
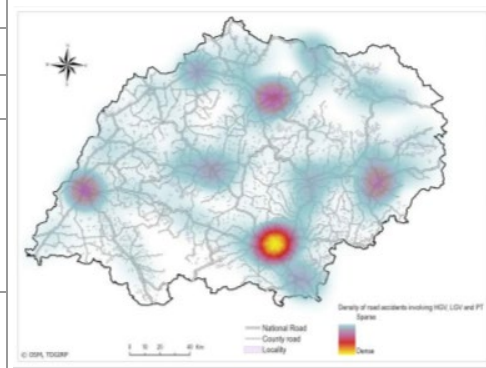
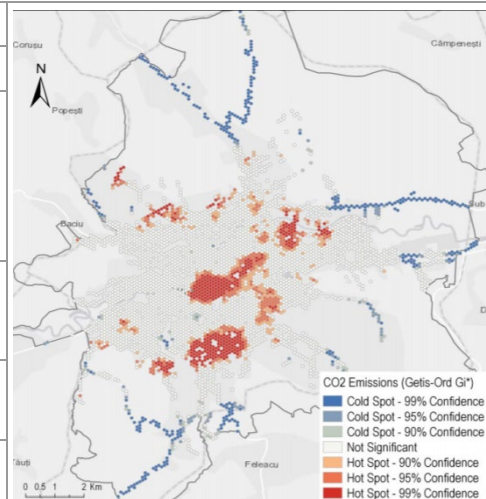


TRANSPORT SYSTEMS RESEARCH GROUP

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Areas of expertise

Traffic Engineering and Transportation Planning: Traffic operations and control; Intelligent Transport Systems (ITS) – monitoring activity with GPS and WIM (weight-in-motion systems). Transport impact on urban mobility – survey deployment and analysis, transport macroscopic modelling. Economic, health and environmental impacts of transport systems; Intermodal regional transport; Integrated transport and land-use planning – modal distribution analysis, modal shift policies. Congestion mitigation; Heterogeneous traffic-flow modelling and simulation; Activity-based travel demand modelling. Dynamic and stochastic modelling of transportation networks.

Road safety: Traffic safety under mixed traffic flow; Analyse and show accident phenomena of a road transport system, identifying critical points; Understand principal accident causes through statistical analysis techniques and “in-depth” analysis. Identify most effective countermeasures for different cases, through correct use of tools for cost-benefit and cost-effectiveness analysis; Monitor the effects of interventions through correct application of results evaluation techniques.

Pavement Engineering Pavement recycling; Road reliability; Circular economy - sustainable processing, reuse, recycling and recovery schemes; Micro-mechanical characterization of asphalt concrete; Raw materials innovation; Investigation on modified binders; Laboratory testing and field studies for road structures and materials; Fatigue and healing of asphalt mixtures; Performance based design of bituminous mixes; Concrete pavements; Road-infrastructure asset management.

Bridge Engineering: Technical Expertise in Bridge Engineering; Composite structures; Network Arch Bridges – design and optimisation techniques; Concrete bridges – design and rehabilitation; Footbridge dynamics; Bridge defect annotation and AI training in bridge condition assessment.

Railway Engineering: New types of rail sleepers, advanced geometry for high speed trains, rail stress analysis; Tram and tramway infrastructure design; Increasing service life for rain and light trams infrastructure; Mechanical analysis of soil using finite element methods.

Team

Prof. PhD. Eng. Mihai Iliescu - PhD supervisor, Assoc. Prof. PhD. Eng. Madalia Adriana Ciotlaus, Assoc. Prof. PhD. Eng. Stefan Gutiu, Assoc. Prof. PhD. Eng. Alexandra Denisa Danciu, Assoc. Prof. PhD. Eng. Mihai Liviu Dragomir, Assoc. Prof. PhD. Eng. Gavril Hoda, Lecturer PhD. Eng. Cadar Rodica, Lecturer PhD. Eng. Beca Ilinca Mirela; Lecturer PhD. Eng. Boitor Melania, Lecturer PhD. Eng. Ciocan Remus, Lecturer PhD. Eng. Andrei Florin Clitan, Lecturer PhD. Eng. Marusceac Vladimir, Lecturer PhD. Eng. Crina Fenesan, Lecturer PhD. Eng. Mircea Suci, Lecturer PhD. Eng. Zsolt Laszlo Orban, Assist. Prof. PhD. Eng. Ionut Chindris, Technician/analyst: Timiș Anca

Representative projects

“Study on establishing the number of public transport taxi licenses in the city of Cluj-Napoca for the period 2020-2025”, contract with Cluj-Napoca Municipality 2019

“Research in improving the bearing capacity of T19 prestressed concrete railway sleepers using zeolite”, CDI35600/27.10.2023, research project for Zeolites Production SA

