



A NEW **RESEARCH INITIATIVE** IN GRAZ IS ON TRACK

March 2021





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VISION - MISSION - VALUES

Vision

• The Research Cluster Railway Systems is a leading and internationally recognized research institution for the entire system railway.

Mission

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- We create a sound understanding of all interactions within the rail system as well as their mapping and replication.
- We increase the competitiveness of the rail system through sustainable overall system optimization.
- We reduce the "time to market".

Values







Fairness









GOALS

Organizational

- Interdisciplinary research cluster in the field of rail vehicle technology, rail infrastructure and rail operations with a focus on overall synergy potentials
- Bundling of technical expertise on railway available in the area of Graz University of Technology in the faculties mechanical engineering, civil engineering in combination with the departments computer science / information technology / measurement technology and the Virtual Vehicle Research GmbH
- Realization of future-oriented research in the areas of vehicle technology, rail infrastructure and operations management using the technological possibilities of digital transformation
- Interdisciplinary training platform for the next generation of engineers for the rail technology of tomorrow
- Accredited testing, inspection and simulation facilities for the validation compliant with rail specific standards and specifications

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GOALS

Technical

Long-term goal – Digital twin for the rail system		
Digitization in the railway system		 Further development of sensors & actuators Data management & -security Monitoring as the basis for predictive maintenance & proactive system design
 Technology & method development Development of innovative material, process and component concepts Service life assessments of complex mechanical structures Description of component / system degradation and failure behavior 	 Modeling & simulation Development of new simulation tools Creation of continuous simulation chains Damage and wear calculation (e.g. crack progress calculation) 	 Validation & Coperation & Static & dynamic material, process and component testing Dynamic subsystem validation Measurement and test rig technology Standardized, synthetic railway line profiles / strain collectives
Overall understanding of the rail system e.g.		 Dynamic behavior and interaction of vehicle and track Load distribution (flow of forces), degradation & material models Wheel rail interaction RAMS Engineering
Development of new products, manufacturing processes and services		 LCC-optimized Highest asset availability (infra, rolling stock Future-oriented sustainable / environment-friendly





PHILOSOPHY OF COLLABORATION





STRUCTURE & GOVERNANCE



1. International Scientific Advisory Board (annually)

5 international experts

(TU München, Politecnico Milano, KTH Stockholm, Deutsche Bahn, ÖBB) > Advisory body

2. RCRS Steering Board (bi-annually)

1 company representative of ÖBB, Siemens, voestalpine & virtual vehicle each,

- 1 representative of the university rectorate, 1 dean
- > Coordination and resolution of the annual research program

3. RCRS Project Board (approx. monthly)

All involved professors (+ career positions) of the involved institutes, project managers, participating researchers and company representatives as required

> Coordination of ongoing activities, partly in parallel sub-teams



CONTACT

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Contact Person Virtual Vehicle Research GmbH Dr. Jost BERNASCH (CEO)

Contact Person ÖBB-Infrastruktur AG DI Dr. Michael WALTER (Route management and facility development)

Contact Person SIEMENS Mobility GmbH

DI Dr. Stefan ERLACH (Vice President Bogies)

Contact Person voestalpine Railway Systems

voestalpine

ONE STEP AHEAD.

DI Dr. Jochen HOLZFEIND, EMBA (Chief Technology Officer)

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SIEMENS

