HUBCAP

Digital Innovation HUBs and Collaborative Platform for Cyber-Physical Systems

Newsletter 3 June 2021

HUBCAP Newsletter

Call #3 INNOVATE is still open!

Our INNOVATE call launched 1st April 2021 and will stay open until **30 June, 17h CET (Brussels Time)**!

INNOVATE will support SMEs wanting to develop innovative Cyber-Physical Systems (CPSs) using Model-Based Design (MBD), by offering access to up to €200,000 towards projects proposed by consortia of 2-3 entities across Europe, using the HUBCAP Platform to support collaboration and to access novel tools.

HUBCAP offers a platform for SMEs to identify and work with technology providers and other stakeholders to raise their game in CPS design. We provide access to expertise, a network of potential collaborators, and to support funds through our open calls.

The main goal of HUBCAP Call #3 INNOVATE is to fund the development and implementation of highly innovative and challenging MBD CPS projects, which will become part of the HUBCAP flagship portfolio of success stories, enlarging the value and outreach of the HUBCAP ecosystem, models, and technologies.

There is still time for your consortium to apply!

In this issue:

* Introduction……1
* Call #3 INNOVATE……1
* Call #2.1 Winners……2
* Call #2.1 Projects……3
* Open Calls overview……4
* Upcoming Events……4

Call #2.1 EXPERIMENT Winners

The first instalment of the EXPERIMENT open call series is now officially entering its most exciting phase, which will see the start of the 4-6 month development period for all approved projects. The call winning consortia will get to work on their projects with the help and support of the HUBCAP Digital Innovation Hubs readily available at all times. If you want to find out more about the 12 accepted projects, you can do so on the following pages of the newsletter!

Contact
Prof. Peter Gorm Larsen
Aarhus University
pgl@eng.au.dk

HUBCAP
Digital Innovation HUBs and Collaborative Platform for Cyber-Physical Systems

Newsletter 3 June 2021

Call #2.1 EXPERIMENT Projects

CPS-Health-Twins (iTwinBuild)

Consortium: IMC | GOLEM

People of age and patients living alone in COVID-19 isolation need health self-management requiring contiguous monitoring, systematic collection of diverse data, analysis and relevant knowledge. iTwinBuild introduces practical, novel cost-effective monitoring and personal heath prediction solution. It is based on a new MBD CPS approach and AI-driven calculation of holistic status of CPS “Smart Person @ Smart Home”, analyses each and all health KPI, its logical combinations in real time, updates patient and authorised remote caregivers regarding health status and each specific Health&Wellbeing indicator. The experiment simulates the actual system operation using realistic fabricated sensor data streams which can be replaced by proper IoT devices installed at home or residential senior houses, evaluates and demonstrates its performance and applicability.

ACDSAT

Consortium: Evitado | Mototok

The goal of this experiment between Evitado Technologies GmbH and Mototok International GmbH is to apply technologies from the self-driving car industry and recent advancements in LiDAR perception to the tug machine handling of aircraft. The Evitado System Simulator HUBCAP asset will be used to simulate the aircraft tug handling scenario and to develop algorithms to track the aircraft steering angle and predict potential aircraft collisions. After the solutions have been developed and proven in the Evitado System Simulator, the algorithms will be migrated to the on-board computational system of an electric Mototok towbarless towing vehicle outfitted with a 3D LiDAR sensor.

SAFE2GO

Consortium: Developair | KMB Lab

KMB Lab has started developing a new product (BOOST) and the complexity of the design forces the company to find new tools to improve the development process. Developair offers MDB tools for verification of requirements and automatic test generation, enabling the optimization of the software development life cycle. Those tools have not been validated in the micro-mobility sector, so for Developair the possibility to expand its business is a unique opportunity. The goal of the proposed SAFE2GO experiment is to incorporate novel MBD tools into the hardware and software development practices of the e-scooter sharing platform BOOST in order to ensure safety requirements to be strictly met at any time and in any possible conditions of e-scooter use.

EVAPOSIM

Consortium: Simevo | NBT Bulgaria

The objective of the EVAPOSIM experiment is to enable the cloud-based simulation of evaporation plants via a simple-to-use, customized web application, making the process model more accessible so that non-experts can prioritize and optimize decisions in the proposal and design phases of new plants. The resulting model could be applied, in a subsequent INNOVATE call, for operator training, and on-line for self-comparison and self-awareness of the CPS.

3DAI

Consortium: conductiv.ai | ATLANT HOLDINGS

The experiment aims to predict and optimize continuously and autonomously for properties like defectiveness, uniformity time and cost. One method to address these problems is the introduction and use of AI and ML in the production pipeline. 3DAI uses Conductiv.ai Process Control which incorporates Hybrid AI, with federated learning to control the printing cycle of ATLANT's atomic 3D printing system and to actively adjust the printing process based on analysis of produced parts.