“Research into the design of Network Arch Bridges”, CDI39029/24.11.2022, research project for SC Diferit SRL

“Research and studies on the relationship between: urban infrastructure traffic induced by a project to extend a industrial platforms at the level of the municipality of Cluj-Napoca”, CDI 2021, research project for Emerson SRL

“Traffic impact study for the urbanization area following the construction of County Emergency Clinical Hospital Sibiu” - Contract no. 40/ 2018, 2018-2019

“Design services of the new general urban plan and the local urban planning regulation of Apahida commune-traffic study”, contract with industry, 2018

“Experimental and numerical study on the performance of asphaltic concrete from the perspective of the thermal susceptibility and the value of the modulus of elasticity” - CICDI2017, ID 18, internal project financed by TUCN, 2017-2018

“Study on light stains at runway surface with asphalt road” – CICDI2017, ID5, internal project financed by TUCN, 2017-2018

“Study of road asphaltic mixtures improved with bitumen additives”, Contract 8/18.10.2013, for C.N.A.D.N.R. S.A

THE ISSUE – “Traffic Health Environment Intelligent Solutions for Sustaining Urban Economies”, Associated partner within the North West Development Region of Romania. Starting October 2012.

Significant results

The most representative publications of the past 5 years:

1. An Analysis of Reclaimed Asphalt Pavement from a Single Source—Case Study: A Secondary Road in Romania RD Cadar, RM Boitor, ML Dragomir, Sustainability 14 (12), 7057 Boitor, R. M., Cadar, R. D., Măran, P. D., Mannini, L., & Petrelli, M. (2022).
2. Investigating accidents on the main road network in the north-west region of Romania. RD Cadar, RM Boitor, M Dumitrescu, PD Maran, Baltic Journal of Road and Bridge Engineering 16 (1), 1-23, DOI10.7250/bjrbe.2021-16.512, IF 0.9.
3. An Innovative Tool for the Evaluation of Nox Emission from Road Traffic, RM Boitor, RD Cadar, PD Maran, M Petrelli, Environmental Engineering-Vilnius Spausdinta, DOI10.3846/enviro.2020.630, 2020.
4. Danciu AD, Guțiu ȘI, Moga C, Dragomir ML, Ciotlăuș M, Marusceac V. (2023) A Review of the Network Arch Bridge. Applied Sciences,13(19):10966. <https://doi.org/10.3390/app131910966>. IF=2.7 (2022).
5. Ciotlaus M, Kollo G, Fenesan C, Danciu AD, Dragomir ML, Marusceac V. (2024) Rail Wear Evolution on Small-Radius Curves under Mixed Traffic Conditions, In-Field Investigations. Applied Sciences, 14(1), 209; <https://doi.org/10.3390/app14010209>. IF=2.7, (2022).
6. Marusceac,V., Danciu,A., Ciotlaus,M. & Dragomir,M.(2023). Influence of Speed Brakers on Traffic Generated Noise Levels. Journal of Applied Engineering Sciences,13(2) 253-258. <https://doi.org/10.2478/jaes-2023-0032>. IF=1.1, (2022).

The offer addressed to the economic environment

Research & development	<p><i>Research on traffic</i> safety and solution development; Development of traffic models (road network and junctions); Development of original solutions regarding survey structure for transport mobility studies in urban and rural areas; Development of statistical analyses for collected traffic data; traffic monitoring, traffic control,</p> <p><i>Research on ecological road materials</i> using recycled material or different waste materials (bricks, old pavements, old concrete from demolition etc.); Development of new road materials or different pavement solutions; Research on laboratory analyses on road materials and development of improved road materials.</p>
Consulting	<p>Technical assistance in projects; Consulting, design, research and assistance for infrastructural projects (roads, parking lots, bridges and railroads); Award of contracts in urban roads field. Valuation: investments, acquisitions, economic costs, financial reporting, sales. Public transport planning.</p>
Applied engineering services	<p><i>Mobility studies</i>; Road network capacity assessment; Air quality assessment; Spot speed studies for enforcement measures in the urban environment; Traffic studies regarding speed profiles and fleet composition; Road accident analysis: spatial analysis, risk exposure, probability of accident, accident consequences; risk factors; techniques for road accident analysis; Empirical Method to estimate the correct number of accidents, innovative databases</p> <p><i>Laboratory tests and reports on road materials</i>; Field measurements: load capacity, deflections, flatness, core extractions; Analyze asphalt/cement concrete recipes – for different utilities: (road, playgrounds, bridge decks, parks alleys etc). Studies on stabilized materials (with different types of binder); Studies on mineral skeleton (the main part of all construction materials)</p>
Training	<p>Actual standards and legal framework in road construction; Rehabilitation projects and road rehabilitation methods; Traffic safety - Audit and Inspection Training.</p>

Last updated: January 2025