



November 10, 2023

The First Year of Eclipse Software Defined Vehicle: a successful "code first" approach

Dr-Ing. Sara Gallian, SDV Program Manager
sara.gallian@eclipse-foundation.org

What is Open Source?

0

Freedom to **run** the program, for any purpose

1

Freedom to **study** how the program works, and change it

2

Freedom to **redistribute** copies

3

Freedom to **distribute** copies of your modified versions

The Eclipse Foundation - By the Numbers

410+

Projects

360+

Members

1900+

Committers

450M+

Lines of Code

65+

Staff Members

20

Industry Collaborations

Open Collaboration for a business-friendly ecosystem

Companies are looking for developers

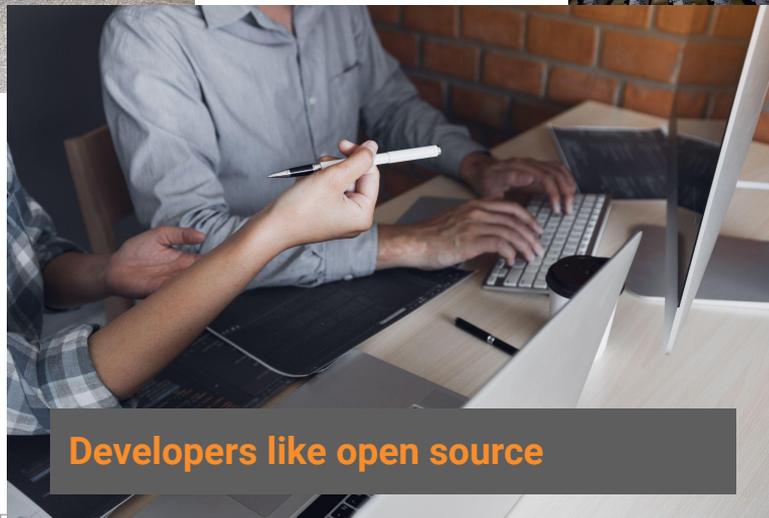


But companies want governance



Photo by Frederic Köberl on Unsplash

