

# Accelerating SDV Through Open-Source Based Virtualization

May. 13, 2026

Panasonic Automotive Systems Co., Ltd.  
EVP, CTO

**Masashige Mizuyama**

# The Future of Automotive Is Driven by Software



# The Speed of Product Discovery Matters

Product  
Develop-  
ment

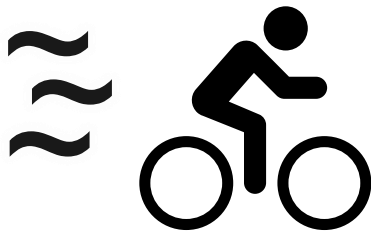
Measures for software that expands exponentially due to shifting to SDVs  
Time To Market, resource limit, explosion of development cost

Product  
Discovery

Competition to "discover the right products to develop"  
How fast can you reach the right product through repeated try-fail-improve?

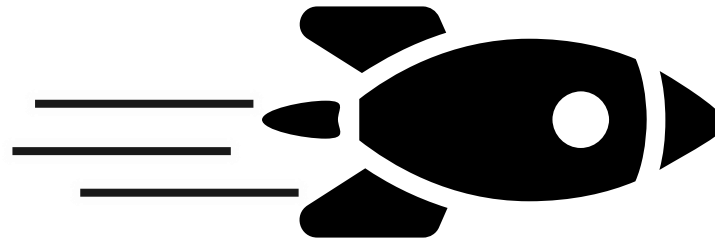
Competitiveness in product discovery will significantly influence the advantage.

Conventional-type hardware company



Copy machine, car navigation,  
automotive parts  
Development period: 1-3 years  
(surveyed by iTiD Consulting)

IT industry





Release in approximately two-week cycles with agile  
development on the cloud  
Amazon: Frequency of once every **11.6 seconds on average**

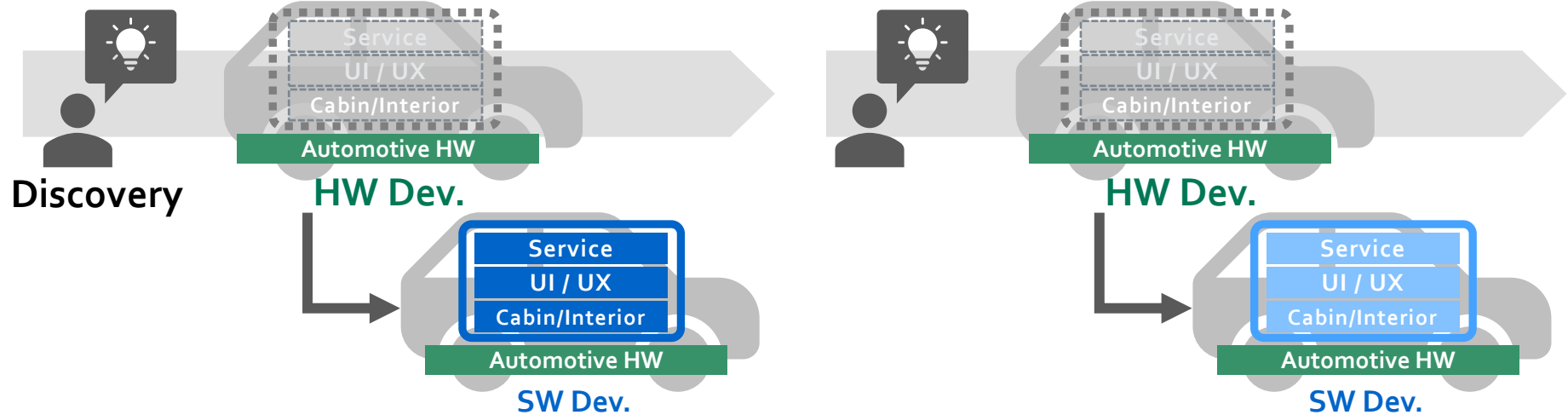
# From "Hardware First" to "Software First"

Evolve Software Continuously to Increase Value, Develop Optimal Hardware to Run it.

Legacy



## Hardware First

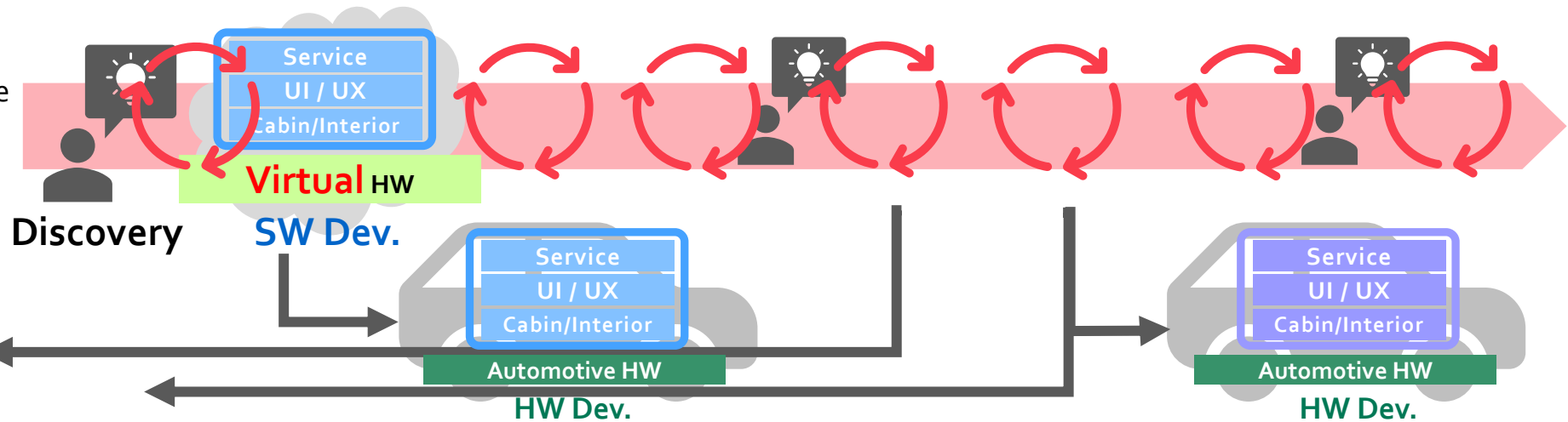
-  Realizing limited value within hardware constraints.
-  Long lead time to realize new value.



