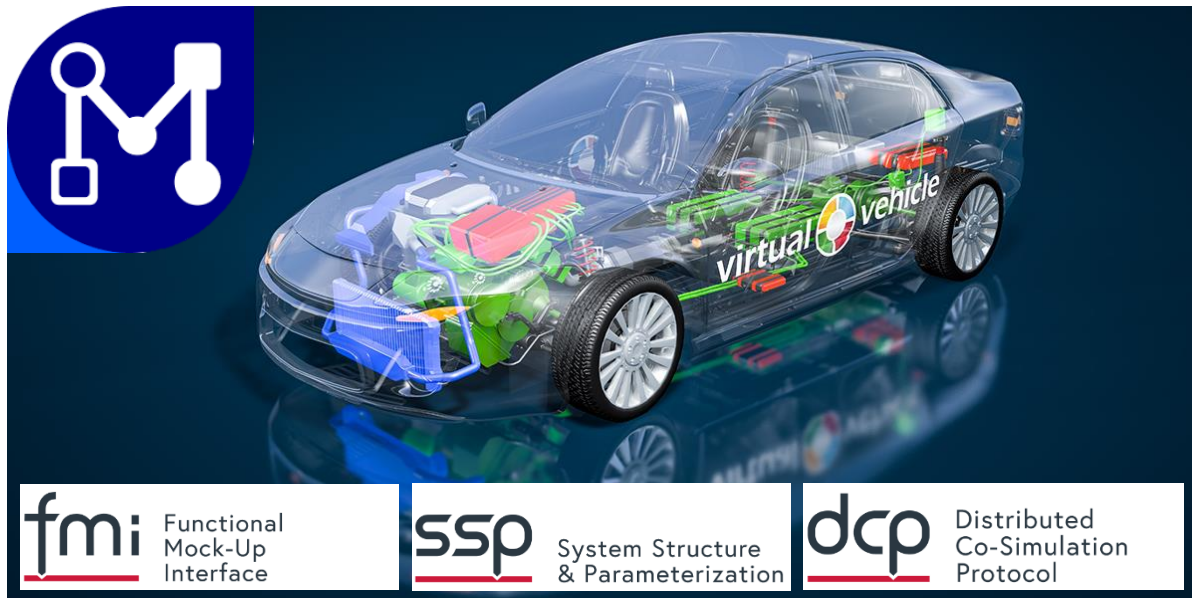# OPEN CALL – LIVING INNOVATION LAB
System Simulation and Standards

BACKGROUND & ADDRESSED CHALLENGE

System simulation represents a huge leap ahead for many sectors, e.g., automotive, aerospace, or manufacturing. System simulation is understood as the capability of simulation, to reproduce the behaviour of a technical system. This technical system is assembled by multiple subsystems, which represent different engineering domains. Therefore, these subsystems are typically represented using a domain-specific and appropriate modelling language. For evaluation, dedicated solvers are in place. This results in a plenitude of modelling and simulation tools on the market. The most reasonable way to render a digital twin of such a system can be achieved by integration of virtual subsystems. For this purpose, different tools and standards are available, which can be used not only for establishment of interoperability, but also to realize efficient and agile development processes, including activities for design and test alike.

We face the challenge of creating new system models, interacting with the real-world systems of our time, including new sensor technologies, innovative architectures, or sophisticated artificial intelligence.

OFFERED TECHNOLOGY

Standardization has proven to be an enabler for system simulation. However, industry-grade tools are needed to succeed in development of real systems. We are able to provide a system simulation environment, represented by the neutral co-simulation platform Model.CONNECT, which can be used to integrate more than 30+ domain-specific simulation tools. Its modular architecture supports FMI (Functional Mock-Up Interface), DCP (Distributed Co-Simulation Protocol), and SSP (System Structure and Parameterization) standards for open model and data exchange too.

We provide our comprehensive expertise to cover the topics of system simulation and test. Virtual Vehicle Research GmbH has more than 15 years of experience with co-simulation methodologies, including first-hand experience with industrial simulation tools, test benches for automotive development, and development of prototypes, including real test vehicles for automated driving. Virtual Vehicle acts as a trusted member in various standardization bodies, including ISO, Modelica Association, and ASAM. Our modelling and simulation experts have diverse backgrounds, in different engineering domains, and industry sectors.

We provide support for development of new system models, configuration of co-simulation platforms, application, and improvement of standards for modelling and simulation.

EXPERIMENT SCOPE

In order to build novel and innovative system simulation models, we expect holistic and fresh ideas, exploiting the available technologies described above. The scope of targeted experiments is broad and independent on industry sectors.

We aim not only on pure computer simulations, but also on simulations in connection with software-in-the-loop (SiL) and hardware-in-the-loop (HiL). We are reaching for a stronger integration of real-time and non-real-time systems. By doing so, a strong demand for networked simulator arises. Rapid prototyping could be thought in a completely new way, including mixed real and virtual components. In the same context, virtual validation is expected to speed up development processes, reduce time-to-market and finally costs.