Developers like open source



Strategic Focus Areas

Cloud Native Java



IoT & Edge



Automotive



Tools



Eclipse Foundation Services

**Governance
& Processes**



**Ecosystem
Development
& Marketing**



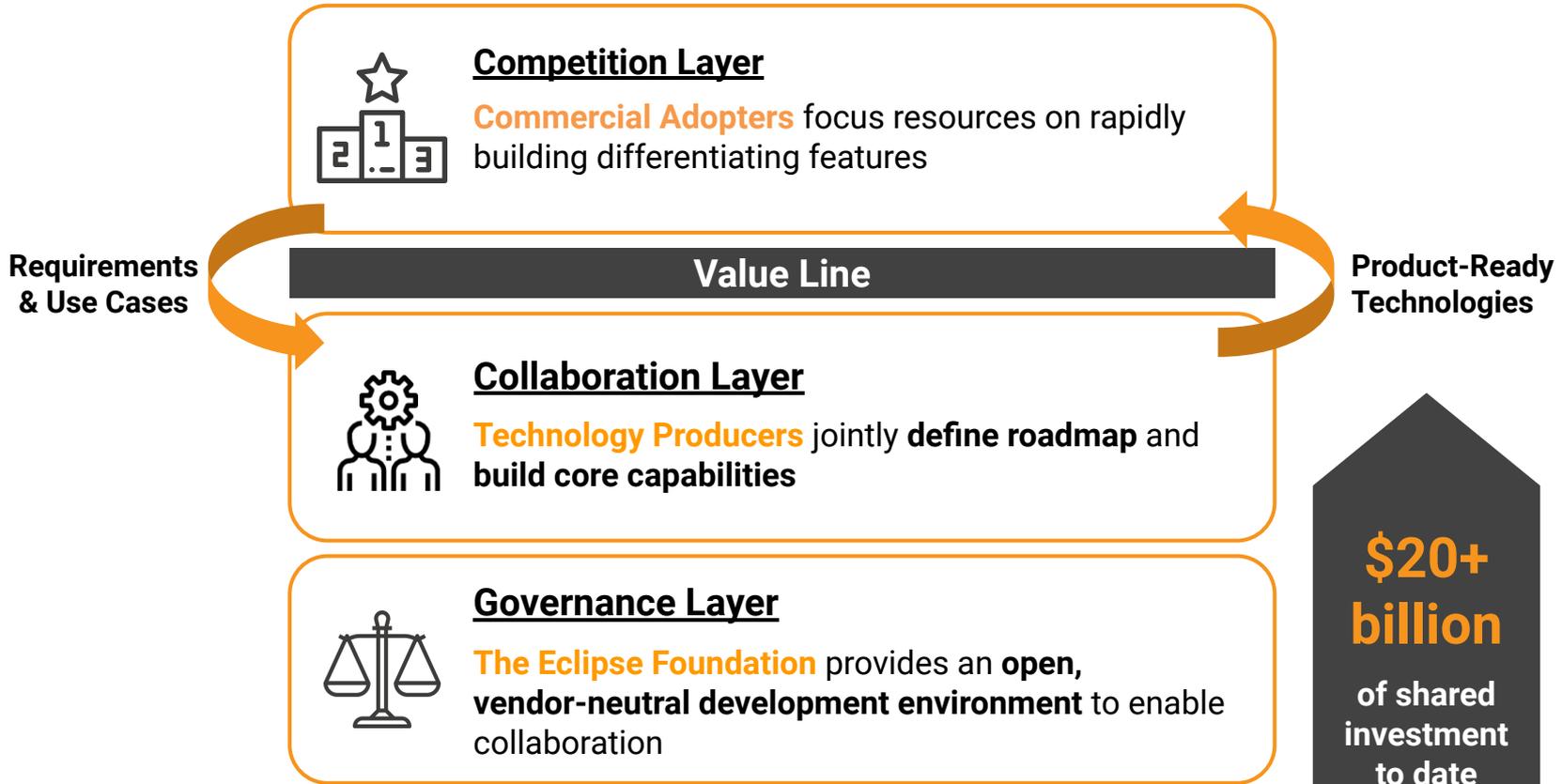
**IP Management
& Licensing**



Infrastructure



Our Impact: Open Innovation at Industrial Scale

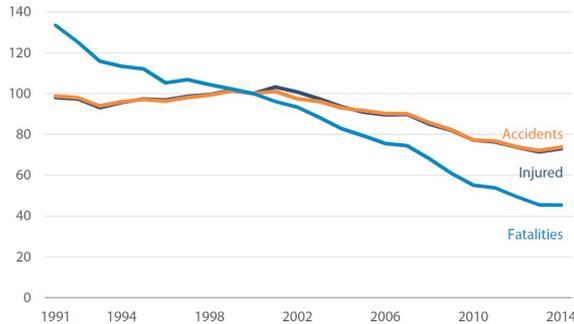




What about Software Defined Vehicle?

Motivation: Automotive Software saves lives but is increasingly complex

Figure 1 – Evolution of fatalities, accidents and injured in the EU (reference year 2000 = 100)



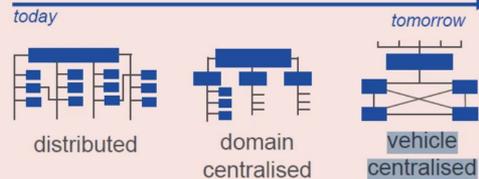
Data source: EPRS calculation based on CARE (EU road accidents database) or national publications, February 2016.

