Software-Defined Vehicle Support and Coordination Project

D1.1 Interim Periodic Technical Report M6

Authors: FEDERATE Consortium
Editors: Claudia Keinrath (AVL), Peter Priller (AVL)
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Internal

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Contact Person	Peter Priller
Email	peter.priller@avl.com

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Author	Affiliation	Author	Affiliation
Claudia Keinrath	AVL	Peter Priller	AVL
All WP and task leads			

Internal

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2 Executive Summary

This report summarizes the work of the consortium in the first six months (M1-M6) of the project with regard to the project objectives. The project was kicked-off on October 4th, 2023 with a GA F2F Meeting in Munich. Since then, activities have started and are operating as planned. This document summarizes the activities in all 5 work packages and provide a brief overview on the results achieved.

The project infrastructure (project office, Email lists, project SharePoint etc.) was established in M1, and is fully operational. All WPs started work, and periodic meetings (weekly or bi-weekly) are scheduled.

A GA (all consortium members) info meeting is held once a month (every 2nd Tuesday, 17:00), to spread project-wide info and updates. The milestone defined in the description of work (DoW) in this reporting period has been met (Milestone 1: Risk management plan, due M6, was successfully released as D1.2)

Within the reporting period, 4 deliverables were planned and have been submitted as planned:
* Deliverable D1.1 First Project report
* Deliverable D1.2: Quality and Risk Management Plan
* Deliverable D5.3 Dissemination plan
* Deliverable D5.8 Data management plan

In addition to the regular calls, the following F2F Workshops were held:
* FEDERATE Kick-off: 05-OCT-2023, Munich
* FEDERATE Vision and Roadmap Workshop: 01-FEB-2024, Munich
* Tools Workshop (OEM view): 18-March-2024 Munich

3   Introduction

3.1   Introduction - Purpose of this document

This report summarizes the work of the consortium in the first six months of the project with regard to the project objectives.

3.1.1   Project Objectives (according to section 1.1.2 of the DoA)

The Coordination and Support Action (CSA) FEDERATE aims to support the HORIZON KDT JU Project Hardware abstraction layer for a European Vehicle Operating System (RIA) and the next following relevant calls as well as relevant Cooperative, Connected and Automated Mobility (CCAM) projects in defining, implementing and delivering an open-source ecosystem for Software-defined Vehicle (SDV) development. In detail, the FEDERATE targets to:

Objective 1: Collect and evaluate future trends (automated driving, V2X, EdgeAI at the SDV and the connected infrastructure) to predict SDV related ones and derive high-level requirements for stakeholders (industry, government, research and community) and to deduce definitions of common non-differentiating building blocks (software components, containers, SDKs, services, ...) that are reusable and scalable across departments and companies, taking into account already existing high level requirements from the stakeholders and those already worked out in the sherpa group meetings.

Objective 2: Derive a common understanding (glossary) about building blocks in a layered service-oriented architecture with harmonized interfaces and required functionalities and features by organizing workshops with stakeholders and the community, and to strengthen the collaboration.

Objective 3: Prepare and maintain a roadmap on how to create the identified non-differentiating building blocks of an open Software-defined vehicle Ecosystem. Identify and advise relevant RDI funding programs for missing building blocks, tools and technology developments.

Objective 4: Help to create a vibrant SDV community in Europe and furthermore, monitor the performance of the CSA initiative by measuring the activities as well as the support of the stakeholders and the community during the project lifetime.

Objective 5: Foster a European initiative, which continues the work of the CSA (FEDERATE) to orchestrate a strong open European collaborative community in maintaining and developing a European Software-defined vehicle Ecosystem.

The work towards the above-mentioned goals that was caried out in the first six months of the project is described in the following chapters.

4 Explanation of the work carried out by the beneficiaries and overview of the progress

4.1 WP1 Project Coordination

The project has started on October 1st, 2023, and a general assembly (GA) kick-off meeting was held on October 5th, 2024. The project ran according to plan throughout the first 6 months this report covers.

One **Milestone** was defined which falls into the reporting period: Milestone 1 (Risk management plan), due M6, was successfully reached with the release of D1.2 (Quality and Risk management plan), submitted 28-MAR-2024.

The **risks** identified in the proposal ("list of critical risks", 1-7) were verified, none of it become an active risk so far.

The **effort reported** by partners (see section 5) are roughly as planned, with only some partners reporting a minor delay of ramping up teams. This will be made up during the upcoming months.

A **first amendment** to the grant agreement was requested and approved by 30-Dec-2023. It included minor formal fixes (removal of duplicated tables), and a shift of efforts between WP's (with no change of the total sum) for partner CONTI, as well as some cost-neutral shifts between cost categories for partner IFAG.

4.1.1.1 Summary of results achieved during reporting period

The results in this WP can be summarized as follows:

- Setup of project IT infrastructure on SharePoint (https://projects.avl.com/23/0310/) and project mailbox (federate-office@avl.com)
- project kick-off done on 5.10.2023 (GA event in Munich)
- implemented kick-off and regular meetings for all 5 work packages
- First Amendment to Grant Agreement successfully implemented
- Established weekly WP1 meeting (Mondays 16:30)
- Established weekly core team preparation meetings (Tuesday 17:00)
- Established monthly full core team meetings (Tuesday 16:00)
- Established monthly general assembly (full consortium) info meetings (Tuesday 17:00)
- Deliverables finished and submitted as planned
    o deliverable D1.2: "Quality and Risk Management Plan"
    o deliverable D1.1: (this document)
- Organized, moderated and handled project consortium agreement (PCA) negotiations (at the time of writing still ongoing)
- A total of 15 associated members have been accepted by the consortium and are now able to participate.

The following deliverables have been submitted:

D1.1 First Project Report (AVL) submitted May 2024

D1.2 Quality and Risk management plan (VDIVDE) submitted 28-MAR-2024

> <u>Major risks and (if applicable) fallback solutions etc.</u>:
>
> Project risks have been identified and are continuously monitored and updated if required.
>
> Deliverable D1.2: "Quality and Risk Management Plan" describes the risk management procedure put in place by the project- management team.

4.1.1.2 Key achievements during reporting period on task level

Task 1.1 Project Management (AVL) [M1-M36]
Project management structures, reporting and IT infrastructures are established and in operation. No major delays or other deviations have occurred. A SharePoint instance has been created to hold all project relevant information; it is hosted by AVL, accessible to project partners (consortium members) only: https://projects.avl.com/23/0310/01/default.aspx
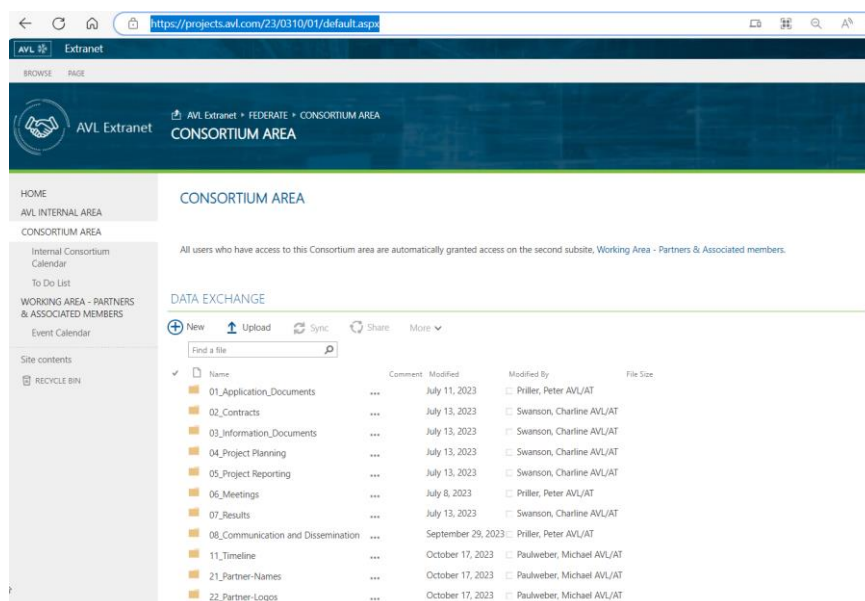

Figure 1: Screenshot: Consortium -only part of the project SharePoint (2024-04-10)

