



Driving Change: SIA CESA 2025 Focusing on the SDV of the Future

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The automotive industry is undergoing a seismic shift, reshaping how vehicles are designed, built and experienced. At the heart of this transformation lies the Software Defined Vehicle (SDV) – a game-changer redefining mobility and connectivity in the modern world.

The principle behind this innovation is elegantly simple: separating the software support layer (middleware) from the functional application layer. This approach allows vehicle software to function more independently from the physical hardware layer, unlocking a host of benefits, including accelerated reuse of software across models, simplified maintenance, reduced development costs and the ability to introduce new features throughout a vehicle's lifetime.

Transitioning to this new software-driven approach comes with its own challenges. A hardware abstraction layer must be established and the vehicle's functional architecture reimaged. Managing the interplay between existing system components and the development of an updated infrastructure adds complexity, alongside a range of other technical hurdles that must be overcome.

Another significant issue lies in adapting the software architecture to existing physical hardware, given the sheer variety of microcontrollers spread across different vehicle data buses. To address this, many manufacturers are taking inspiration from new OEMs by adopting centralized hardware architectures. By consolidating computing power, these architectures align more seamlessly with the software-defined strategy and its demands.

In theory, this hardware configuration is ideal: by consolidating processing power, it boosts efficiency, centralizes connectivity for improved management and facilitates flexible access to vehicle functionalities, similar to the way smartphones operate. However, a car is far more complex than a smartphone on wheels. This approach itself raises its share of complications: managing model diversity, adapting functionalities to the new system, integrating heterogeneous interfaces into a single network as well as ensuring compliance with safety and security standards. While these obstacles may seem insurmountable, with significant effort, we can expect to see the first vehicles built on this concept hitting the roads by 2026.

Currently, the market suffers from an excessive diversity of costly architectures and the difficulty of implementing the new approach across the entire sector. To stay competitive and avoid falling behind non-European competitors, it is crucial to foster collaboration on numerous non-competitive topics and to develop a unified strategy at European level.

The **SIA CESA 2025** will provide the SDV community with valuable opportunities to engage in a qualified exchange. Taking place in **Versailles** on **February 12-13, 2025**, the congress will gather numerous specialists and offer a platform to explore topics related to SDVs and centralized electronic architectures. A panel discussion with international experts will be a key element. Furthermore, members of the FEDERATE consortium will deliver two keynote presentations, providing insights from both OEM and Tier perspectives, on the first day of the conference.

For more details and registration, please visit the SIA CESA 2025 webpage: <https://www.sia.fr/evenements/366-sia-cesa-2025>.



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FEDERATE Webinar: Exploring the European SDV of the Future Initiative

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On November 4, 2024 the first instalment of the FEDERATE webinar series, titled „Introduction to the European SDV of the Future Initiative“ took place. This 30-minute session marked the beginning of a series designed to provide the community with valuable insights into the SDV of the Future (SDVoF) Initiative. Tailored for stakeholders outside the consortium, the webinar is hosted by VDI/VDE-IT. The inaugural session was moderated by **Benjamin Wilsch (VDI/VDE-IT)** and featured a presentation by **Michael Paulweber (AVL)**.

The first webinar offered an in-depth introduction to the SDVoF Initiative, covering its challenges, visions and objectives. Michael Paulweber delved into the Coordination and Support Action (CSA) FEDERATE, highlighting its role and relevance. The webinar explained why the SDV topic is transformative for the European automotive sector, emphasizing the pressing need for innovation. Moreover, it spotlighted on critical challenges for automotive OEMs and Tier companies, such as transitioning from a legacy-based vehicle software to a newly structured approach with agile development processes.

The importance of a pre-competitive collaboration on non-differentiating software to enhance development speed and efficiency was underlined. This was highlighted by an overview of the wide-ranging support network of the European SDVoF Initiative, which includes OEMs, software development providers, semiconductor companies, Tier suppliers, industry associations, academia and RTOs. Additionally, the webinar touched on related projects and initiatives, such as the European Commission’s RISC-V Initiative, further contextualizing the SDVoF within broader European innovation efforts.

The session concluded with a Q&A segment, where participants had the opportunity to submit their questions via the chat. Michael Paulweber provided detailed responses, further enriching the discussion.

A recording of the first FEDERATE webinar „Introduction to the European SDV of the Future Initiative“ is now available on the [FEDERATE website](#) and the [FEDERATE YouTube channel](#).