To Be

## Software First

-  Selecting the most suitable and latest hardware for realizing value through software.
-  Faster value discovery and introduction into market.



Achievements *du jour* on VirtIO ecosystem

Growth of Existing VirtIO Initiatives

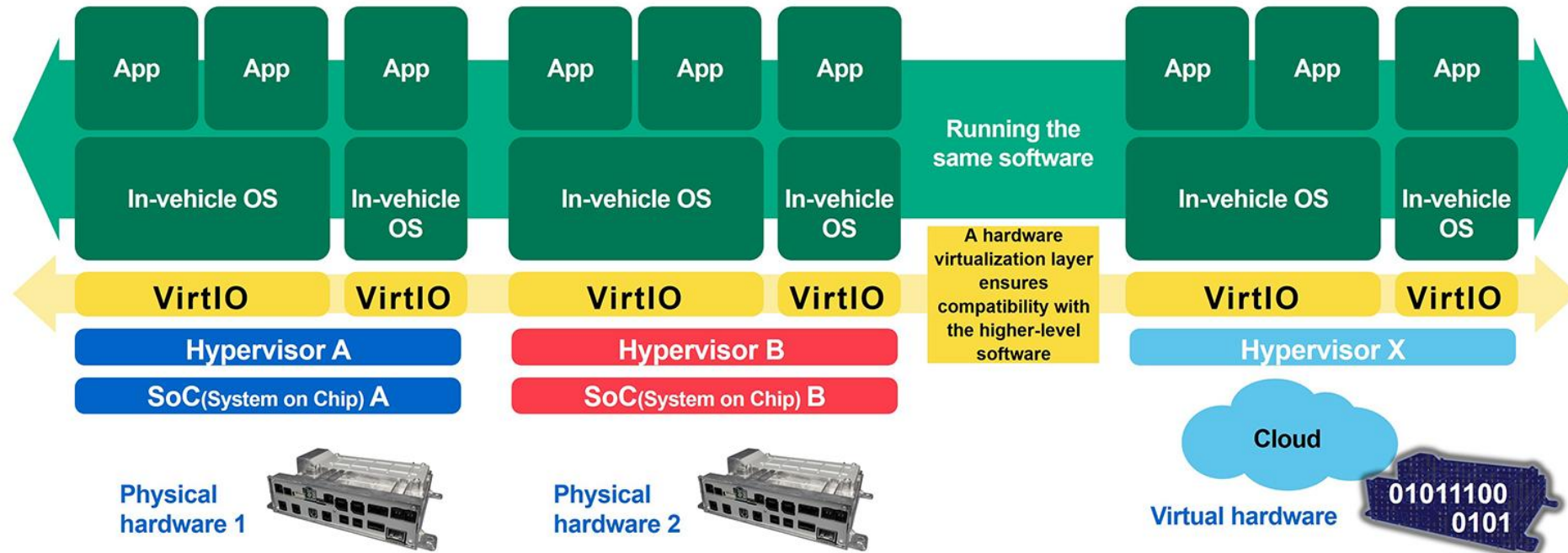
Launch of New Incubation & Innovation

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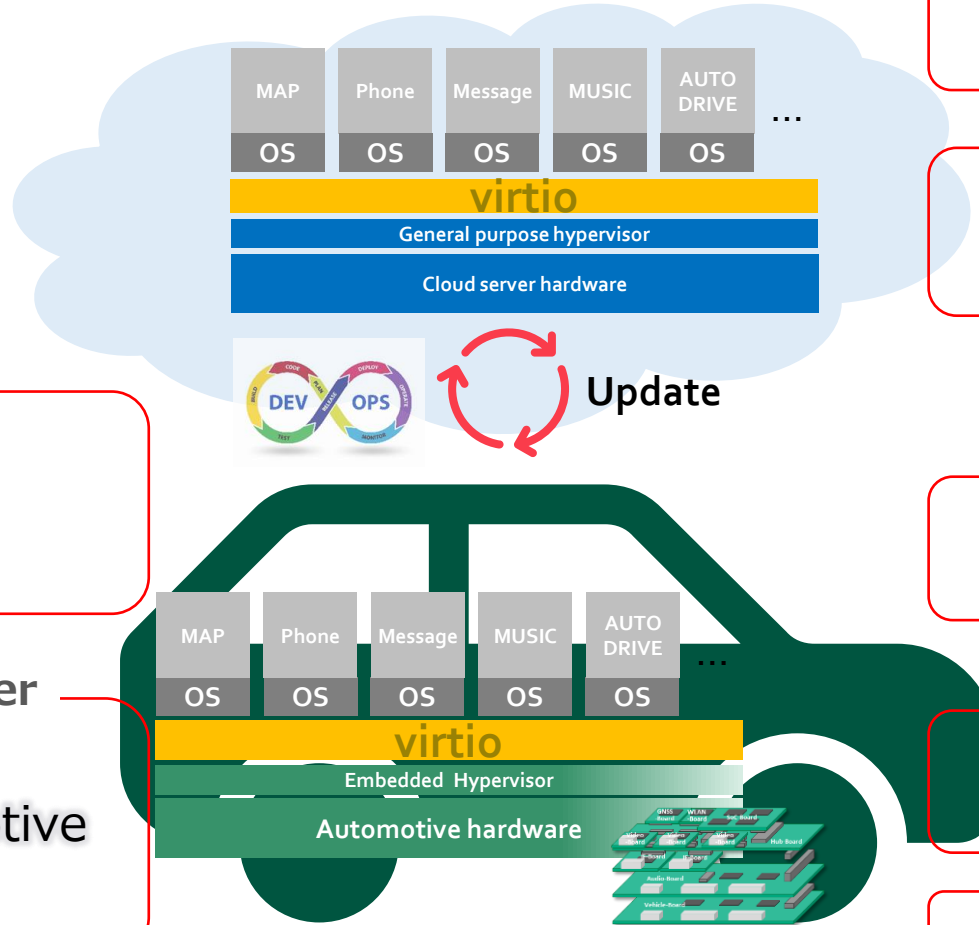
# Industry-wide support gained for standardizing VirtIO as a de-facto industry standard, led by Panasonic Automotive w/AGL