Part 2 is accessible to both project partners and associated members:
https://projects.avl.com/23/0310/03/default.aspx
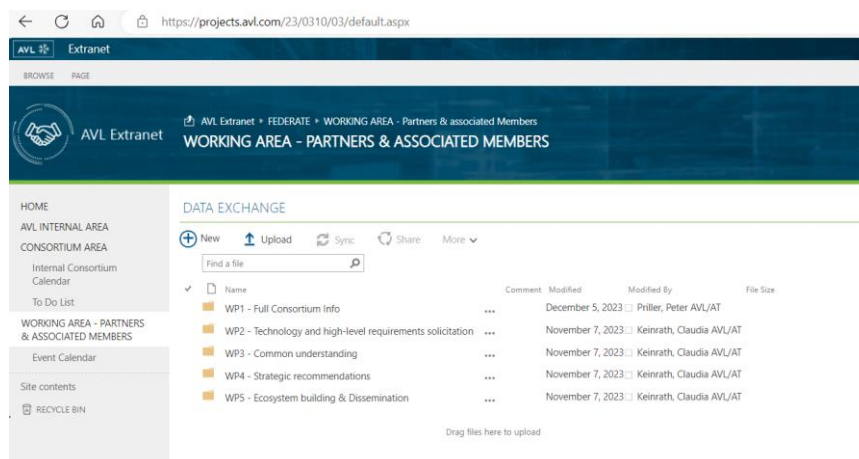
Figure 2: Screenshot: Consortium and Associated Member section of the project SharePoint (2024-04-10)

Table 1 lists the entities which have been accepted as Associated Members (AM) by the consortium, and as such have access to WP1 - WP5 documents on SharePoint. They are also invited to participate in meetings and workshops of the FEDERATE consortium.

Table 1: Approved associated members (per end of M6)

ANFIA
AUTOSAR
CAE List
EUCAR
FEV
PFA
VITESCO
VDA
ASTAZERO
COVESA
Volvo Truck
Accenture
DAIMLERTRUCK
STELLANTIS
TU Berlin

The process to become associated member to FEDERATE is depicted in Figure 3.

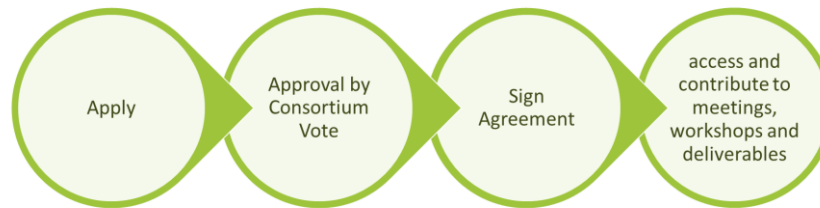*Figure 3: Onboarding process for associated members (AM) in FEDERATE*

Periodic meetings have been established:
- 1st Tuesday in a month
  core team meeting

- 2nd Tuesday in a month
  full consortium meeting (GA)

- All other Tuesdays in a month
  core team prep meeting

Task 1.2. Project Risk Management (VDIVDE) [M1-M36]
A project risk management process has been established. Details of the project risk management process are described in the deliverable "D1.2_Quality_and_Risk_Management_Plan_FEDERATE_v0.1", which has been submitted by the end of M6.

The project risks are regularly monitored in each work package and are discussed with the project Core Team. Risks are assessed based on their likelihood of occurrence and the impact in project scope and constraints. Upfront activities to avoid, transfer or reduce a risk as well as activities that will be engaged when a risk has materialized and cannot be avoided are part of the risk response development. Core Team Meetings are used to revise the status of risks, probabilities and impacts, and related actions, and to identify new risks. Risks will be revised monthly, but also after the occurrence of any significant event.

A risk log file has been created and will be monitored and updated within the execution of the project. The project members have already collected a set of potential general and specific project risks, that have not materialized yet, but will be monitored with a special focus.

4.1.1.3   Deviations from plan

No significant deviations were reported.

4.2 WP2 Technology and high-level requirements solicitation

WP2 started after the project kick-off in Munich with the preparation of the WP2 ramp-up. The officially WP2 ramp-up meeting was held on Nov the 10th. Since this WP2 kick-off a bi-weekly 2 hour working meeting is held. In these meetings scientific board presentations take place, and current project topics are discussed.

Documents (presentations, meeting minutes, etc.) can be viewed at:
https://projects.avl.com/23/0310/03/Data_Exchange/WP2%20-%20Technology%20and%20high-level%20requirements%20solicitation

4.2.1.1   *Summary of results achieved during reporting period*

The results in this WP can be summarized as follows:
- Established bi-weekly working meeting (Thursday 15:00 – 17:00 CET)
- Organized scientific board presentations in the bi-weekly meetings.
  - RWTH - (ASOA Automotive Service-Oriented Software Architecture) 07.12.23
  - LTU - Eclipse Arrowhead (A framework and implementation platform for SoS, IoT and OT integration) 07.12.23
  - ETAS - Eclipse SDV (Eclipse Software Defined Vehicle) 18.01.24
  - FZI – SofDCar (SofDCar Alliance are focussing their research on the challenges of future E/E & SW architecture in vehicles.) 01.02.24
  - RWTH (Container-Driven Development and Deployment of ROS Applications) 01.02.24
  - Verum – Dezyne (Rich tools to support the development of complex embedded software) 22.02.24
  - RWTH – RobotKube (*Orchestrating Large-Scale Cooperative Multi-Robot Systems with Kubernetes and ROS) 14.03.24*
  - COVESA - (Introduction to COVESA , how the work and what are the Building Blocks of a SDV that they work on) 28.03.24
- First set of Building Blocks is collected, available on SharePoint.
- Worked out first maps of Building blocks (located in SDV-Areas) available on SharePoint.
- A first version of the Glossary document with terms, definitions, and collected Building Blocks is available on SharePoint.
- Initial proposals for structuring the Building Blocks were drawn up.
- WP2 status presentations in the weekly Core Team Meetings.
- First Workshop to specify required tool chains took place on 18-MAR-2024 in Munich: OEMS view.

The following deliverables have been submitted:
No deliverables were due during the reporting period.

> Remark: The SDVoF document which is released by WP4 and the Sherpa Group will be partly used for the D2.2 Vision Document due at M12.

> Major risks and (if applicable) fallback solutions etc.:
>
> Project risks have been identified and are continuously monitored and updated if required.
>
> Deliverable D1.2: "Quality and Risk Management Plan" describes the risk management procedure put in place by the project- management team.
> No increased risk is currently visible.

4.2.1.2 Key achievements during reporting period on task level

Task T2.1: High-level requirement solicitation (VIF) [M1-M36]
The first version of the Glossary contains solicitated Building Blocks from project partners. This document together with the maps of the BB's will serve as a basis for the derivation of the High-Level Requirements. Work is ongoing for the definition of the terms which are still under discussion.

Proposal - New Terms for Building Blocks

Building Blocks BB & Building Blocks Cloud BBC
(Building Block Stack Component BB-SC & Building Block Cloud Stack Component BB-CSC)
Building Blocks were defined as executable code or usable library within the car itself or within the cloud or within the development environment.
Building Blocks can be combined into groups to enable a simplified representation at different abstraction levels.

This could include implementations as well as open-source software or interfaces and application programming interfaces proprietary (APIs), which need to be implemented by specific components.

Building Blocks are used to develop, verify or validate, to operate, support and maintain Software Components, Tools, or Processes during the whole "product life cycle" and afterwards.

~~Enablers~~
Building Blocks (BB-MU & BB-E&ST)

Enablers were defined as technical solutions, which are not executed within the car during runtime.
Enablers support the development, deployment, quality assurance and other areas of the product without being part of the product itself.