The next FEDERATE webinar will focus on the SDVoF Initiative’s vision and roadmap. Scheduled for late February, details for registration will be shared via the [FEDERATE website](#) and the [FEDERATE LinkedIn channel](#).

Success of the 2024 Eclipse SDV Hackathon: A Showcase of Innovation and Collaboration

Author: Dr Ing Sara Gallian, Eclipse Foundation Europe GmbH

In November 2024, the [Eclipse SDV Hackathon](#) brought together over 60 technologists, innovators, and enthusiasts in Karlsruhe, Germany, for an inspiring three-day event. Participants brainstormed, coded, and prototyped creative solutions to tackle real-world challenges in fleet management, software orchestration, and vehicle safety. The event demonstrated the transformative potential of [Eclipse SDV](#) technologies, while highlighting the power of teamwork and collaboration.

Driving the Vision of a Unified SDV Ecosystem

Aligned with the FEDERATE project’s mission to foster an engaging and active Open European SDV Ecosystem, the hackathon showcased the collaborative spirit needed to break down technological silos. Key initiatives, such as the Eclipse SDV Working Group’s [Blueprints](#), alongside projects like [Eclipse Kuksa](#) and [Eclipse uProtocol](#), along with [Special Interest Groups \(SIGs\)](#) enabled seamless cross-community collaboration.

Leadership in Precompetitive Innovation

The success of the event underscores the role of effective leadership in orchestrating precompetitive collaboration across European organizations. By establishing common goals and partnerships, leaders are helping position Europe as a global leader in Software-Defined Vehicle (SDV) innovation.

Notable Projects and Highlights

Guided by experts from ETAS, Microsoft, and Bosch, participants delivered impressive projects:

- **Team APT** developed a real-time emergency response system using weather and crash data.
- **Team ASAP** created a speeding alert system leveraging Eclipse Ankaios.
- **Team Caliper Kings** utilized synthetic data to enhance autonomous vehicle reporting and incident prevention.
- **Team Challengers** combined driving analytics with gaming to promote safer habits.
- **Team FEV.io** showcased in-trip entertainment through a car-integrated game.
- **Team Python Hobbits** tackled collision prevention using dash cameras and traffic detection.
- **Team Wise Riders** enhanced microcontroller communication with real-time monitoring.

Celebrating Creativity

The hackathon culminated in an awards ceremony, with **Team FEV.io**, **Team Challengers**, and **Team Wise Riders** taking the top prizes. Harman’s Special Award recognized the contributions of **Caliper Kings** and **Wise Riders** for their innovative efforts.

The event highlighted the immense creativity and collaborative spirit within the SDV ecosystem. As we reflect on these achievements, the future of SDV innovation promises exciting advancements driven by this vibrant and engaged community.

FEDERATE and HAL4SDV presented at EF ECS 2024

Author: Gabrielė Keraitė, UAB Metis Baltic

At the European Forum for Electronic Components and Systems (EF ECS) 2024, held on December 5th in Ghent, Belgium, representatives of the Software-Defined Vehicle (SDV) industry - **Michael Paulweber** and **Andreas Eckel** shared their insights on groundbreaking advancements in SDV technology. Their presentations highlighted the complementary efforts of two major projects and the European initiative, shaping the future of Europe's automotive sector - the "Software-Defined Vehicle of the Future" (SDVoF) initiative, the FEDERATE project and the HAL4SDV project.

Michael Paulweber (AVL List GmbH) introduced the FEDERATE project and SDVoF initiative, which aims to build an open ecosystem for software-defined vehicles in Europe. The initiative focuses on fostering collaboration among Original Equipment Manufacturers (OEMs) and suppliers to drive innovation in SDV. Key objectives include developing standardized tools and governance structures to enable clean, affordable, and safe mobility solutions aligned with the European Green Deal.