Open-source device  
virtualization technology 「VirtIO」

A common platform that enables the same software to run reliably,  
even across different hardware and cloud environments



# Various World-class Companies and Organizations Aligned around VirtIO in our Press Release



**OEM**

Honda Mazda  
Mitsubishi  
Nissan Toyota

**Tier1/SDV Enabler**

Panasonic Automotive

**Cloud**

AWS Google

**Virtual Hardware**

Panasonic Automotive

**OS/Platform/Hypervisor**

AGL Google Eclipse Xen

**SoC**

AMD MediaTek Qualcomm  
Renesas Telechips

**Core IP**

Arm

# Enthusiastic Endorsements Gathering around VirtIO

**Honda:** Specifically, it is critical to treat software as a continuous asset, necessitating a hardware-agnostic architecture that remains resilient to underlying hardware evolution. We recognize VirtIO as a key technology for hardware virtualization, offering the potential to overcome these challenges and accelerate SDV development. Furthermore, we believe that the adoption of VirtIO will go beyond Honda's own advancements **to fortify the entire industry's technological foundation, driving sustainable value creation across the mobility ecosystem.**

**Mazda:** Mazda views VirtIO as a common interface that helps maintain architectural consistency in line with the evolution of future system configurations. Recognizing its potential early on, Mazda has been actively evaluating and promoting the adoption of VirtIO as an effective technology to underpin this common foundation. Mazda expects VirtIO to further mature as a technology that contributes to value creation and remains committed to contributing to its continued advancement.

**Google:** At Google, we have officially adopted VirtIO as the standard I/O interface for many years, both in Android Automotive OS and our cloud-native development environments. It supports extensions for a wide range of devices and ensures stable operation and high versatility across multiple hypervisors and hardware configurations. **We appreciate Panasonic Automotive's continuous contributions to VirtIO standardization and Android development.**

**AGL:** PAS is playing a critical role in defining the future of the software-defined vehicle. Their significant technical contributions, most notably their extensive work on VirtIO, have become an integral part of the AGL SoDeV platform, providing the essential device and hardware abstraction required for modern, scalable architectures. We deeply value their continued collaboration and leadership as we work together to accelerate automotive innovation.

**Renesas:** As a leading provider of automotive semiconductor solutions, Renesas is strengthening hardware virtualization in our SoCs and actively driving software-based virtualization technologies. As part of these efforts, we are expanding VirtIO capabilities in our SoC software. **We fully support Panasonic Automotive's initiative to promote the standardization of VirtIO across the industry.**

**Qualcomm:** Virtualization is a foundational pillar of the software defined vehicle, playing an increasingly important role in decoupling the inherent complexity of the automotive domain, where diverse platforms and fragmented architectures demand scalable solutions. By enabling portability across devices and cloud environments, it accelerates development, testing, and rapid prototyping. **Qualcomm Technologies remains committed to advancing VirtIO as it evolves to meet growing automotive requirements.**