~~Definitions~~
Supporting Building Block (S-BB)

Definitions meant joint procedures, rules, standards and other definitions, which did not fail into Building Blocks or Enablers.
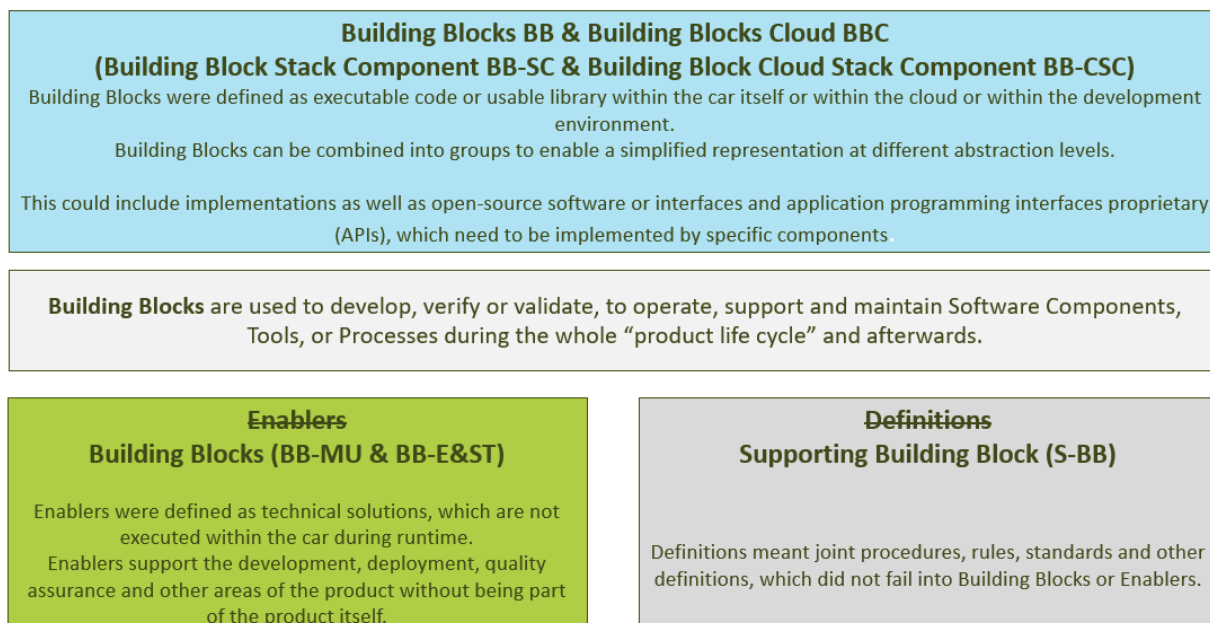
Figure 4 Current "Terms and Definitions" for Building Blocks

In addition to the definition of terms, and definitions of BB's, WP2 continued to work on the structuring and identification of further BB's.

WP2 Structuring

Figure 5 Structuring of In-Vehicle (On-Board) BB's
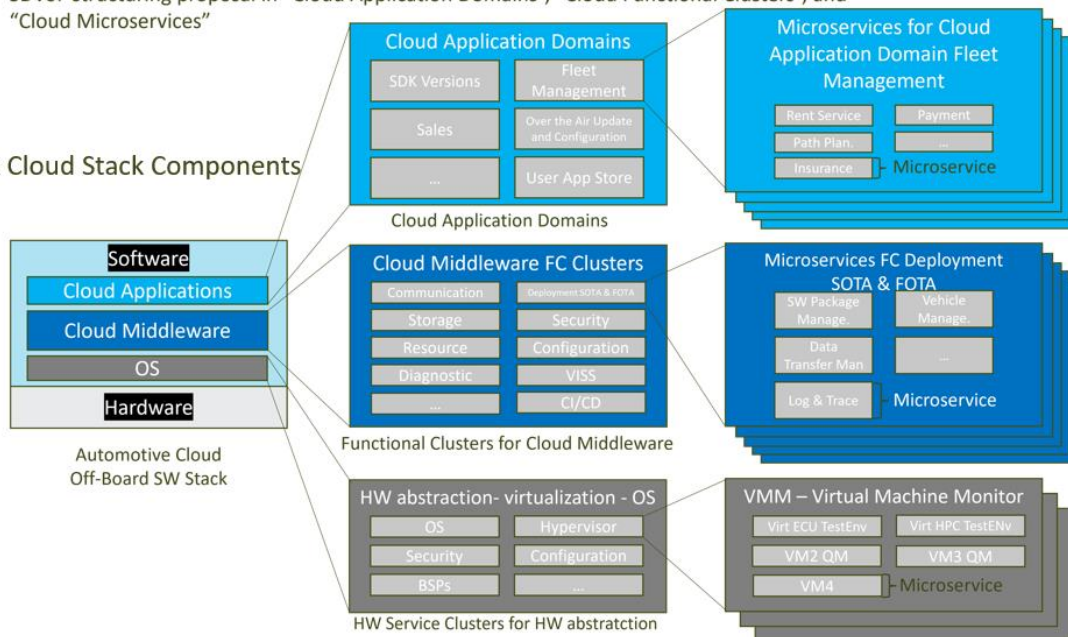
WP2 Structuring

Figure 6 Structuring of Cloud (Off-Board) BB's

A well-defined structure of BB's, a defined possibility to group them in clusters / domains and in different layers together is one of the first set of High-Level Requirements. Without these grouping and structuring options and the joint coordination, the complexity would be unmanageable.
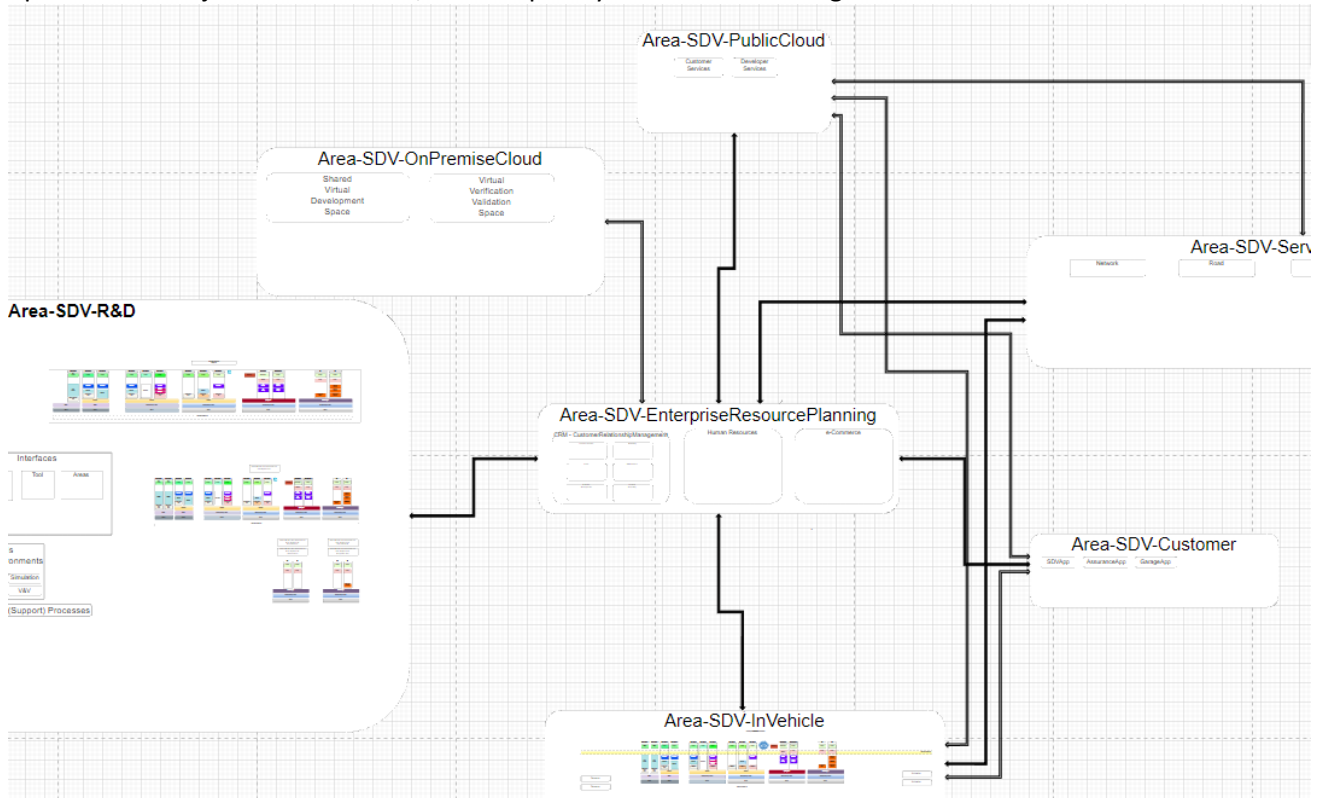

Figure 7 shows the Areas identified where SDV BB's are located

Task T2.2: SDV technology capturing, tracking, gap analysis, forecasts and glossary (UOULU) [M1-M36]
The in Task 1.1 mentioned Glossary document which is available on SharePoint provides a set of Terms and Definitions as well as explanations for the Terms and Definitions. For the first set of collected BB's a table with additional properties and attributes was proposed by WP2. Gap analysis started with work on existing standards and open source projects.
The following Figure 9 on the left-hand side shows the table, while Figure 8 on the right-hand side the so far collected BB's.