Scuba Dive

Consortium: D-RisQ | ScubaTx

Scuba's technique keeps transplant organs viable for longer. By preserving viability and function, it can extend donor criteria enabling more transplants. The control software needed has to be of the highest integrity (EU Medical Device Directive Class 3 device). The use of the D-RisQ MBD tools, that exploit automated formal methods, supports the high integrity requirements, are user-friendly through automation, and support the needed cost and time savings.

Simulair-covid19

Consortium: Alteria Automation | Alberto José Acín Martínez

The goal is to create a design model of the virus inactivation in dynamic conditions, extrapolating static results to a real airflow dynamic environment (taking into account air loss, turbulence, reflectivity, air speed etc) of the HVAC ducts, thus optimizing the equipment location & spacing to provide maximum disinfection efficiency & minimizing power consumption.

Opticity

Consortium: Noleko | Vodena

Vodéna will integrate into HUBCAP platform a new asset tool, Opticity, a comprehensive energy management tool that will completely automate finding an optimal pattern in energy consumption and production in case of facilities with Renewable Energy Sources (RES) and energy storage capabilities. Employing this tool Noleko will develop the digital twins of solar installations, and streamline and optimize electric energy production-consumption process.

ARC (Team Digital Sprayer)

Consortium: Schmidt Innovation | Danfoil

Sprayer booms are susceptible to oscillations when distributing fertilizer and pesticides in fields. The high concentration zones have an environmental impact as chemicals are washed out to the ground water, and in low concentration zones the crop yield is reduced and weed is left untreated. The varying operating conditions of sprayers makes passive dampers suboptimal and the design of active damping systems requires extensive testing. A digital twin of the boom provides the ability to test all the system in all the known situations and environments without the need of prolonged tests in various conditions around the world. This experiment will use tools like 20sim and Simulink to model the system and carry out the tests. A few selected test cases will be used to validate the model on a Danfoil sprayer.

MedaPlus

Consortium: AvailabilityPlus | Slezák IoT

Systems

Slezák IoT (SIoTS) is a specialist in implementing customized IoT solutions across verticals including medical devices. Slezák IoT Systems will be responsible for providing the Recording, Digitizing, Filtering, Amplification, Transmission, Receiving and Displaying of auscultation data on an IoT device. APlus will be responsible for providing the AI driven data analytics, APIs to push data from the IoT device to the MedaPlus software, GDPR compliance, results down streaming, and the APIs to pull data from the MedaPlus software.

WHY- PRED

Consortium: DatenBerg | Markus Klatz

Farming SME's try to approximate the crop yield based on past experiences and invest into fertilizers accordingly. In a world of decreasing food prices, knowledge about how much can be harvested is the key for a profitable operation. In academia there are many process- or data-driven models for predicting crop yield, but the adoption of it in farming SMEs is non-existent. This is due to the high complexity, which a small farming SME can't handle. WHY-PRED will develop a model-based approach for wheat yield prediction on a small farming land. By validating the models and integrating the needs of the SME, the project will pave the way towards a product to be adopted by farming SME's.

HUBCAP

Digital Innovation HUBs and Collaborative Platform for Cyber-Physical Systems

Newsletter 3 **June 2021**

PRO-CPS

Consortium: Asti Automation | Energeia Technologies

The experiment aims to jointly develop the PROSIM platform, a currently available HUBCAP technology asset, as state-of-the-art modelling and simulation environment for industrial automation application development and training. The project will integrate, adapt and further develop the PROSIM technology for model-based simulation of industrial PLC applications in the process industries in accordance to the end-user requirements and target market adoption for a broad range of EU and non-EU customers. The focus will be on the control of industrial steam installations in healthcare and food/drinks manufacturing as main application areas and provable expertise of the end-user (Energeia Technologies).

Call #1 PULL

Attracts and engages individual SMEs to join and to integrate existing CPS and MBD tools in the HUBCAP platform. To enlarge the HUBCAP ecosystem

Call #2 EXPERIMENT

Stimulates SMEs towards the adoption or improvement of CPS products & services by applying assets from the HUBCAP platform in a two-SME consortium.

Call #3 INNOVATE

Funds the deployment of new products and demonstrations of highly-innovative collaborations using the HUBCAP platform.

Upcoming Events

Call #1.4 PULL 01.09.2021

The fourth call of our PULL series opens in September 2021! Welcoming more assets onto the HUBCAP platform.

Call #2.2 EXPERIMENT 01.11.2021

The second instalment of the EXPERIMENT open call will open in November of 2021!

Webinars & Matchmaking

Keep up to date with webinars and matchmaking events by following us on social media!

Upcoming Open Calls

Call #1.4 PULL

September 2021 – October 2021

Call #1.5 PULL

February 2022 – March 2022

Call #2.2 EXPERIMENT

November 2021 – January 2022