# AGL is always in the frontier of Automotive VirtIO

VirtIO-compatible Virtual Hardware  
in the cloud (later “vSkipGen”)  
@2021



Unified Virtual Display System  
(Unified HMI)  
@2022



Enhance System  
Diversity Support,  
Performance  
since 2023

Led to “SoDeV”  
@2025



AGL UCB on VirtIO  
since 2020

Increase Peripheral Device  
Coverage for Automotive  
since 2019

Healthy Eco-system Concept  
w/VirtIO @2018



Achievements *du jour* on VirtIO ecosystem

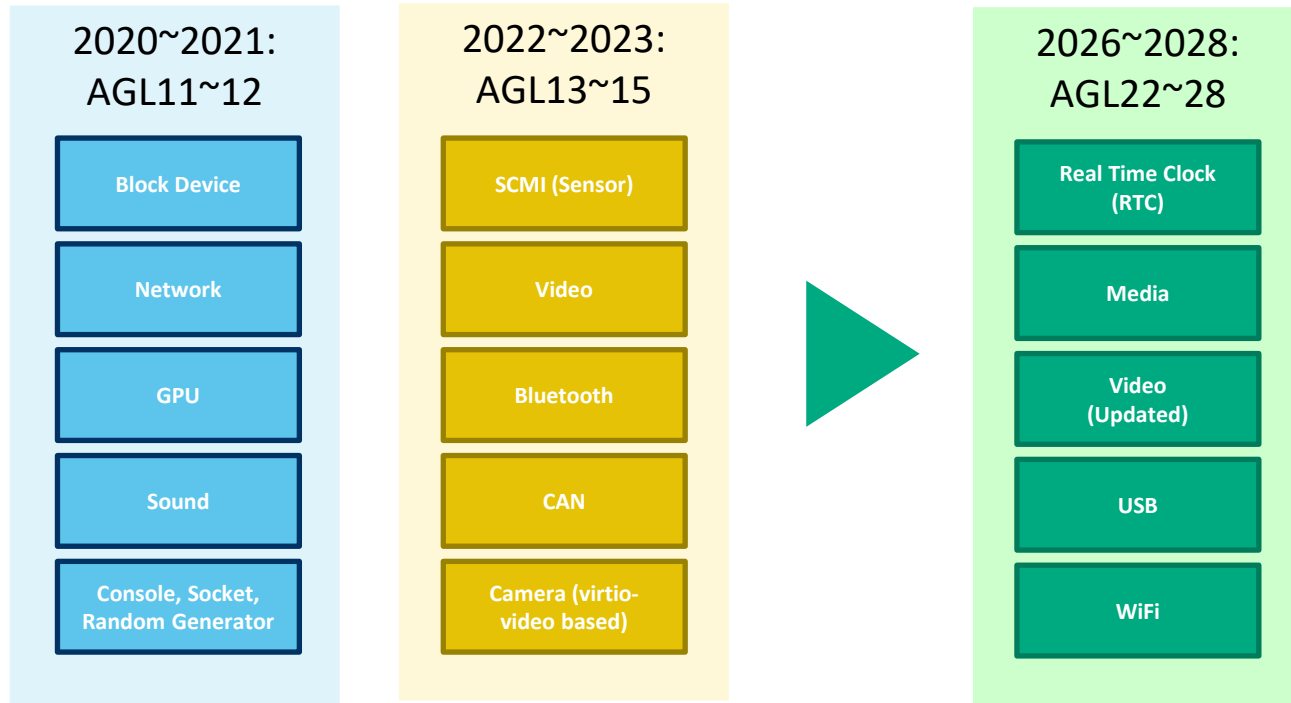
**Growth of Existing VirtIO Initiatives**

Launch of New Incubation & Innovation

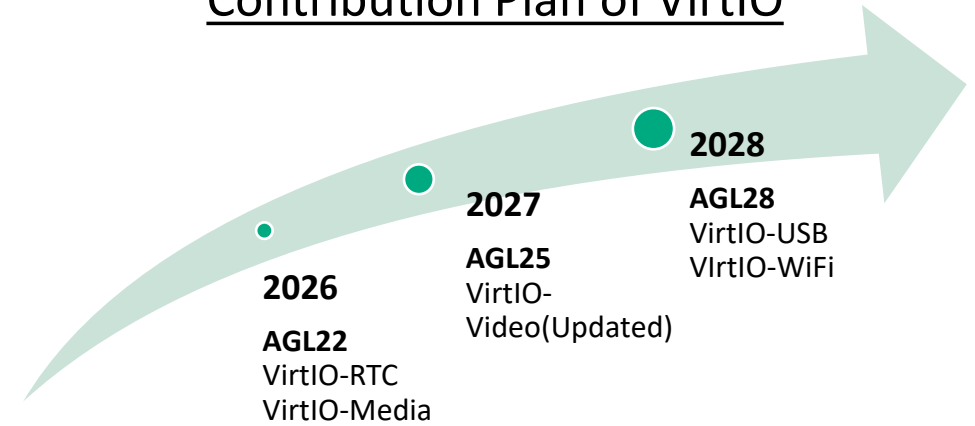


# VirtIO devices (HV-frontend) coverage expands.

AGL has been equipped most of fundamental VirtIO devices for CDC, as a frontier of VirtIO implementation. Panasonic Automotive will continue to contribute more ready-to-user VirtIO to evolve AGL implementation.



## Contribution Plan of VirtIO



**[Problem]** May take 2~3-year progress to reflect latest VirtIO

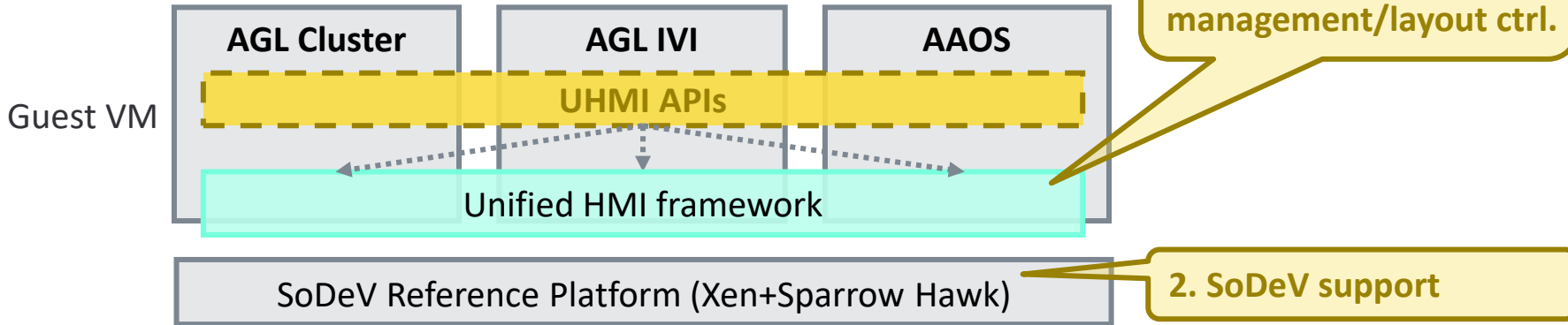
VirtIO	Kernel Upstream	Yocto	AGL
virtio-rtc	6.16 (2025/5)	Not yet in latest 5.0.16 (6.6 kernel) → Later than 2026	AGL 22 (in-progress)
virtio-media	Patch v3 under review (2025/4)	Later than 2026	AGL 22 (in-progress)
virtio-video	Patch v10 under review (2026/2)	Later than 2027	AGL 25 (plan)
virtio-usb	draft commit in 2027 (TBD)	Later than 2028	AGL 28 (plan)
virtio-wifi	draft commit in 2027 (TBD)	Later than 2027	AGL 28 (plan)