Figure 9 Table which descibes a BB with it's additional properties and attributes

List of BBs

Building Block Collection:
Middleware Building Blocks
    Power Management
    Time Service
    Automotive Edge Runtime
    BB State Management
    Diagnostic services Applications
    Distributed Health Management
    Watchdog
Security Services
    Crypto Service Manager
    Security Event Manager
    Secure Onboard Communication
    sSOA
    Key Management System
    Security Transport Layer
    Internet Protocol Security
    Intrusion Detection
    Diagnostic Policy Manager

Software and Update Management Services
    OTA Master
    Local Update Manager
    Digital Twin
    Shadowing
Communication Services
    SOA
    Network Management
    Gateway Mirroring
    Smart Charging Communication
    SecOS
    Communication Server (S2S)
Data Management Services
    Vehicle Data Collector
    Vehicle Logging and Recording
    Vehicle Data Persistency

Figure 8 collected set of BB's

4.2.1.3 Work carried out in this work package per beneficiary

AVL: participated and contributed in the bi-weekly WP2 meetings, and the F2F WP2 workshop
BMW: participated and contributed in the bi-weekly WP2 meetings, focus on Vision, Roadmap und State of the Art.
ETAS: Participation in WP2 meetings. Presentation on Eclipse SDV Working Group and its operational

approach.

CARIAD: During the reporting period, Cariad SE has been working intensively on possible technical enabler topics that make sense within the framework of the European initiatives of the open SDV platform. In intensive internal and external discussions, it became clear that, among other things, the topic of **plug and charg**e is an important topic area that is suitable for striving for or promoting joint technical implementations.

The considerations are shown in Figure 10, Figure 11 and Figure 12 on technical software components of Plug and Charge, which are potentially suitable for development as Open Source projects. The analysis of the components involved in Plug & Charge and their system environment was conducted and led to a detailed list of potentially suitable in-car functions from the point of view of CARIAD/Volkswagen. CARAID as well identified first viable Open-Source candidate for PoC components from an OEM perspective taking into account the OEM-specifics which will be different at each OEM. The CARIAD team identified the internal group wide Plug & charge experts and plan detailed technical discussions with other project partners taking place from May 2024 on.

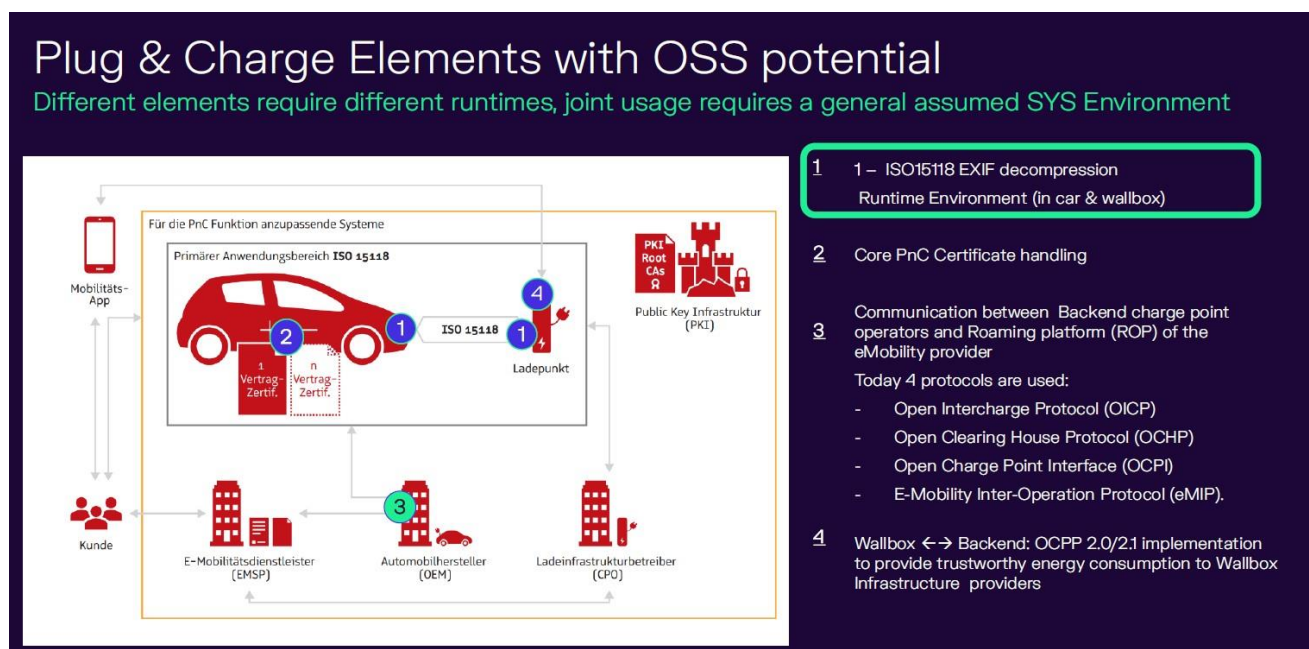
Figure 10: Plug & Charge elements in general

Plug & Charge 2.0 SSP (SDV)
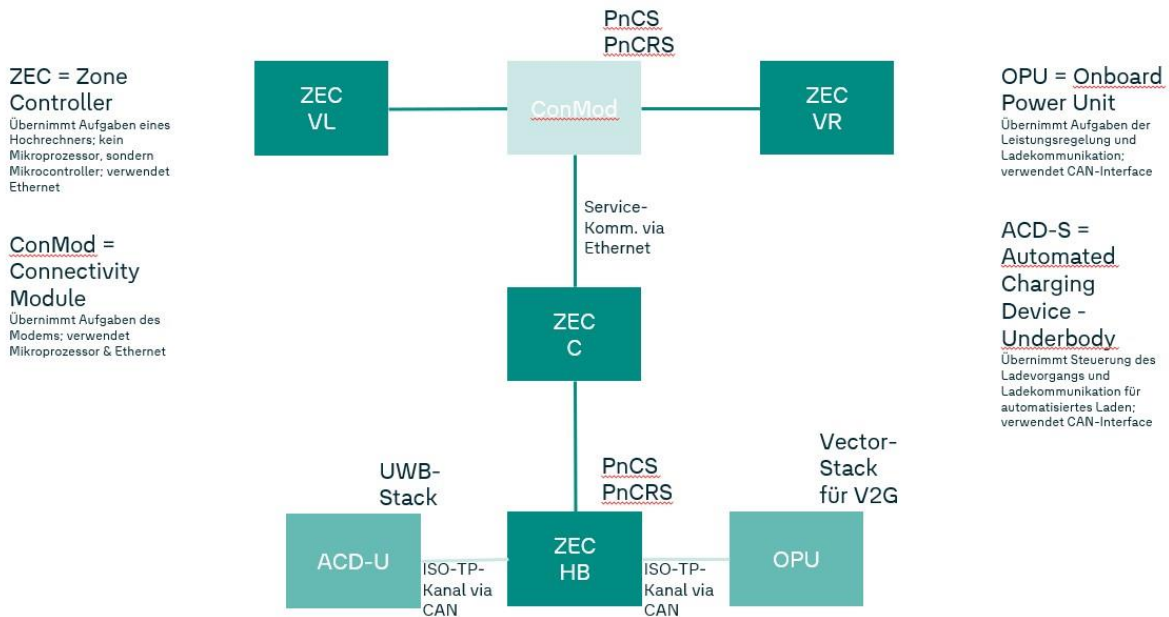## Beispiel für Verortung PnC-spezifischer Funktionsanteile

