



## Expression of interest

### Contact details

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### Short description of the organisation

BigTRI is a spinoff company established by the researchers of VeNIT Lab, working on R&D projects with expertise on IoT, vehicular networks, computer vision and AI/ML. From research and prototyping to product development and branding, we build custom solutions for real world problems including but not limited to transportation systems, smart manufacturing, data infrastructures and retail.

BigTRI creates a value chain between academy and industry through close collaboration. The company has services and innovative solutions for C-ITS applications and testing, network monitoring, AI/ML-based data infrastructures, edge&cloud computing, image processing, and smart manufacturing.

BigTRI collaborates with the industry and the academy through the projects and voluntary organizations. The company currently participates in 4 EU projects and actively contributes in the proposal and design phases of new projects.

### Specific skills related to the project

#### **HORIZON-CL5-2024-D6-01-06: Optimising multimodal network and traffic management, harnessing data from infrastructures, mobility of passengers and freight transport**

##### (1) Large-scale demonstration platform for C-ITS/ITS

BigTRI is an experienced and competent company for demonstrating ITS/C-ITS services by mirroring their effects in the traffic by working with open-source simulation tools or its large-scale digital twin demonstration/testing platform for connected and cooperative mobility(CCAM).

##### (2) Connectivity solutions for mobility/automotive

BigTRI provides software solutions for connectedness in automotive from V2X to in-vehicle network development. Having a complete set of Day-1 scenarios (please refer to C2C-CC classification), BigTRI currently develops applications for sensor-sharing and vulnerable road user safety

##### (3) Network Monitoring and Reliability Metrics Collection Services



BigTRI has products related to network monitoring including the services for collection, storage and analysis of the data. The tools are applicable in various domains such as retail, production, maritime or (ITS).

(4) Real demonstration site

BigTRI provides demonstration site for ITS/C-ITS with relevant sensors such as camera, lidar and loop detector.

(5) Big data Infrastructures for ITS and Connected Cars Service Platform

**Proposed activities for the project**

Indicate which activities you would like to implement during the project

BigTRI is an experienced company in ITS/C-ITS and can work on:

- Data collection services and methods
- Scalable service development and/or deployment
- API development for existing services
- Edge computing solutions
- Large-scale demonstration via simulation/emulation
- Digital twin development
- Image processing on edge
- Increasing TRL for provided solutions

**References**

Previous research project

Project acronym / starting date	Main objectives	Main activities	Role in the project
Brighter	Thermal micro-bolometer imaging solutions for: * High frame rate with fidelity * Multispectral info required * Lower power consumption for embedded video processing	* HW and sensor development for required thermal imaging solutions * Algorithm development for thermal imaging in multiple domains * Use case implementation for utilizing and demonstrating outputs' satisfiability and impact	* Thermal and daylight camera image processing for VRU safety Thermal image processing for traffic parameter measurement (e.g. emission) * V2X Communication for VRU safety * Image processing algorithms



Decice	Development of an open and portable cloud management framework for automatic and adaptive optimization of resources in a heterogeneous system landscape	<ul style="list-style-type: none"> <li>* AI based optimization algorithms development and implementation in the framework</li> <li>* Virtual training environment development</li> <li>* Use case implementation with selected scenarios from various domains for testing and verification of developed framework</li> </ul>	<ul style="list-style-type: none"> <li>* Edge computing solutions for VRU safety and V2X communication</li> <li>* API development for AI-based cloud-continuum services</li> </ul>
InSecTT (As VeNIT Lab – Marmara University)	<ul style="list-style-type: none"> <li>* Providing intelligent processing of data applications and communication characteristics locally at the edge to enable real-time and safety-critical industrial applications</li> <li>* Developing industrial-grade secure, safe and reliable solutions that can cope with cyber-attacks and harsh network conditions</li> <li>* Providing measures to increase trust for user acceptance</li> <li>* Making AI/ML explainable and give the user control over AI functionality</li> </ul>	<ul style="list-style-type: none"> <li>* Trustworthy AI-based solutions for IoT</li> <li>* Development of testing and validation frameworks for wireless connectivity solutions and cybersecurity in IoT</li> <li>* AI-based security solutions development on edge and IoT</li> <li>* Providing cross-domain industrial use cases surrounding wide-range of applications areas including but not limited to V2X communication, automotive cybersecurity and smart manufacturing</li> </ul>	<ul style="list-style-type: none"> <li>* Simulation/emulation based Large-scale demonstration for C-ITS</li> <li>* Cybersecurity testing for V2X</li> <li>* Open/Closed-loop testing for several V2X scenarios such as multi-platoon management</li> </ul>
Beyond5 (As VeNIT Lab – Marmara University)	Advanced SOI technology development to target several domains including 5G, IoT and connectivity for autonomous mobility	<ul style="list-style-type: none"> <li>* SOI technology development</li> <li>* Development of HW for various domains using the developed SOI technology</li> <li>* Use case implementation targeting various domains to verify and demonstrate the results on a large-scale</li> </ul>	<ul style="list-style-type: none"> <li>* Large-scale simulation-based demonstration for construction site autonomous connectivity scenarios</li> </ul>