**Solution**  
AGL to be the first OS code base of the latest automotive VirtIO to lead SDV evolution

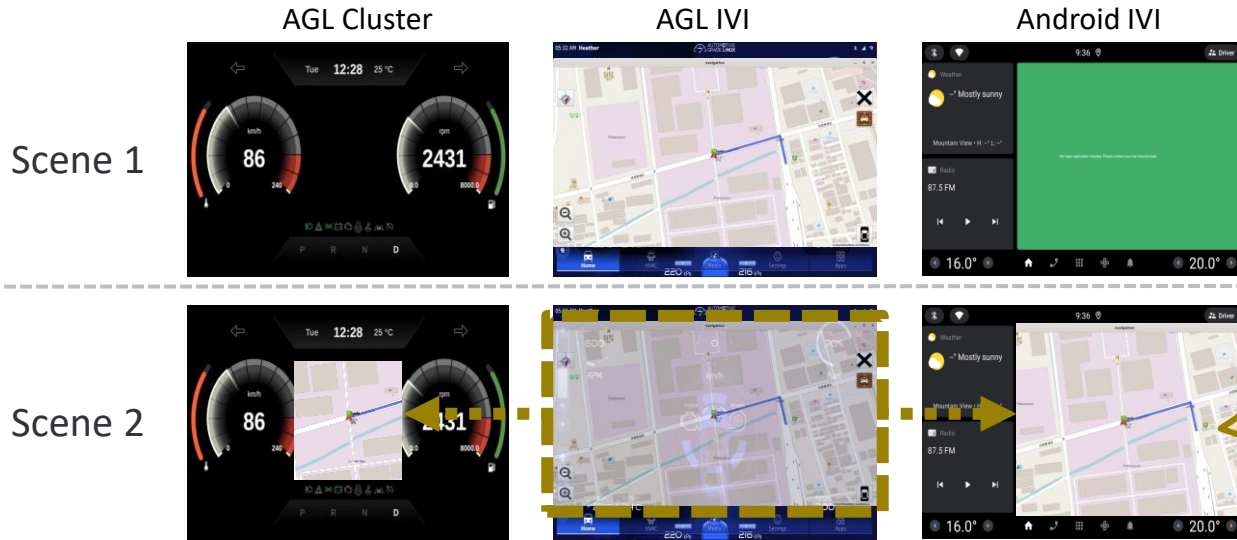
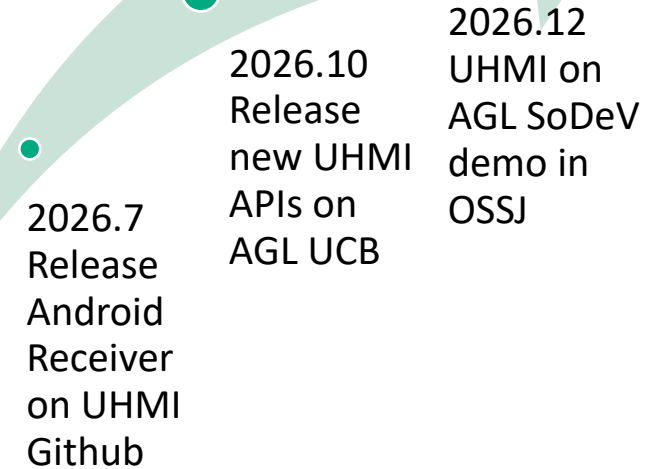