Figure 11: Plug & Charge with focus on in-car-architecture elements

Plug & Charge 2.0 SSP (SDV)
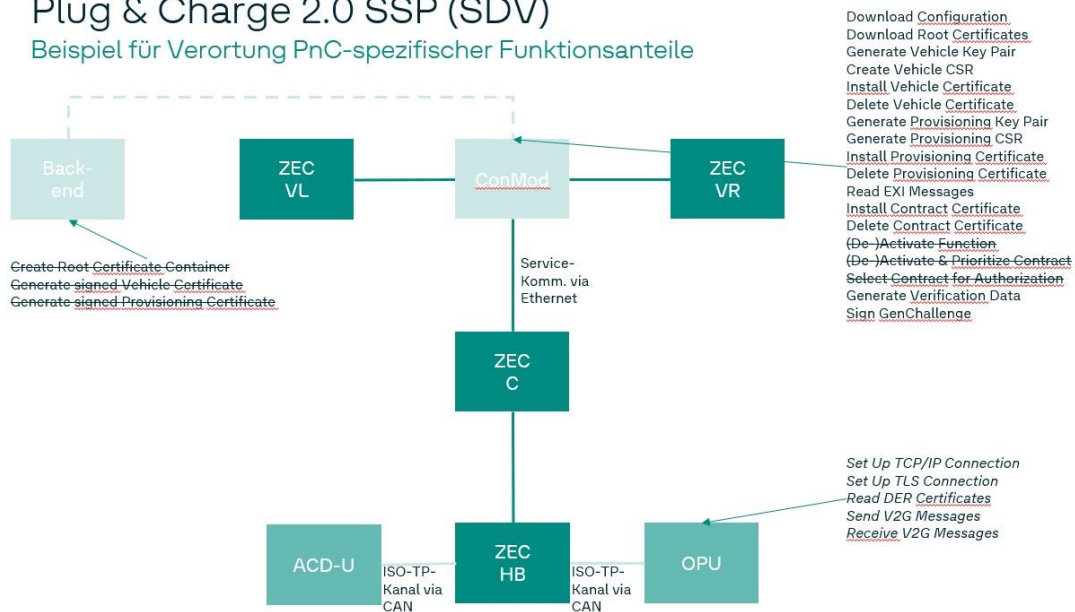## Beispiel für Verortung PnC-spezifischer Funktionsanteile

Figure 12: Plug & Charge with focus on elements for Backend and Connectivity architecture

CONTI: participated and contributed in the bi-weekly WP2 meetings. Contribution in structuring of BBs..

CONTI-FR: Participation to the regular WP2 calls for discussing topics. Contribution to definition of the structural and definition of BBs, with providing detailed description of BBs for middleware.

EB: Participation to the regular WP2 calls for discussing topics. Contribution to definition of the structural and definition of BBs.

FSG: Participation to the overall project kickoff in Munich.

FZI: Participation to the overall project kick-off in Munich. Participation to the regular WP2 calls for discussing upcoming topics. Preparation and presentation of SDV-related research projects (e.g. SofDCar, TASTE) during WP2 calls.

MBAG: Participation in WP2 meetings the kickoff event and working on collecting and how to collect Buildingblocks for WP2

UOULU: Participation in the kick-off meeting in Munich. Participation in WP2 meetings. Discussion on invitations for further relevant topics/presentations in WP2 meetings. Gap analysis started.

RENAULT:

RWTH: Participation in the overall project kick-off in Munich. Participation in the regular WP2 calls for discussing presented input. Provision of input for the definition of BBs. Preparation and presentation of three scientific board presentations.

TUM: has not yet started to work on this project

VDIVDE: Uptake of work structure and alignment with WP5 (D5.8 Data Management Plan)

VECTOR: Participation to the overall project kickoff in Munich. Participation to the regular WP2 calls for discussing presented input.

VER: Participation in the kick-off meeting in Munich. Participation in the WP2 meetings. Presentation to the scientific board on the subject of formal methods.

VIF: Participation in the Kick-Off Meeting in Munich. WP2 Lead and organization of bi-weekly meetings. Participation in the Core Team Meetings (Present status of WP2). Organization of scientific board presentations. Preparation and proposal for a first set of maps of BB's. Provide proposal for the Structuring of BB's, Areas and Tools. Provide the first set of "Terms and Definitions" in the Glossary document. Provide a proposal for the table with additional attributes and properties for the BB's collection. Present Federate at EARPA Spring Meeting 2024 in Brussels.

ZF: Participation to the overall project kick-off in Munich. Participation to the regular WP2 calls for discussing upcoming topics. Support setup of WP3 Back log.

4.2.1.4 Deviations from plan

TUM: has not yet started to work on this project and will accelerate during the upcoming months.
No other significant deviations were reported.

4.3 WP3 Common Understanding

During the first month an aligned approach for managing and tracking the FEDERATE backlog has been defined. The corresponding infrastructure has been setup on a FEDERATE GitHub instance. Role based access rights for FEDERATE members have been defined and provided.

Furthermore, an initial set of backlog items have been collected and will be integrated in the backlog tracking.

4.3.1.1   Summary of results achieved during reporting period

The results in this WP can be summarized as follows:

- Alignment discussion in workshops and meetings
- Introduction and overview of Automotive OSS communities, esp. Eclipse SDV working group
- Set up a web form to anonymously collect requests for building blocks (was requested by OEMs); collected a total of 23 inputs (see Figure 13)
- Synchronization around use case collection and tracking
- Representation of FEDERATE and SDVoF efforts at Eclipse SDV community event
- A Git environment was registered to manage the BB specification process (https://github.com/CSA-FEDERATE)

The following deliverables have been submitted:

No deliverables were due during the reporting period.

Major risks and (if applicable) fallback solutions etc.:

- If members do not adopt the GitHub approach, coordinating backlogs might become difficult. Mitigation: collaboratively discuss and refine workflow and structure
- Risk mitigation: Provide several "training sessions" on the usage of and the corresponding process within our GitHub instance.

4.3.1.2 Key achievements during reporting period on task level

Task T3.1: Refine definition of modular building blocks and create prioritized backlog (ETAS) [M1-M36]
Suggestions for building blocks are collected via multiple channels, specifically
- WP2 and WP3 workshops
- WP2 regular meetings
- Sent in descriptions from partners
- Anonymous collection via web forms (see Figure 13)

Figure 13: Web- form to collect anonymous descriptions of BB's (partial screen shot)
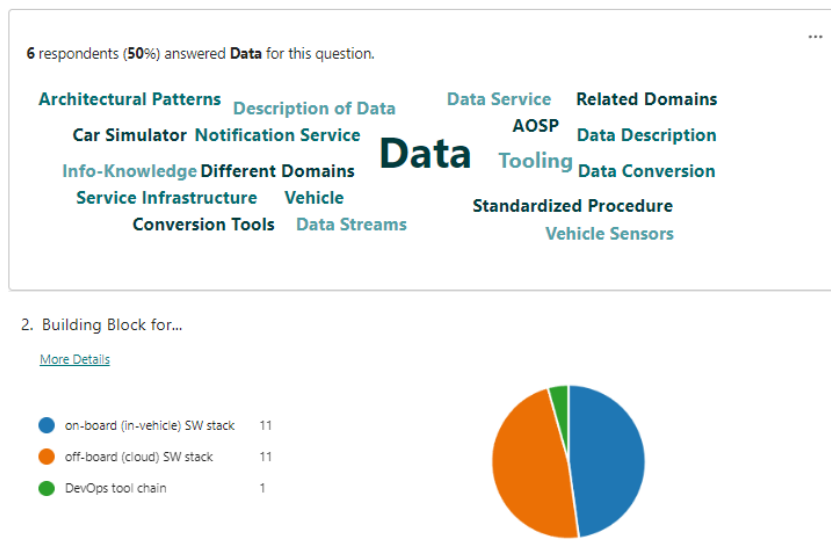

Figure 14: First analysis of the BB descriptions collected

A GitHub environment was set up to host the description of building blocks in a Wiki, in order to allow discussion and refinement. In a next step, a "matured" building block description will lead to an dedicated GitHub repository.

Internal

Task T3.2: Alignment with running projects about implementation of building blocks (ETAS) [M1-M36]
In the first few months, first alignments were done with (i) the HAL4SDV consortium, and (ii) the proposal consortium addressing the ChipsJU-2024 IA-FT-3 Middleware call. This includes collection and documentation of foundational SDV use case clusters for HAL4SDV and subsequent projects:

- Distributed Service Mesh
- Link to AUTOSAR
- Vehicle Fleet Data
- Remote Vehicle Interaction

These use case cluster definitions include input collected from the recently created SDV alliance group, which aims to streamline the contributions to a larger SDV technology ecosystem by AUTOSAR, COVESA, Eclipse SDV and SOAFEE. In addition, ongoing engagements in existing open source projects and communities especially in Eclipse SDV have informed these use case clusters, with the goal of aligning ongoing work on technology blueprints that have the potential to become pieces of an open source supply chain for automotive product companies (OEMs) with the ambition of FEDERATE to foster and support community-driven OSS work for SDV technology.
This ensures that the work ETAS is contributing to the project scope of FEDERATE and its successors is directly aligned with goings-on in relevant communities, as well as work that is happening with and for actual OEM software platforms.

