In the framework of implementing the European Action entitled: 'X-by-Construction Design framework for Engineering Autonomous & Distributed Real-time Embedded Software Systems', **AVN as participating beneficiary publishes the current invitation in an attempt to collaborate with three researchers** (Electrical engineering or Informatics engineering or relevant) for the implementation of the following tasks and deliverables (the final assignment will be made by Project Manager, after the selection and taking into account the qualifications and research background of researchers interested in participating).

The tasks mentioned concerns the first year of the Action since contracts will be made until the end of 2021. AVN retains the rights to renew the contracts for the whole period of the Action until the end of 2024 either with the researchers contracted for the first year (2021) or after publishing new invitation.

Description of Action to be implemented:
The next generation of networked embedded systems (ES) necessitates rapid prototyping and high performance while maintaining key qualities like trustworthiness and safety. However, deployment of safety-critical ES suffers from complex software (SW) toolchains and engineering processes. Moreover, the current trend in autonomous systems relying on Machine Learning (ML) and AI applications in combination with fail-operational requirements renders the Verification and Validation (V&V) of these new systems a challenging endeavor. Prime examples are autonomous driving cars that are prone to various safety/security vulnerabilities. The XANDAR project is built to exactly match the goals defined within the ICT-50 Software Technologies.

XANDAR will deliver a mature SW toolchain (from requirements capture down to the actual code integration on target including V&V) fulfilling the needs of the industry for rapid prototyping of interoperable and autonomous ES. Starting from a model-based system architecture, XANDAR will leverage novel automatic model synthesis and software parallelization techniques to achieve specific non-functional requirements setting the foundation for a novel real-time, safety-, and security-by-Construction (X-by-Construction) paradigm. For the first time, XbC-guided code generation for non-deterministic ML/AI applications will be combined with novel runtime monitors to ensure fail- operation in the presence of runtime faults and security exploitations. The project provides a consortium covering the full spectrum of ES and software engineering. XANDAR will be validated by an automotive OEM (BMW) and the German Aerospace Center (DLR). Leading European SMEs and enterprises such as Vector, AVN, and fentISS as well as successful academic partners will contribute their diverse knowhow in Model-Driven Engineering, Software Systems and V&V, multicore architectures, code generation, and security enforcements from higher-level behavioral models to actual runnables.

Tasks to be involved (until 2021):
5.2: V&V of functional requirements

5.4: Conducting V&V and meta-V&V in different levels

6.1: Project Coordination, Conflict Resolution, and Risk Management

1.5: CI/CD Framework for Toolchain Development

Details of Contracts awarded:

1. Duration: until end of 2021, with possibility of renewal until the end of the Action
2. Description: Participation in the implantation of the Action deliverables shown above.
3. Reimbursement: on hourly basis according to the qualifications of the researchers and taking into account AVN reimbursement policy on researcher's hourly rate.
4. Timesheets must be kept for the time allocated on the Action and should be validated and signed on monthly basis by Project Manager

Skills and Qualifications:

Electronic Systems, Electronics Troubleshooting, Electronic Testing Design, Project Management, Quality Focus, Database Design, Analyzing Information , Reporting Research Results, Attention to Detail, Emphasizing Excellence, Innovation

Requirements Analysis, Planning, Database Management, Self-Motivated, Presenting Technical Information, Problem Solving, Data Modeling, Strategic Planning, Multi-tasking, Ad Hoc Reporting, Data Maintenance

CVs can be sent via email at the following email address: at hr@avntechgroup.com until 15/8/2021 or via regular mail at the following address:

AVN Innovative Technology Solutions
133B Fraglin Rousvelt Ave
3011, Limassol
Cyprus

Researchers will be notified via email. Interviews may be needed via skype.