schedule

By June, we plan to build an operating environment on R-CarE3 Ebisu boards. After the release of the 1st version of Low Spec AGL, the rendering performance of ClusterSpec will be evaluated.





### Status Update : Reference design

Panasonic prepare some samples.







# Status Update : Container host and Container manager

### Container host

- 1. Begin discussion of AGL core OSS (libc, systemd, etc ...) LTS strategy (Conducted at SC and SAT).
- We have found that we cannot achieve the level of IC-EG unless we establish OSS selection rules and develop and operate a process to select OSS that meets these rules.
   At first, we searched for the possibility of passing the quality standard of OSS which AGL did not develop, but it did not match with A-Spice.

### • Container manager

Preparing to Begin Development (Starting Mar. ~)

-Review tools required to create documents in AGL IC-EG Confluence (completed)

-When we started to review the contents of the document, we found that there were no AGL rules (Design, coding, and documentation) in the first place, so we changed our policy to implement additional activities to determine AGL QM standards.

### Common future work/Schedule

Need to define QM criteria as an AGL project

-Sharing Issues at IC-EG in March, Added to SAT Agenda

-Cluster, host containers and the software they contain. IVI is not covered

-Since QM tasks and Test Spec tasks have similar problems, a sub-working is established

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to LINUX tigate them. (wekly meeting start)