# Unified HMI: VirtIO based Display System Virtualization

## Updates for Unified HMI



## Contribution Plan



Achievements *du jour* on VirtIO ecosystem

Growth of Existing VirtIO Initiatives

Launch of New Incubation & Innovation

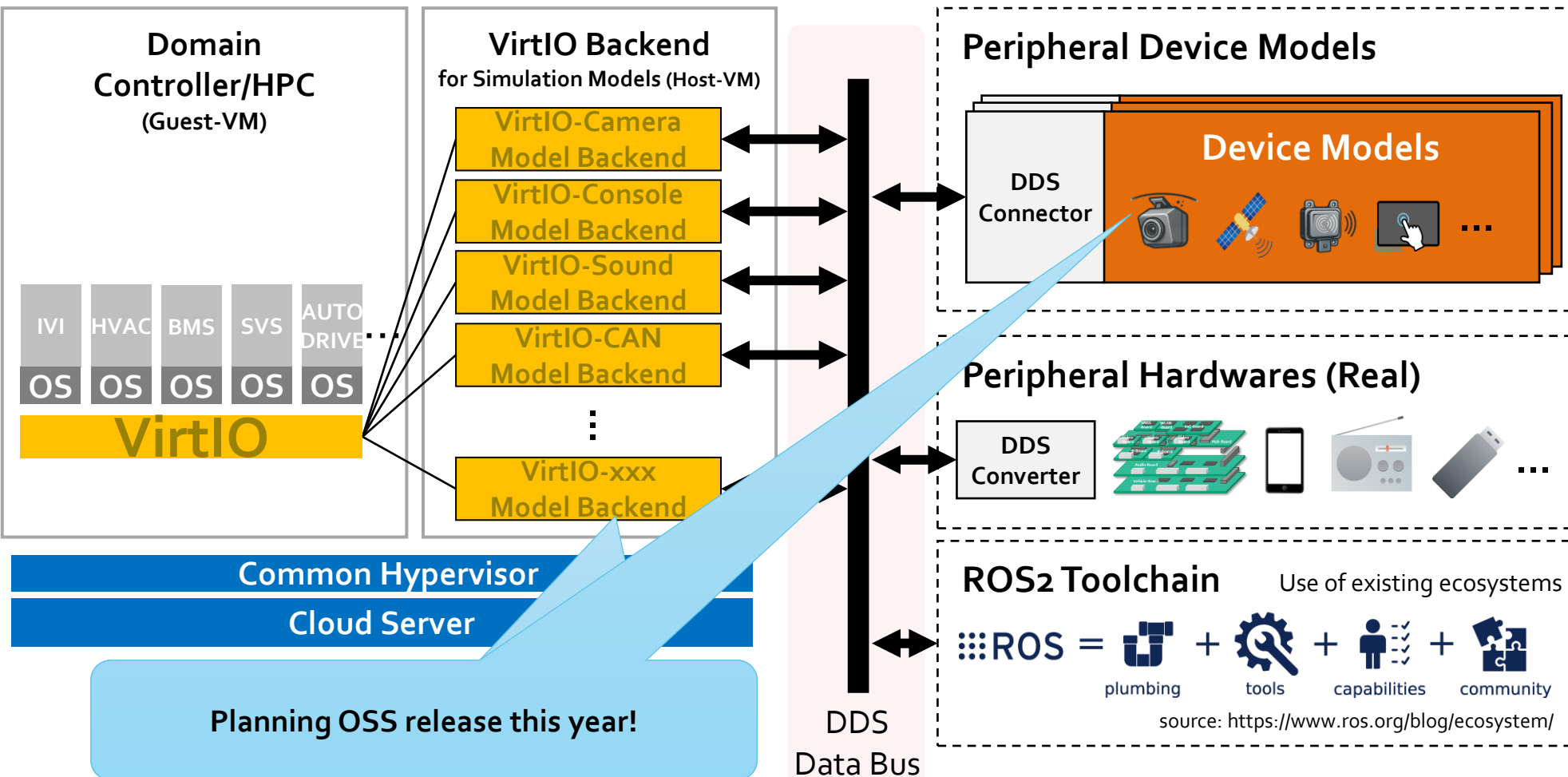
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# Coupling of Cloud-native with MBD Models or Other Simulated External Systems

Accelerate model standardization and reuse through a VirtIO-compliant Model interface backend