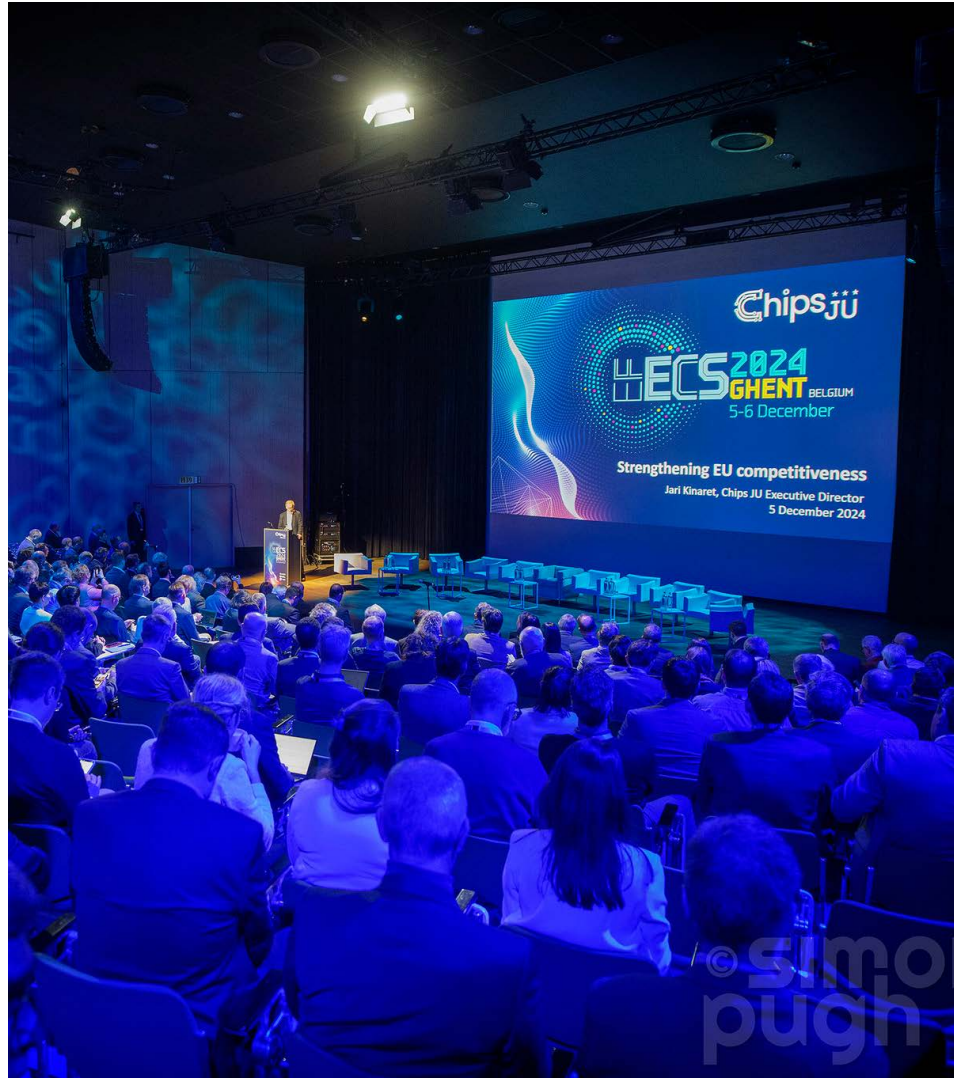
Andreas Eckel (TTTech Computertechnik AG), presented the HAL4SDV project, which complements the SDVoF initiative by creating a hardware abstraction layer for the software-defined vehicles. This project standardizes the interaction between software and hardware, enabling seamless integration across various platforms. By simplifying system complexity, HAL4SDV accelerates innovation and reduces development costs.

Both projects are closely cooperating and supplementing each other. While the FEDERATE focuses on building the broader framework and ecosystem for SDVs, HAL4SDV provides the critical technical foundation by ensuring interoperability between hardware and software. Together, these projects aim to strengthen Europe's leadership in the automotive sector, advancing sustainable, scalable, and cutting-edge vehicle technologies.

In addition to the engaging presentations, the FEDERATE project had a vibrant presence at the event's project exhibition. A dedicated booth featured an eye-catching poster, branded notebooks, and pins, drawing significant participant attention. The booth served as a hub where the project team actively engaged with attendees, discussing and explaining the activities of both the SDVoF initiative and the broader FEDERATE project. This interactive platform helped to foster connections and spread awareness about the critical work being done to shape the future of SDV in Europe.

The collaboration between the HAL4SDV and the FEDERATE projects' dynamic engagement at the event, highlights a unified approach to addressing societal challenges and fostering technological sovereignty, ensuring Europe remains at the forefront of this transformative industry.

For more information, the detailed presentation slides are available on the [EF ECS website](#).



Advancing the Building Blocks for Software Defined Vehicles (SDVs)

Shaping the Future Together: Building Blocks for Software Defined Vehicles

Author: Mario Driussi, Virtual Vehicle Research GmbH

The world of **Software Defined Vehicles (SDVs)** is evolving at an incredible pace, bringing with it the growing need for standardized approaches and modular components to build and manage these complex, connected systems. To foster collaboration and innovation in this field, the **Proposed-BuildingBlocks Repository** was created.