Task 3.3: Identification of new standardization initiatives for successfully implemented building blocks (FZI) [M25- M36]
Not yet started.

4.3.1.3 Work carried out in this work package per beneficiary

AVL set up the GitHub repository for the FEDERATE project https://github.com/CSA-FEDERATE, see Figure 15.
This repository is open to public (read access for everybody), consistent with FEDERATE's objectives. Edit/Write access is possible for a defined list of users with git ID from consortium partners only.
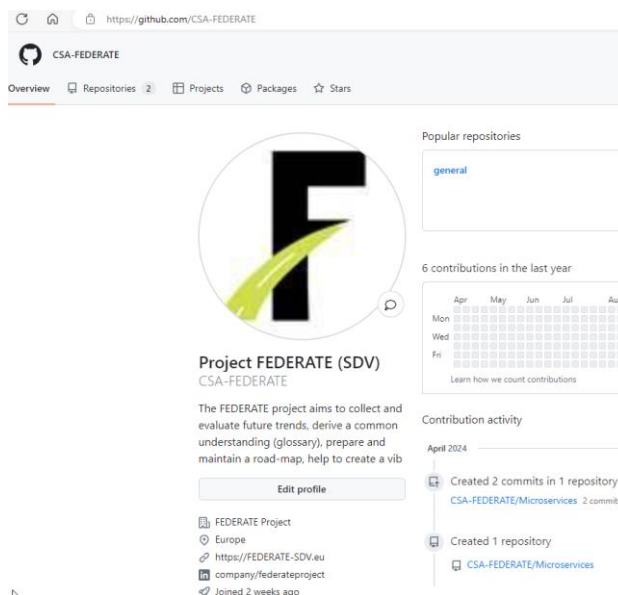
Figure 15: FEDERATE GitHub Repository (Screenshot 10-APR-2024)

AVL-DE: The involvement of AVL-DE was moved to WP 4.

BMW, BOSCH, ETAS, CARIAD: participated in WP2/WP3 discussions and workshops

CONTI: Participation to the overall project kickoff in Munich

CONTI-FR: Participation to kick-off online.

EB and **ECL**: participated in WP2/WP3 discussions and workshops

FSG: Participation to the overall project kickoff in Munich

FORD:: participated in WP2/WP3 discussions and workshops

FZI: Participation to the overall project kick-off in Munich. Participation to the initial discussion on WP3 tooling.

IFAG, **MBAG**, **NXP**, **RENAULT**: participated in WP2/WP3 discussions and workshops

ST: Participation in consortium meetings.

TTTECH, **VALEO**: participated in WP2/WP3 discussions and workshops

VDIVDE: Uptake of work structure and alignment with WP5 (D5.8 Data Management Plan)

VECTOR, **VER**, **ZF**: participated in WP2/WP3 discussions and workshops

4.3.1.4   Deviations from plan

No significant deviations were reported.

4.4 WP4 Strategic recommendation

The vision and roadmap was authored by FEDERATE during the first months of the project. Together with the SDV Sherpa Governance group, it was iteratively revised and finally published as the "European Software-

Defined Vehicle of the Future (SDVoF) Initiative – Vision and Roadmap" paper on the FEDERATE Website (https://federate-sdv.eu/wp-content/uploads/2024/04/2024-04-12-SDVoF-Vision-document-ver017-final.pdf) at the beginning of M7. It will be the base for deliverable D4.4 ("Strategic Roadmap - First Versiont"), due M12.

The focus of WP4 is to identify research projects focussing on vehicular software architectures, HW/SW implementation-focussed projects, and application-focussed projects in CCAM and 2ZERO.

Goal:
1. identify active and upcoming research projects on national and EU level
2. Collect brief info per project --> one-pager
3. Support collaborations (associated membership, mailing lists,…)
4. align & advise future calls, standardization, …

4.4.1.1   Summary of results achieved during reporting period

The results in this WP can be summarized as follows:

Basics for building blocks and basics for first workshop created. The working method is based on an agile workflow. The first projects and initiatives were collected and evaluated for relevance.

- Regular meetings started (Every 2 weeks Thursday 11:00-12:00)
- Collected an overview of related projects on EU and national level; collected short presentations (one-pagers) on the most relevant ones.
- Vision and Roadmap was authored by FEDERATE, released at 17-APR-2024
- Alignment meeting prepared for SDV/RISC-V exchange (to be held 23-APR-2024, to discuss jointly appropriate UC/PoC and applicable EE architectures

The following deliverables have been submitted:

While D4.4 is due only in M12, the consortium in alignment with the SDV Sherpa Government Group decided to release this first version in the "Vision and Roadmap" paper already in April 2024 = M7.

No other deliverables were due in this reporting period.

Major risks and (if applicable) fallback solutions etc.:

The involvement of relevant stakeholders is not brought in to the required discussions and results.

- A major risk would be the failure to identify and connect with a relevant project, thus risking misalignment.
  mitigation: assemble info from networks of individual partners and check periodically.

4.4.1.2 Key achievements during reporting period on task level

Task T4.1: Orchestrated building block backlog (MBAG) [M1-M36]
WP4 collaborates with WP3 in defining and setting up the workflow and tool support (GitHub etc) for managing the building blocks.

Task T4.2: Alignment recommendations for future calls (CONTI) [M1-M36]
During WP4 workshops, relevant projects, calls, and funding schemas have been identified and listed. Short summaries (one-pager) per relevant project were collected/created and are available for project and associated members only on SharePoint (https://projects.avl.com/23/0310/03/Data_Exchange/WP4%20-%20Strategic%20recommendations/04%20Relevant%20Projects%20beyond%20SDV)

Task T4.3: Create and update roadmap for realization of vision of SDV Ecosystem program (VDIVDE) [M1-M36]
The creation of a roadmap update requires results from WP2 and WP3, as well as input from project partners and associated members. Since the project is currently ramping up, no roadmap updates have been generated, so far. A first workshop, considering the key goals and aspects of an update is planned on the 15th May 2024.

4.4.1.3 Work carried out in this work package per beneficiary

AVL created the initial version, and took over editor role for the "Vision and Roadmap Paper" which was developed by FEDERATE consortium in collaboration with the Sherpa Governance Group. At the time of writing this document is in version 16 and close to its final release on the FEDERATE website.
AVL-DE: Active generation of content in WP 4 and participation on WP4 meetings, research for relevant SDV projects and initiatives, participation on „Vision and Roadmap Workshop" in Munich, review of the SDVoF vision and Roadmap paper.
BMW: leads and moderates WP4 meetings
CARIAD: participate sand contribute sin WP4 workshops and meetings
CONTI: Contribution and review to the SDVoF Vision and Roadmap document.
CONTI-FR: Contribution and review of the SDVoF vision and Roadmap paper sent to Sherpa Group for approval.
EB: participate sand contribute sin WP4 workshops and meetings
FSG: Contribution and review of the SDVoF vision and Roadmap paper with the Sherpa Group
MBAG, **NXP**, **RENAULT**: participate sand contribute sin WP4 workshops and meetings
VDIVDE: Participation on WP4 meetings, research for national SDV projects and initiatives, creation of a common template, participation on „Vision and Roadmap Workshop" in Munich, review of the SDVoF vision and Roadmap paper

4.4.1.4   Deviations from plan

No significant deviations were reported.

4.5 WP5 Ecosystem building & dissemination

The first WP5 meeting after the project kick-off took place on the 21st November 2023. A common timeslot, considering all work package partners has been found. Work package meetings are held in a bi-weekly frequency. The team has started working on the WP5 tasks and has met all work package goals for the considered project phase. Two deliverables have been finalized and submitted in time. No major delays or other deviations have occurred.