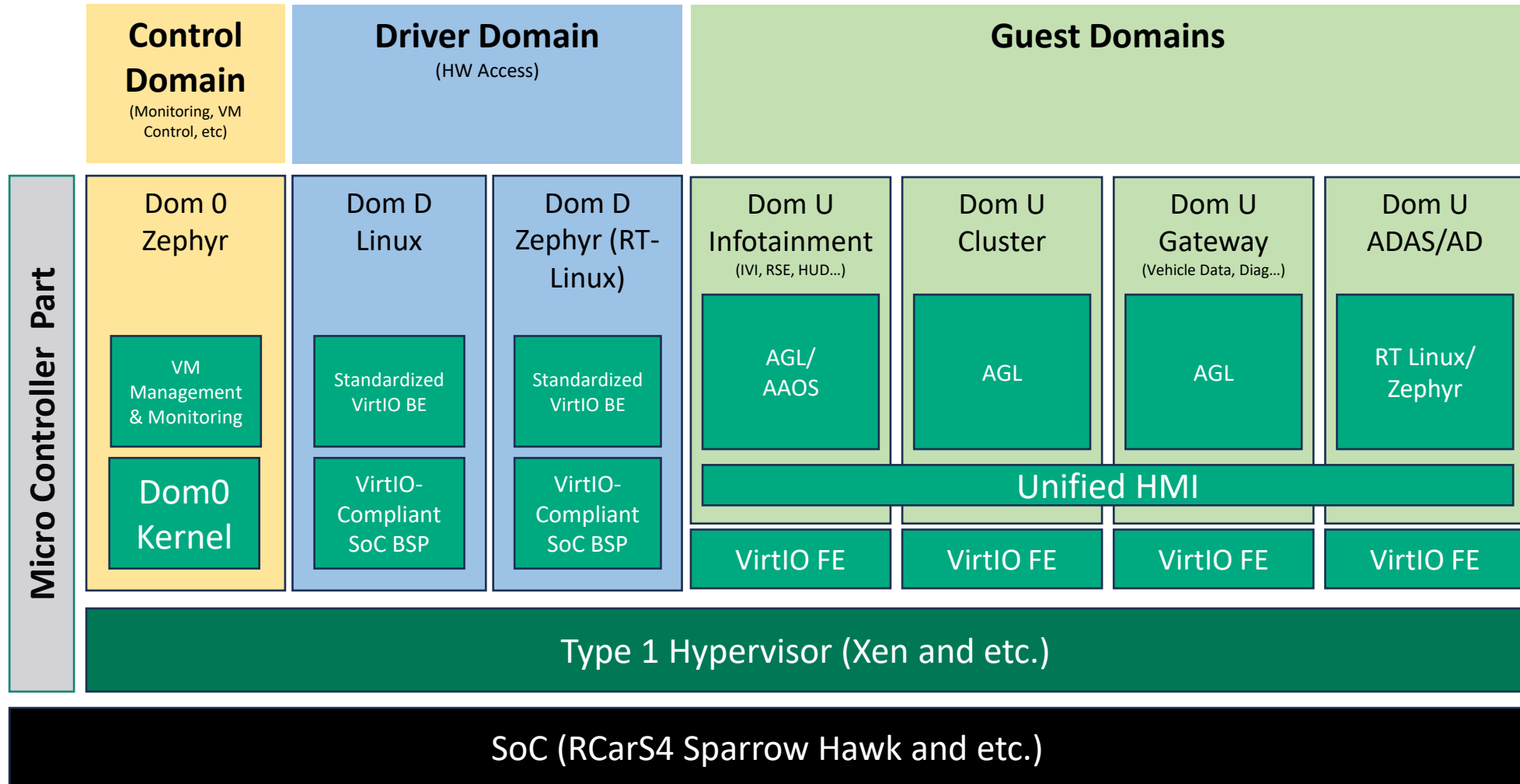
Open Source Release Plan

2026.12  
- VirtIO Backends for Simulation Models  
- Reference Peripheral Device Models (behavioral level, e.g., GNSS, HVAC)

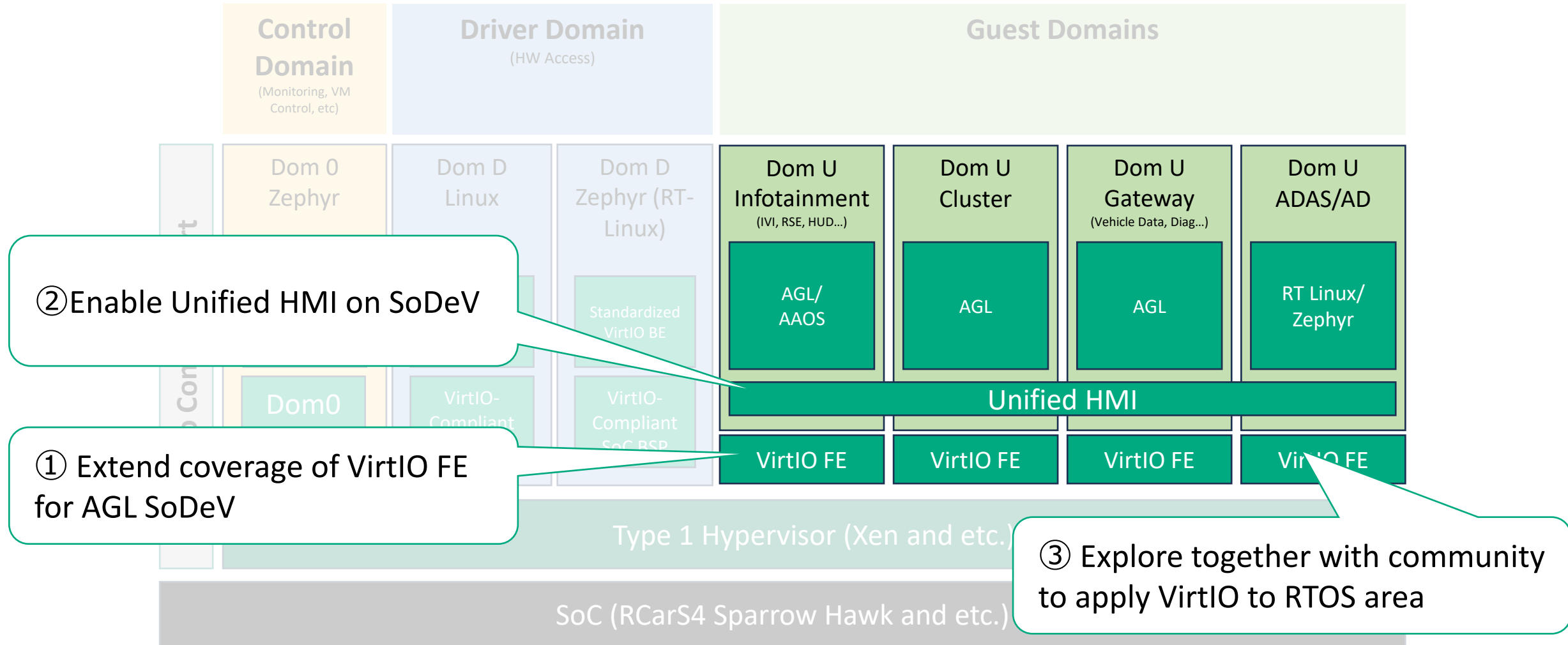


Planning OSS release this year!

# AGL SoDeV Overview - Collective Community Work



# AGL SoDeV Overview – PAS Major Future Contribution Area



# Explore more about PAS Presentations & Demo in AMM

May 13 (WED) 12:05pm~12:35pm

Speaker: Jerry, PAS

Title: Accelerating Software-Defined Vehicles: Updates of SDV-EG & AGL SDV Reference Platform "SoDeV"

Topic: SDV-EG

Accelerating Software-Defined Vehicles: Updates of SDV-EG & AGL SDV Reference Platform "SoDeV" - Jerry, Jiancong Zhao, Panasonic Automotive Systems Co., Ltd.

