



Development of sensors systems for detecting impacts on road safety barriers

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Pillar SMART MOBILITY – Spoke 7 / WP2

**SAMOTHRACE 2nd Year:
Experimental Prototypes Demo Showcase**

SAMOTHRACE PROJECT ECS00000022

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Addressing the Wildfire Challenge: Needs, Limitations and Market Opportunity



Problem Definition and Market Need

The developed innovation aims to improve road safety through timely and accurate monitoring of impacts on guardrails, overcoming the limitations of current solutions based on manual reports or periodic inspections, which cause delays in interventions.

Target Audience and Unmet Need

The system is primarily intended for road infrastructure management entities, transport sector operators, and public administrations responsible for road maintenance.

Limitations of Existing Solutions

Current solutions have limitations such as non-real-time monitoring and high installation and maintenance costs due to the need for expensive infrastructure and complex wiring.

Market Opportunities

The market for road safety systems is growing, driven by the need to reduce accidents and improve infrastructure management. The smart road sector is expected to expand further, supported by investments and the availability of low-cost components, making these solutions highly scalable for large-scale implementation.



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The developed system offers an innovative solution for real-time impact monitoring on guardrails, overcoming limitations of traditional technologies. It uses high-sensitivity, low-power MEMS sensors installed in the guardrail bolts, enabling discreet and effective detection. When an impact occurs, the system immediately processes and transmits the data to a wide-coverage network for prompt alerts. With energy autonomy through an integrated solar panel, the system eliminates the need for external power, reducing installation and maintenance costs, making it ideal for quick deployment.



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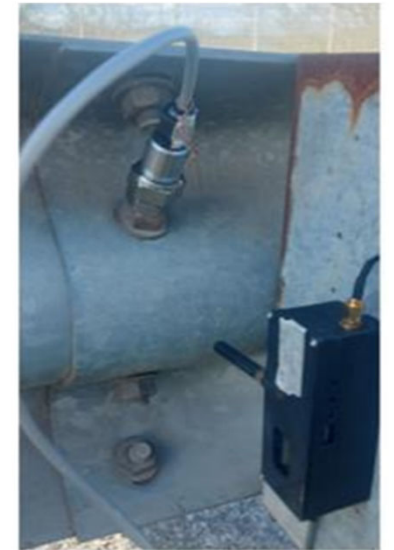
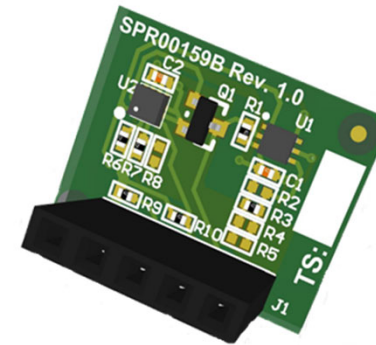
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In the initial phase (TRL 3), the technology was tested in the laboratory with MEMS sensors to detect impacts.

Thanks to SAMOTHRACE funding, significant milestones were achieved:

- **Innovative monitoring system**
- **Energy autonomy**
- **Validated and field-tested**

These advancements have brought the technology to **TRL 5**, with real-world tests confirming its effectiveness compared to traditional solutions, thanks to collaboration with **ANAS SpA**.



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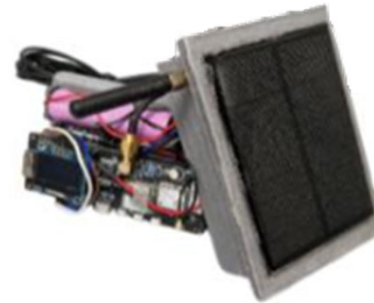
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The final goal is to reach **TRL 7** by the end of the project.

To achieve this milestone, the following progress will be necessary:

- **System optimization**
- **Large-scale testing**
- **Integration with Smart Road Systems**

With these advancements, the project will be ready to demonstrate its full operational capacity, thus reaching TRL 7.



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Acknowledgment



**VISIT OUR DEMO AT
BOOTH N. 72**

Demo location:

- Belpasso (CT), Bivio Aspro
Zona, Industriale Piano
Tavola



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