4.5.1.1   Summary of results achieved during reporting period

The results in this WP can be summarized as follows:

- Established bi-weekly WP5 meeting (Tuesdays 10:00)

- Two WP5 deliverables (D5.3 Dissemination plan & D5.8 Data management plan) finished and submitted in time

- FEDERATE visual identity was created together with templates and communication material

- FEDERATE project website has been launched (https://federate-sdv.eu)

- 1st Newsletter has been published (31-JAN-2024)
    - Newsletter #1 was sent out to **107** receivers

- 1st Press Release released
    - https://idw-online.de/de/news828178
    - Press Release has been sent out to 6515 subscribers, 1638 journalists

- FEDERATE LinkedIn channel has been created, 24 articles have been posted as per 29-04-2024

- As of 29-04-2024, there FEDERATE's LinkedIn presence has 481 followers

- 1st FEDERATE project video created

- List of external (networking, collaboration) events created (incl. number of events attended by project partners);

- Partners / hosts for two major SDV conferences in the first project year have been found

- Planning phase for the SDV conferences has started

The following deliverables have been submitted:

D5.3 Dissemination plan (METIS) submitted 28-MAR-2024

D5.8 Data management plan (VDIVDE) submitted 28-MAR-2024

Major risks and (if applicable) fallback solutions etc.:

- Potential risks with impact on work package 5 and the project have been collected in the deliverable D1.2 "Quality and Risk Management Plan", risk response measures have been defined

None of the collected risks have materialized, so far

4.5.1.2 Key achievements during reporting period on task level

Task T5.1: Creation of an Open SDV Ecosystem Forum (VDIVDE) [M1-M36]

The creation of an Open SDV Ecosystem Forum has started. Members of FEDERATE have introduced the project and its objectives on several events, such as the Chips JU launch event on the 01.12.2023. Furthermore, the launch of the FEDERATE website by the end of January 2024 gives the public the opportunity to get to know the project mission and allows to get in contact with the community. The measures mentioned above, have led to 22 applications for an associated membership, so far. The associated membership allows the partners to be part of the project and to get access to all project information (except financial data), regular consortium meetings, workshops and events.

Task T5.2: Organization of community solicitation workshops (VDIVDE) [M1-M36]

The project has taken first measures to organize community solicitation workshops. Two major SDV conferences in the first project year are in the planning phase. Solicitation workshops will be a key part of the SDV conferences, where relevant stakeholders and all interested parties are invited to present their projects and discuss ambiguities, address urgent needs and plan future activities. The content and topics for further workshops, hackathons and ecosystem activities are currently being collected from the project partners.

Task T5.3: European SDV Conference (METIS) [M1-M36]

In close collaboration with VDIVDE, first organizational steps were taken towards planning two SDV conferences in 2024 in parallel with bigger SDV events. Both of them are listed in table below:

Table 2: FEDERATE Conferences in 2024

Name of the conference	Details	Targeted groups	Expected Outcome
FEDERATE Networking Event in conjunction with Autonomous 2024	23 – 24 September 2024 (The Autonomous Main Event 2024 - Vienna, Sept. 23-24, 2024 (the-autonomous.com). In synergy and cooperation with The Autonomous 2024, FEDERATE is planning to hold a networking event on 23rd September 2024 with potential topics like the presentation of EU SDV projects & initiatives and on 24th September it is planned to hold a main event with high-level keynotes and/ or podium discussion including a workshop related to SDVoF.	Strategic focused event orientated to EU SDVoF and international initiatives, policy makers, industry associations, OEMs and Tiers	Engage stakeholders
Open Community for Automotive (OCA) in conjunction with Open Code Experience 2024 (OCX24)	22 – 24 October 2024 in synergy with Eclipse Foundation (Open Code Experience 2024	Oct 22-24	OCX 24	The Eclipse Foundation (opencode-x.org), FEDERATE is planning to hold a co-located event presenting potential topics like the Vision of the SDVoF, map of building blocks & current state, main patterns/objectives/motivation/engagement/view	Targets developers, architects, researchers, politicians.	Engage stakeholders

Name of the conference	Details	Targeted groups	Expected Outcome
	of OEMs to OSS, code-first, HW abstraction (giving developers an idea why common understanding and building blocks are so important), solicit input from OSS community, other.		

Specifically, number of alignment meetings with co-organisers were attended, preliminary agenda for FEDERATE Networking Event drafted, a draft of SAVE THE DATE announcement has been produced, etc.

Task T5.4: Organization of SDV Hackathons (ECL) [M1-M36]
We are talking to the Eclipse SDV members to identify a location for the SDV Hackathon which is planned for November. The Hackathon will span 3 full days of hacking and will revolve around using Open Source projects to solve concrete hack challenges.

Task 5.5 Dissemination and communication activities, incl. tools and materials (METIS) [M1-M36]
First steps towards the increase of the project visibility were taken during first six months of the project implementation. Namely:

1. Visual identity of the project was created including logo, colour palette, main visuals for communication material;

Figure 16: FEDERATE logo (full version)

2. Website of the project was finalized and released on M4 which serves as a vehicle for the dissemination of project activities and results;
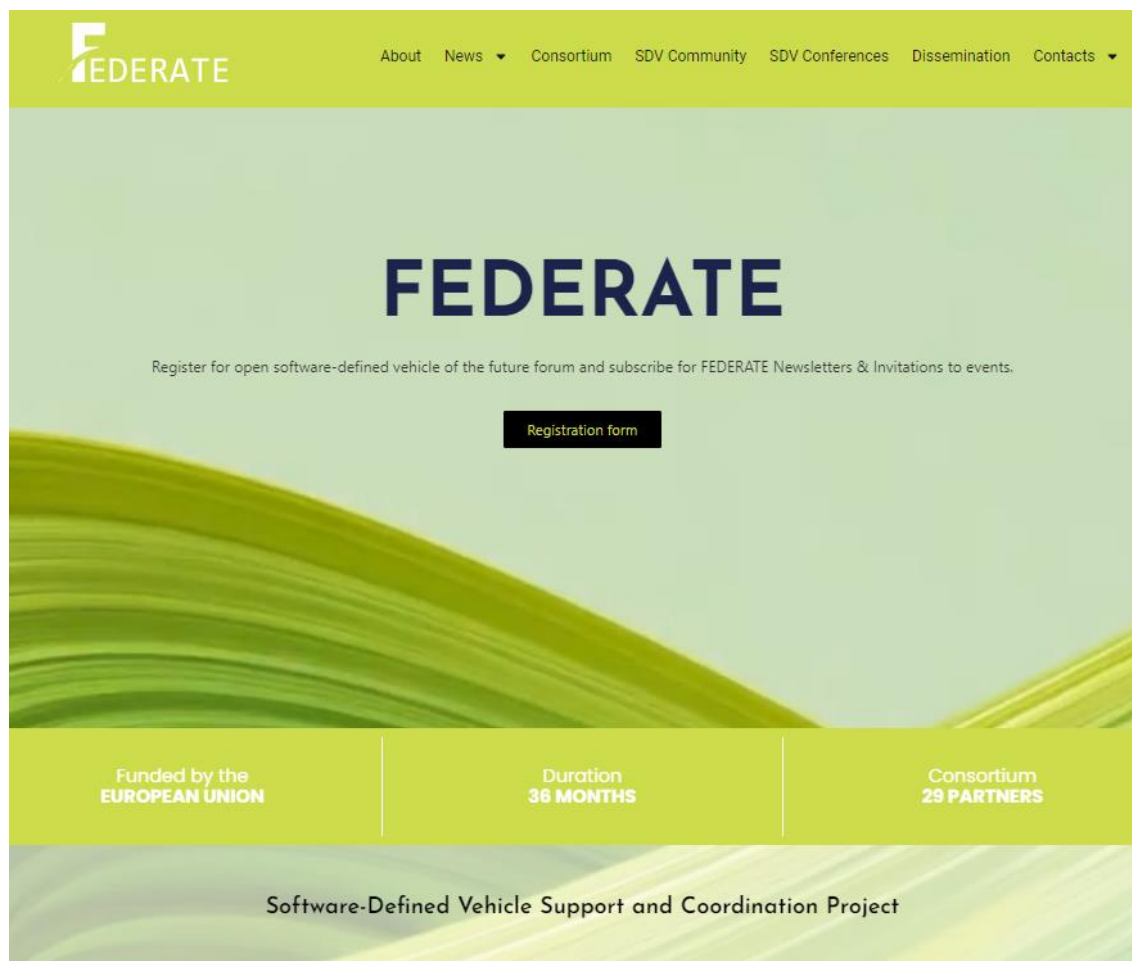
Figure 17: FEDERATE Website landing page

3. Project social media accounts were set (LinkedIn, YouTube), main hashtags identified, number of posts released;

Table 3: Social media channels

Social Media channel	Direct link
LinkedIn	https://www.linkedin.com/company/federateproject/
YouTube	https://www.youtube.com/@FEDERATECSAProject

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4. 1st Press Release was written and disseminated via project website and shared via additional news portal;
5. 1st Newsletter was prepared and sent out to FEDERATE subscribers, providing information about the project, dissemination actions and news on upcoming FEDERATE events;
6. 1st project video was created and shared via project website and social media accounts;
7. Project roll – up banner was designed and printed out in order to be distributed at various events, conferences, workshops, etc.;
8. Common templates for the documents were created using the FEDERATE brand identity in order to keep consistency and visibility of the project;
9. D5.3 – Dissemination Plan was produced and submitted, which outlines the strategy the FEDERATE project will employ to effectively disseminate and communicate its progress, findings, and achievements, specifically:
    a) roadmap for the ongoing and future activities of the FEDERATE project;
    b) organization of dissemination and communication inside the Consortium;
    c) Dissemination strategy (incl. specific objectives, scope, types of information to be disseminated, target groups, tools & channels, sustainability aspects and principles, etc.);
    d) Communication strategy (incl. communication approach, means, phases, use of visual identity, website structure, social media channels, other communication tools);
    e) Way of monitoring dissemination and communication actions (incl. specific assessment form, counter of downloads, dissemination and communication activities reports as well as certain KPI's set for the evaluation of the effectiveness of communication and dissemination strategies);
    f) Social Media Guidelines.