The digitization of otherwise decoupled processes is the key to efficiency. Simulation and test are therefore seen in connection with distributed computing and cloud computing. Calculations and data processing can be accomplished close to the data's source, or shifted to other, more efficient places.

Modelling and simulation may also be considered across different levels of abstraction. The question how conceptual models may interact with real detailed implementations is an open topic, and can be explored best with first hand modelling and simulation experience.

We want to focus on system simulations for embedded systems and also cyber-physical systems.

We expect to offer:
- an introduction and overview of favoured standards and tools
- to support in establishment of your application-specific system simulation via Model.CONNECT
- the eventual application and utilization of related standards
- insight in new, modular, and more agile virtual development approaches for gaining development efficiency
- a concluding evaluation of the experiment (report and/or publication) including a one-page leaflet

The expected outcome of the experiments is further development of ideas and publication.

FUNDING OPPORTUNITIES

Start-ups and SMEs benefit from various opportunities of support from the VIRTUAL VEHICLE:

Membership

Financial support for project initiation

In case your application is selected, there is little effort and no risk for you. We help to initiate collaborations and research projects and embed you into VIRTUAL VEHICLE' s existing Partner-Network.

Conditions: Membership: 500 €/p.a.; In the event of project-proposal acceptance, we claim a success fee based on a bilateral agreement. This represents a low-risk activity for SMEs concerning proposal preparation efforts.

Accelerator Support

Financial support for accelerating product development to help SMEs to get to the market.

Depending on a successful project partnership and in case your innovative company is selected, your solution development could be accelerated. You will get access to international networks, know-how and infrastructure, as well as improved market access. VIRTUAL VEHICLE would embed your product / service into follow-up research activities and disseminate your solution via the VIRTUAL VEHICLE network. Finally, we offer proportional funding to accelerate your product development.

Conditions: After successful completion of the product development and market exploitation, we claim a later repayment based on a bilateral agreement. Generated intellectual property rights remain with you.

K2-Research Project

Aligned with the defined long-term Austrian COMET K2 research program **fast-track experiments (up to 6 months)**, executed at VIRTUAL VEHICLE, can also be public (co-)funded within the K2 funding scheme.

Seed Innovation Action for SMEs and Start-ups will be free of charge.

Your application will be reviewed by our Scientific Assessment Board. The board will evaluate the applicant's proposals and select proper candidates. The final number of applications being selected might be different for each call.

Only selected applications will get our support.

CALL INFORMATION

Call Opening	01.09.2020	**Project Duration**	1-12 months; Seed Innovation Action: ~2 weeks
Proposal language	English, German	**Targeting Group**	Start-ups, SME, or mid-caps from EU member states

If you have a promising smart idea, we are happy to receive your application!

Please use our online application form to send us your proposal and describe:

- In which technology field or discipline are you active

- Your planned application concept and its expected use

- The preliminary benefit

- The industrial relevance and potential impact of your experiment, as well as your plans for exploitation of the results and the future business outlook

Your experiments should be designed to be completed in a maximum of 12 months.

Experiment proposals are very welcome from organisations located in any EU member state and must be written in English or German. Submissions done in any other language will not be evaluated.

Contact: lil@v2c2.at

LIVING INNOVATION LAB – BRIDGING THE GAP

Bridging the Gap
LIVING INNOVATION LAB

VIRTUAL VEHICLE facilitates SMEs, Start-ups, and Enterprises to experiment and innovate with new technologies.

The LIVING INNOVATION LAB enables the transfer of knowledge – from academia to industry and the development of highly innovative product solutions. Together with academic and industrial partners, VIRTUAL VEHICLE is bridging the gap between your innovative solutions and early technology adopters.

Successful demonstrations of highly innovative technologies maximize the benefit in exploitation as well as the realistic chances for a market uptake. That's why the LIVING INNOVATION LAB initiates open calls for experiment proposals to expand and strengthen the transfer of technical capabilities and **making innovative solutions, platforms, and data available for experimentation.**

YOUR PARTNER: ACCELERATING INNOVATION WITH VIRTUAL VEHICLE

The Virtual Vehicle Research GmbH is Europe's largest R&D center for future vehicle technology with 300 employees. Our research priority is targeting on supporting virtual system development, which leads to manifold and powerful system design and automation of testing and validation procedures. The focus is on industry related research and thus makes VIRTUAL VEHICLE the innovation catalyst for upcoming digital mobility and transportation technologies.

WHO CAN APPLY?

You are…

- developing smart, innovative solutions in digital future technologies?

- bridging the physical and virtual world with advanced approaches and industrialized solutions?

- wishing to access the network, infrastructure, and know-how of VIRTUAL VEHICLE to improve your product or service?

- interested in using VIRTUAL VEHICLE's decades of experience in interdisciplinary and virtual system development?

- Interested to be embedded into upcoming and funded R&D-projects via a Single-point-of-contact-institution?

- Looking for a chance for financial support with manageable long-term costs

…then do not miss this outstanding opportunity and apply to one of the open calls to make your innovative idea come true!