Click here to remove from My Schedule.

Wednesday May 13, 2026 12:05 - 12:35 JST  
Estate | + |

In this presentation, Jerry will outline the evolution of Software-Defined Vehicles and highlight AGL's key role in this dynamic landscape. He will share the latest updates from the AGL SDV Expert Group, including progress on VirtIO and Unified HMI. Additionally, Jerry will announce the launch of a new initiative to implement the AGL SDV Reference Platform.

Speakers



**Jerry Zhao**  
Chief SDV Architect, Panasonic Automotive Systems Co., Ltd.  
Jerry leads the Automotive Grade Linux Software-Defined Vehicle Expert Group and works at Panasonic Automotive Systems Co., Ltd. leading a development team for SDV solutions. He had abundant experience in multiple automotive fields, including IVI, AUTOSAR, virtualization and cloud... [Read More](#)

May 13 (WED) 13:35pm~14:05pm

Speaker: Ishii-san, PAS

Title: A Year of Momentum: Looking Back at the Growth of the AGL Japan Community and What Comes Next

Topic: AGL Japan Community

A Year of Momentum: Looking Back at the Growth of the AGL Japan Community and What Comes Next - Hiroyuki Ishii, Panasonic Automotive Systems Co., Ltd.

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Wednesday May 13, 2026 13:35 - 14:05 JST  
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2025 marked a turning point for Automotive Grade Linux (AGL) and the Japanese automotive open source community. Growing interest from the Japanese automotive industry, the launch of initiatives such as SoDeV and AGL Assessment Automation (AAA), and expanded activities targeting both the community and the industry created strong momentum for AGL in Japan.

This session looks back on the past year of the AGL Japan Community, highlighting what changed, why it mattered, and how these developments are reshaping AGL's role in the Software Defined Vehicle era. We will review key developments in 2025, including the motivations behind SoDeV and AAA, and the evolution of community engagement through events, demos, and outreach.

Looking ahead to 2026, the session will share perspectives on where these initiatives are heading and what kinds of collaboration and contributions are needed to sustain this momentum. The goal is to clarify how companies and individual contributors can get involved and help shape the next phase of AGL together.

Speakers



**Hiroyuki Ishii**  
OSS Community Expert, Panasonic Automotive Systems Co., Ltd.  
Senior Architect and OSS Community Expert, Panasonic Automotive Systems | AGL Steering Committee | Linux Foundation Japan Evangelist

Hiroyuki Ishii is a Senior Architect and OSS Community Expert at Panasonic Automotive Systems, where he leads the establishment and operation of the company's Open Source Program Office (OSPO) and drives its open source strategy across the organization. He plays a key role in aligning

May 13 (WED) 14:45pm~15:15pm

Speaker: Murakami-san, PAS

Title: Unified HMI Updates: Simplified APIs for Dynamic Multi-Display Layout Control

Topic: Unified HMI

Unified HMI Updates: Simplified APIs for Dynamic Multi-Display Layout Control - Kenta Murakami, Panasonic Automotive Systems Company

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Wednesday May 13, 2026 14:45 - 15:15 JST  
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Unified HMI is a software-defined display virtualization platform based on VirtIO-GPU that enables such cross-SoC and cross-OS multi-display integration. Unified HMI helps developers reduce development complexity and accelerate practical multi-display HMI development on AGL.

This session presents the evolution of Unified HMI for 2026, focusing on dynamic layout control and easy integration for developers and integrators. We introduce updates to UHMI APIs that enable applications to be launched and dynamically moved in multi-display environments across AGL and Android, without complex configurations.

Speakers



**Kenta Murakami**  
employee, Panasonic Automotive Systems Co., Ltd.  
Kenta Murakami has five years of experience at Panasonic Automotive Systems Corporation, focusing on the development and research of graphics framework for automotive embedded operating systems. He is committed to contributing to the field of automotive software. Outside of work... [Read More](#)

May 14 (THU) 12:30pm~12:45pm

Speaker: Teramura-san & Kuzu-san, PAS

Title: Update on VirtIO CTS and Integration of Virtio-rtc and Virtio-media Into AGL UCB

Topic: VirtIO

Update on VirtIO CTS and Integration of Virtio-rtc and Virtio-media Into AGL UCB - Kazuki Kuzu & Yuki Teramura, Panasonic Automotive Systems Co., Ltd.

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Thursday May 14, 2026 12:30 - 12:45 JST  
Estate | + |

This session provides a brief status update on VirtIO CTS, revisiting previous work and sharing recent progress. It also introduces ongoing efforts to bring virtio-rtc and virtio-media into the AGL UCB, including motivation and current status.

Speakers



**Yuki Teramura**  
employee, panasonic automotive systems



**Kazuki Kuzu**  
Employee, Panasonic Automotive Systems Co., Ltd.  
Kazuki Kuzu has five years of experience at Panasonic Automotive Systems Corporation, focusing on the development and research of virtualization for automotive embedded operating systems. He is committed to contributing to the field of automotive software. Outside of work, He enjoys... [Read More](#)

May 13~14

Sponsor Booth Demo: vSkipGen as Virtual Reference Hardware of SoDeV

SoDeV  
AGL  
Cluster

SoDeV  
AGL  
IVI

Virtual  
Android  
Phone

SoDeV  
Android  
IVI



vSkipGen

# Heartmotive

Connecting our hearts to the Journey