Figure 18: FEDERATE Dissemination Plan (D5.3)

Task 5.6 Data management plan (VDIVDE) [M1-M6]

A data management process has been established. Details of the data management process are described in the deliverable "D5.8_Data Management Plan_FEDERATE_v1.0", which has been submitted by the end of M6.

The data management plan states, that the project partners will implement all mandatory open science practices and encourage the implementation of the recommended ones within the consortium as per Horizon Europe Programme Guide. FEDERATE will use open access publishing for all scientific publications resulting from the project. Documents will be provided preferably in pdf format or any other one that allows access to the majority of users. This approach ensures high visibility and interoperability among FEDERATE members as well as the general public.

Project working data is accessible for the FEDERATE members and associated members via the common SharePoint, hosted by AVL. Furthermore, an open-source backlog for requirements and the description of software building blocks has been created. The data repository is accessible via: https://github.com/CSA-FEDERATE/ . Project results will be openly accessible. The FEDERATE website (https://federate-sdv.eu/) will be used for the publication of the project results.

Task 5.7 Quality assurance and consistency check for key reports (VDIVDE) [M1-M36]

A quality assurance process has been established. Details are described in the deliverable "D1.2_Quality_and_Risk_Management_Plan_FEDERATE_v0.1", which has been submitted by the end of M6. The quality assurance and consistency check will be ensured by a peer-review process. Each deliverable or

key report will be reviewed by a separate project partner, preferably from another work package. Before the submission, all key reports and deliverables will be presented to the Core Team.

4.5.1.3 Work carried out in this work package per beneficiary

AVL has registered the domain www.federate-sdv.eu and actively contributed to the setup of its structure and design. Project-relevant information such as objectives, partners, associated members and results are published on this website. Targeted measures have been taken to ensure the security and GDPR-compliant handling of user data on the project website, e.g. implementation of a penetration test, verification of compliance with the GDPR by a data protection responsible.

AVL was involved in the creation of project-relevant templates and provides content for newsletters and LinkedIn postings on a regular basis. AVL authored for example the FEDERATE LinkedIn posting for week 14/2024. The company is also a driving force in the co-organization of events relevant to FEDERATE. In case of "The Autonomous" AVL and the conference organizer TTTech Auto invite for a networking event the day before the conference. AVL further participates in the conference board for the OCX conference (Open Code for Automotive (with Eclipse)).

ECL: Participation in the WP5 activities, in particular by raising awareness of the FEDERATE project within the Eclipse SDV Community and at invited events.

In particular the Eclipse Foundation has partnered with FEDERATE to organize an Automotive focused conference addressed to Developers and Architects around the use and development of Open Source Software as well as Community.

The Conference, Open Community for Automotive, part of the larger Open Community Experience (OCX, https://www.ocxconf.org/) will take place in October in Mainz.

METIS: manages communication and dissemination activities, including setting up and operating the web presence and posts on the project's social networks

VDIVDE: Execution of bi-weekly WP5 meetings, contribution to the OCX conference board, organization of the FEDERATE Networking Event in alignment with TTTech, creation of the Deliverable D5.8 "Data Management Plan"

4.5.1.4 Deviations from plan

No significant deviations were reported.

5 Effort reported by partners

Reported efforts in PM (person months) spent in M1-M6

#	Partner Short Name	PM in WP 1	PM in WP 2	PM in WP 3	PM in WP 4	PM in WP 5	Total PM per Participant
1	AVL (Coordinator)	2.7	0.0	0.4	1.1	0.4	4.6
2	BMW		0.2		0.6		0.8
3	MBAG		0.2				0.2

4	RENAULT						0.0
5	CARIAD		0.4				0.4
6	FORD						0.0
7	BOSCH						0.0
8	CONTI		0.4		0.1		0.5
9	CONTI-FR		0.3		0.1		0.3
10	EB		0.1				0.1
11	TTTECH						0.0
12	VALEO		0.3				0.3
13	ZF			0.3			0.3
14	FSG			0.3			0.3
15	IFAG						0.0
16	NXP			0.3	0.1		0.4
17	ST			0.5			0.5
18	AVL-DE					0.5	0.5
19	ETAS		0.4	0.5			0.9
20	VER		0.4				0.4
21	UOULU		0.6				0.6
22	RWTH		0.5				0.5
23	TUM						0.0
24	VIF		3.4				3.4
25	VDIVDE	1.5			0.2	1.4	3.1
26	ECL						0.0
27	METIS					0.5	0.5
28	FZI		0.3				0.3
29	VECTOR		0.1				0.1
	Total Person Months	4.2	7.5	2.3	2.2	2.9	19.0

Table 4: Definitions, Acronyms, Abbreviations

Definitions, Acronyms, Abbreviations	Meaning
AM	Associated Members
BB	Building Block
CCAM	Connected Collaborative Automated Mobility
CSA	Coordination Support Action
CI	Continuous Integration
CD	Continuous Deployment/Delivery
CVV	Continuous Verification & Validation
DevOps	Development (Dev) and IT Operations (Ops)
ECU	Electronic Control Unit
EdgeAI	AI running on edge devices
FEDERATE	Software-defined vehicle support and coordination project
GA	General Assembly
HPC	High-Performance Computing
HW	Hardware
NN	Neural Network
OEM	Original Equipment Manufacturer
OS	Operating System
OtA	Over the Air (Update/Upgrade)
PoC	Proof of Concept
RDI	Research Development Innovation
SOA	Service Oriented Architecture
SDV	Software-defined vehicle
SDV Ecosystem	Entirety of the corresponding technology layers (software and hardware) of a software-defined vehicle with its non-differentiating building blocks in a layered structure
SDV Ecosystem program	All RDI projects, which collaboratively work together to create hardware and software building blocks in a jointly agreed layer structure. The building blocks together with vendor specific components can (and will) be used to create OEM specific software stacks and HW platforms for software-

	defined vehicles
SDV RDI projects	Research, development and innovation projects in the context of the SDV Ecosystem program
SDV community	Entirety of people and institutions involved to create an SDV Ecosystem for software-defined vehicles
SW	Software
V2X	Vehicle to anything [communication]

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8 Conclusions

Activities in project FEDERATE have started and progress as planned. A set of building blocks have been identified and described, and the process and tool chain to handle the workflow towards implementation has been initiated. The glossary document has started and found consensus amongst partners. Multiple sessions of the scientific board have already taken place, exploring state of the art and novel approaches in the SDV area.

The Vision and Roadmap was authored by FEDERATE during the first months of the project. Together with the SDV Sherpa Governance group it was iteratively revised and finally published as "European Software-Defined Vehicle of the Future (SDVoF) Initiative – Vision and Roadmap" paper on the FEDERATE Website (https://federate-sdv.eu/wp-content/uploads/2024/04/2024-04-12-SDVoF-Vision-document-ver017-final.pdf) at the beginning of M7. It will be the base for deliverables D2.4 ("Vision Document"), due M12, and D4.4 ("Strategic Roadmap - First Versiont"), due M12.

One Milestone was defined which falls into the reporting period: Milestone 1 (Risk management plan), due M6, was successfully reached with the release of D1.2 (Quality and Risk management plan), submitted 28-MAR-2024.

4. References

n/a