This public repository serves as a centralized platform to collect, document, and continuously refine existing and new building blocks. The goal is to establish a shared understanding and a comprehensive library of components that simplify the development, operation, and maintenance of SDVs.

What is the Repository's Objective?

The **Proposed-BuildingBlocks Repository** aims to structure the fragmented landscape of SDV development and contribute to standardization. It defines reusable, modular building blocks that address specific challenges in areas such as cloud engineering, data management, security, AI/ML, communication and networking, extending to safety-critical and real-time capable in-vehicle stacks.

- **Structured Documentation:** Each building block includes a clear description, use cases, technical requirements, and potential implementations.
- **Ongoing Refinement:** Content is continuously improved with contributions from the community to stay aligned with current trends and technologies.
- **Comprehensive Coverage:** From edge-to-cloud integration to AI-driven data analytics and safety-compliance frameworks, the building blocks cover all relevant aspects of the SDV ecosystem.

Next Steps: Collecting New Building Blocks

The SDV community is invited to actively shape the next phase of development. The focus is on identifying new building blocks that address specific challenges or innovation opportunities in the SDV context. Examples include:

- Edge computing for highly connected vehicles
- Energy and charging management
- Tools for integrating AI-driven and environmental behavior analysis
- Hardware abstraction, vehicle APIs, and standardized interfaces

Your Expertise Is Needed!

We warmly invite all experts, developers, and enthusiasts in the SDV space to contribute to this project. Your input can help shape industry standards and pave the way for the next generation of SDVs.

How You Can Contribute:

1. **Visit the GitHub Repository:** Explore the **Proposed-BuildingBlocks Repository**.
2. **Review Existing Building Blocks:** Get an overview of the current structure and content.
3. **Propose New Ideas:** Document your suggestions for new building blocks, including use cases and technical requirements.
4. **Join the Discussions:** Participate in discussions within the repository to share feedback and ideas with the community.
5. **Contribute Directly:** Submit pull requests to integrate your proposals into the existing framework.

Driving Innovation Together

The strength of the SDV community lies in its diversity and expertise. By participating in this initiative, we can collectively build a robust foundation that fosters innovation and addresses future challenges.

Let's take the next steps toward for Software Defined Vehicles together.

Visit the repository today and contribute to this exciting project!

We look forward to your ideas, feedback, and contributions!

Visit the Repository: [CSA-FEDERATE/Proposed-BuildingBlocks](#)



Launch of the Open Tech Talk and Discussion Series for the Software Defined Vehicle of the Future (SDVoF) community

We're excited to announce the launch of our open Tech Talk and Discussion Series!

At federate-sdv.eu, we believe that sharing knowledge and fostering collaboration are key to advancing the field of Software Defined Vehicles (SDVs). To support this vision, we're kicking off a series of open discussions and technical deep-dives featuring experts and practitioners in the SDV ecosystem.

First Open Tech Talk organized by FEDERATE!

We're thrilled to invite you to our first session, where Stefano Stabellini from AMD will present on:

"Xen for Automotive, Real-Time and Safety!"

Discover how hardware virtualization plays a critical role in enabling SDVs and learn about the application of the Xen Hypervisor in creating efficient, scalable, and secure virtualization environments for automotive systems.

Event Details

- **Date:** Wednesday, 19 February 2025
- **Time:** 5:00 PM CET
- **Location:** Online via [Microsoft Teams](#)
- **Participation** is free and open to everyone, all SDV enthusiasts are welcome!

How to Participate

1. **Save the Date** in your calendar.
2. **Join the Event:** Access the session via [Microsoft Teams](#) link.
3. **Spread the Word:** Share this announcement with colleagues and friends interested in SDVs.

Why Join?

- Gain insights into cutting-edge virtualization technology.
- Engage in a live Q&A session with **Mr. Stefano Stabellini from AMD**.
- Connect with a growing community of SDV professionals and enthusiasts.

Be Part of the Conversation

The **Tech Talk and Discussion Series** is an open platform designed to spark dialogue, exchange ideas, and explore the latest advancements in SDV technology. Whether you're an expert or just getting started, there's something for everyone!

We look forward to seeing you at our inaugural session and hearing your thoughts on this exciting topic. Stay tuned for more events in the series as we continue to explore the frontiers of SDVs together.

[Learn more at federate-sdv.eu](https://federate-sdv.eu)

Let's shape the future of Software Defined Vehicles, one talk at a time!