Automotive hardware and software: key trends

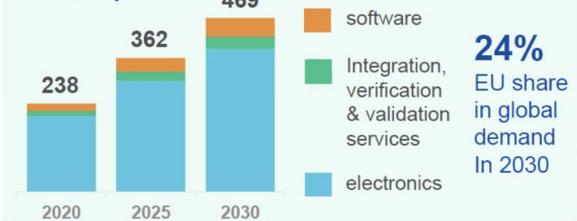
Share of electronics in total cost of a car
Deloitte



Evolution of e/e architecture
McKinsey



Automotive SW and e/e market (USD billions)
McKinsey



Lines of SW code in a car



Slide Nr 4

The mission of the Eclipse Software Defined Vehicle (SDV) Working Group is to provide a **forum** for individuals and organizations to build and promote **open source software, specifications, and open collaboration** models needed to create a **scalable, modular, extensible, industry-ready open source licensed vehicle software platform** to support in-vehicle and around the vehicle systems development and deployment.

A brief history



Collaboration on non-differentiating
SW: **SDV WG** is born!

Beginning of time

March 2022

Code first: **The SDV cake**

Every organization is an island
but **complexity** is too high



A brief history II

From single organizations to a **Community**: from Developer to Community Days



Q1 Community Days:
March 2023

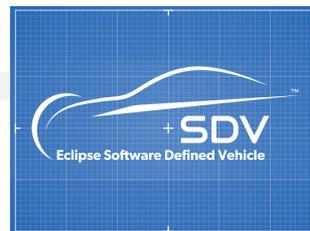
AOSS June 2023

Focus on project **integration** with SDV blueprints and onboard **tooling** projects

Q2 Community Days:
July 2023

Getting senior managers on board:
Starting the **mentality shift**

EclipseCon
Oct 2023



Our Governance principles

```
public class HelloWorld {  
    public static void main(String[] args) {  
        System.out.println("In code we trust");  
    }  
}
```

Code First



Active Participation



Vendor
Neutrality



Transparency



Openness

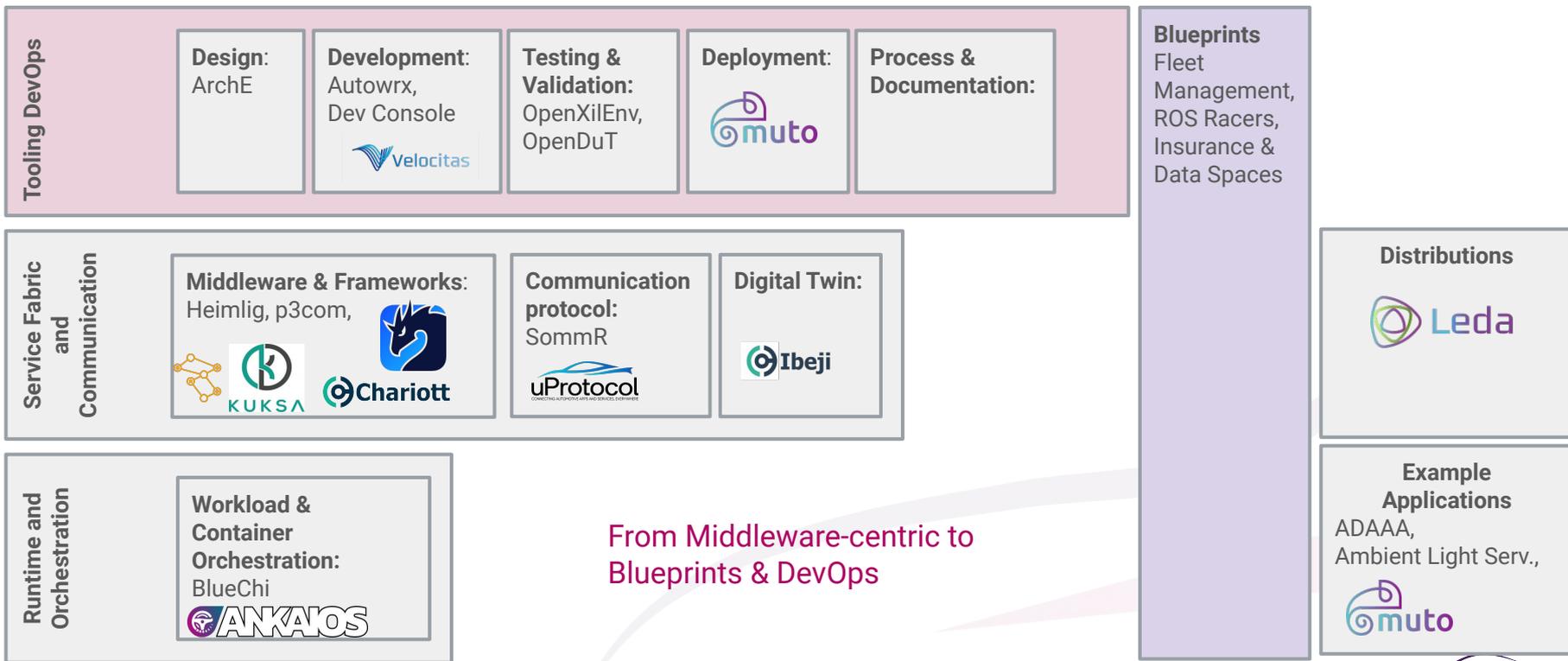
Where we stand today:

Our Members (Nov 2023)

41 Members!

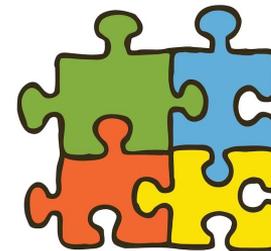


Where we stand today: More than Middleware?



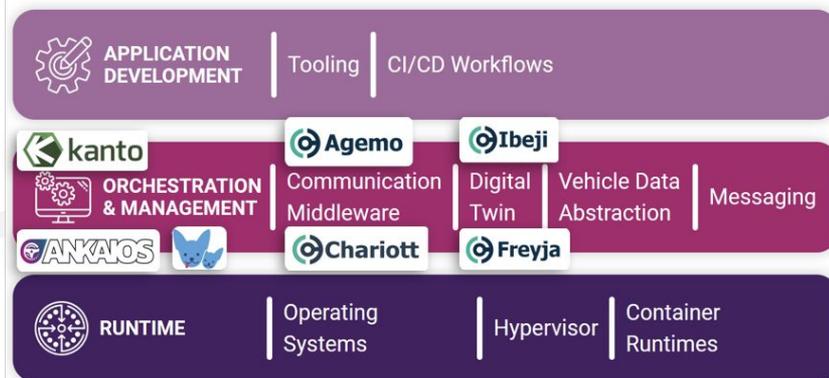
Where we stand today:

Project Integration & Collaboration



Eclipse SDV Blueprint:
Fleet Management System

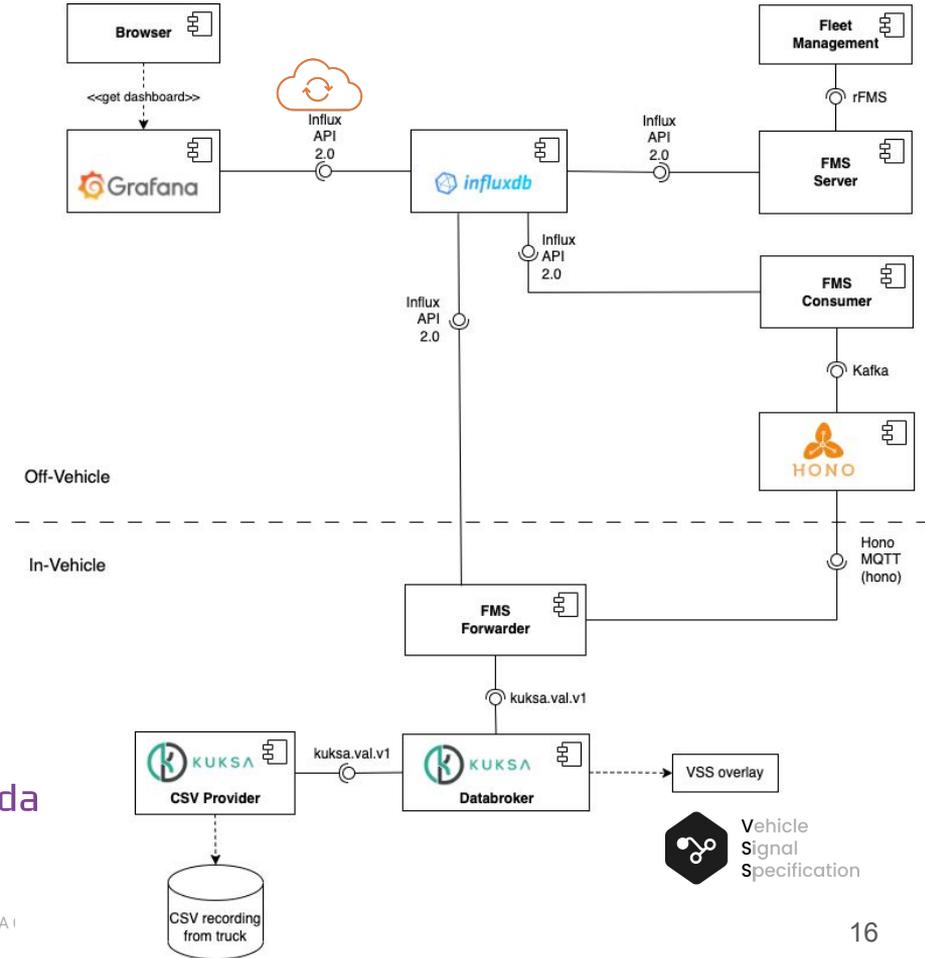
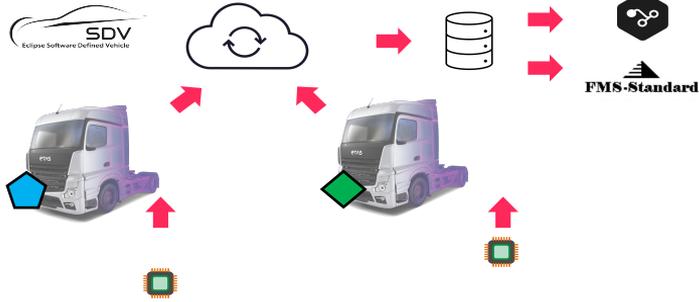
Eclipse SDV Blueprint:
Software Orchestration Blueprint



SDV Blueprint: Fleet Management System

Transition to SDV by leveraging Open standards and technology enables to:

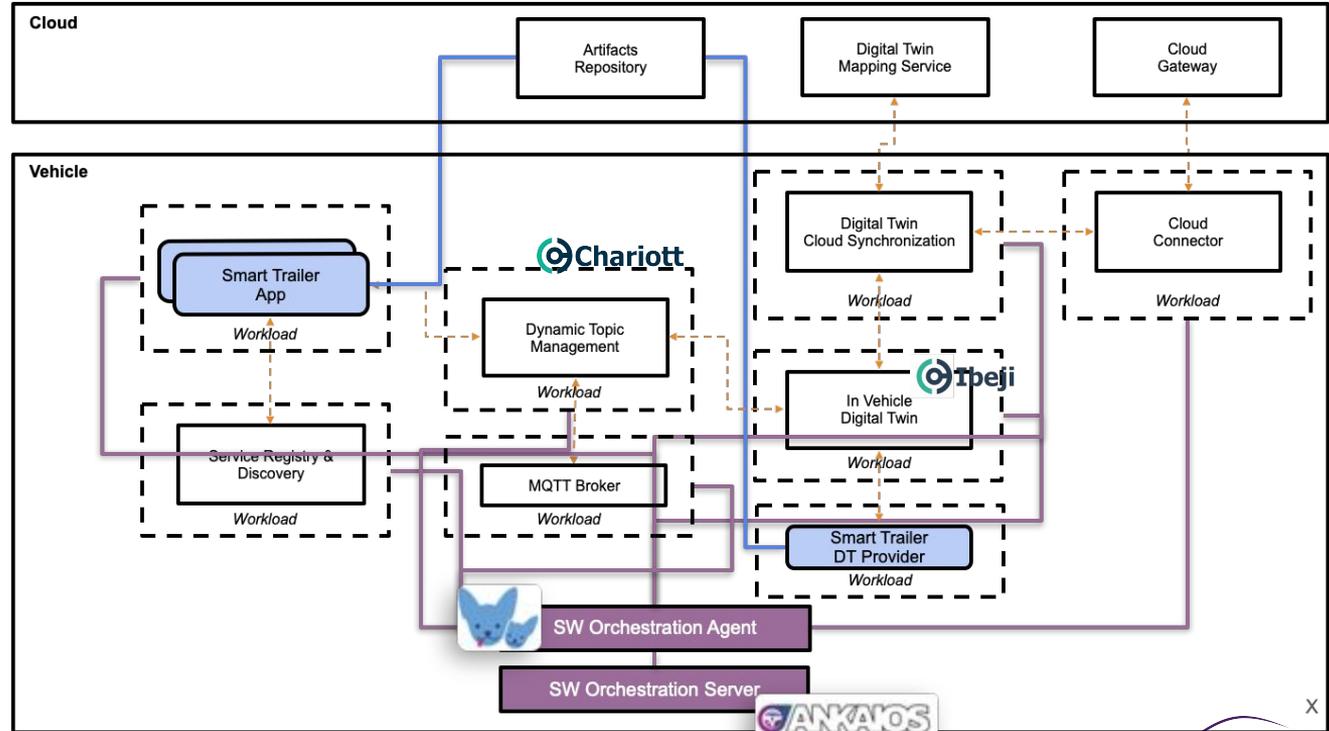
- Run Fleet SW on any vehicle
- Make changes to data reqs. & scale
- Simplify HW & focus on API's



SDV Blueprint: SW Orchestration

I'm planning to go on travel and need to carry additional cargo. I connect my cargo trailer to my vehicle and I'm off to enjoy a fun week!

1. The system detects that a smart trailer is being connected to the car.
2. A signal is raised to the orchestrator that a smart trailer provider and application is required
3. Adjust body functions and powertrain accordingly



Where we stand today: Process and Standards

Automotive-SPICE Standard

- Derived from ISO 15504
- Dedicated for Automotive
- A collection of best practices accompanied by an Evaluation Model.

Automotive Functional Safety Standard

- Derived from ISO 61508
- Dedicated for Automotive
- Collection of guidelines to minimize the risk of accidents and unintended failure of automotive systems / subsystems.

Automotive Cyber Security Standard

- Derived from ISO 15408
- Dedicated for Automotive
- A collection of guidelines on protecting the SW running in vehicle, communication between vehicles, smart devices and cloud.



What about Open Source?

Automotive-grade OS SW methodology

What?

- Design automotive grade best practices for SDV projects

Why?

- Ensure high quality Eclipse SDV Projects.
- To increase projects' success - Can we make consuming "us" easier for integrators?
- To be part of the automotive industry's innovation

How?

- Define and apply a set of best practices that can bring OS Projects closer to being "certification-ready"
- Ensure "continuous compliance"
 - Define measurements (KPIs) that can ensure a "continuous compliance" of the defined practices
 - Periodical KPIs measurement and analysis and badges allocation
- SDV Projects Maturity Badges as part of the business card of the projects
- Exploit Synergies with other initiatives
 - ELISA - Enabling Linux in Safety Applications
 - ISO norm definition for third party SW certification

SDV Working Group: **How to participate**

- Mailing lists
 - Open community [mailing list](#)
 - Voting Members mailing list
- Slack Workspace [sdvworkinggroup.slack.com]
 - Dedicated technical discussion channel [#technical-alignment](#).
 - Other interest group channels
- Technical alignment [activities](#)
 - Bi-weekly tech alignment call - contact Sara for invitation
 - Special interest groups meeting weekly
- Strategic and Participant members alignment every month
- Community Days organized on site on a Quarterly basis
 - Community Days @ EclipseCon 2023

REGISTER FOR SDV HACKATHON 2023!

Build the car of the future - use current
Eclipse SDV projects to solve real automotive
challenges!

November 28 - 30, 2023
Accenture | Munich, Germany





THANK YOU!