ACTIVITIES AT **IMID 2022+**

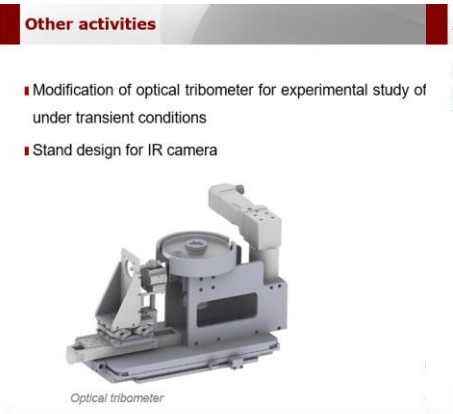
Radovan GALAS

DEPARTMENT OF TRIBOLOGY | **WHEEL-RAIL TRIBOLOGY**

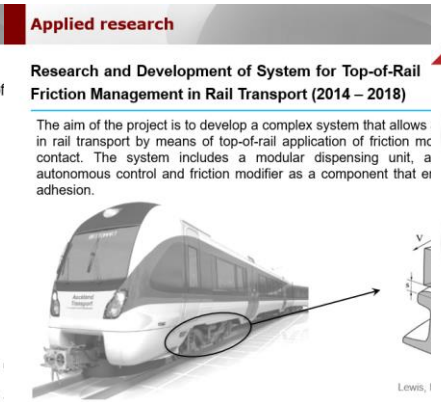
BRNO, 12th March 2025

INSTITUTE OF **MACHINE**
AND **INDUSTRIAL DESIGN**

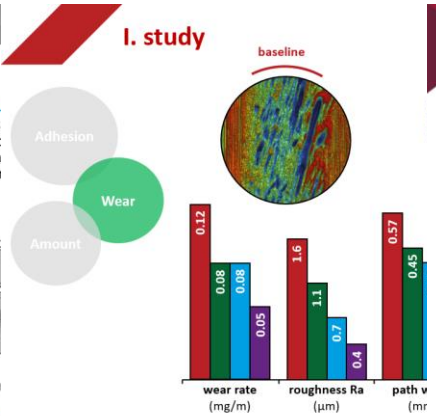
CONTENT



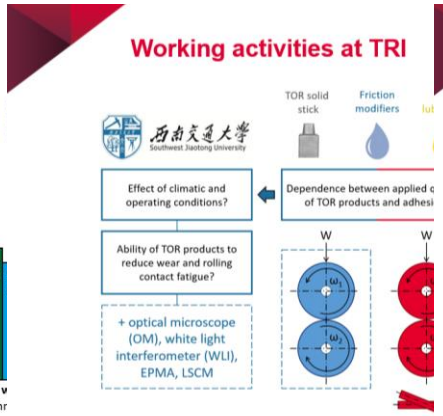
2013



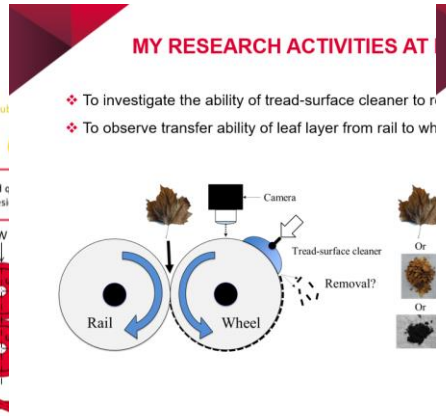
2014



2016



2018



2019

2022

INSTITUTE OF MACHINE AND INDUSTRIAL DESIGN

APPLIED RESEARCH PROJECTS

MINISTERSTVO PRŮMYSLU A OBCHODU

COMBINED ON-BOARD UNIT FOR AIRLESS LUBRICATION OF THE RAIL HEAD EG20321/0025198

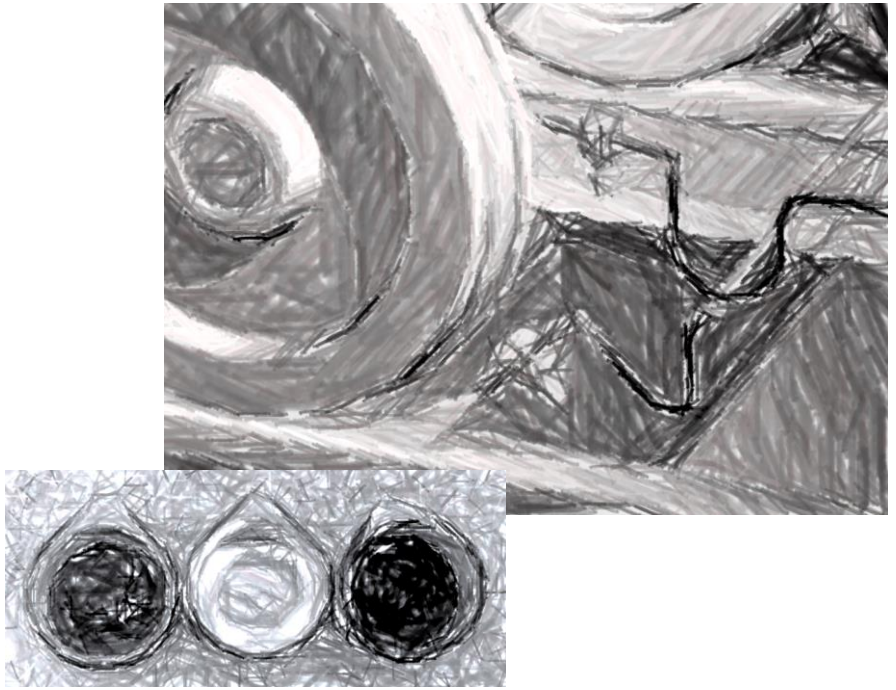
Program: OP PIK

Duration: 03/2021 – 05/2023 (27M)

Project goal: Development of a combined on-board unit for airless lubrication of the side and top of the rail

Results: G_{prot}

TriboTec



APPLIED RESEARCH PROJECTS

MINISTERSTVO PRŮMYSLU A OBCHODU

COMBINED ON-BOARD UNIT FOR AIRLESS LUBRICATION OF THE RAIL HEAD EG20321/0025198

APPLIED RESEARCH PROJECTS

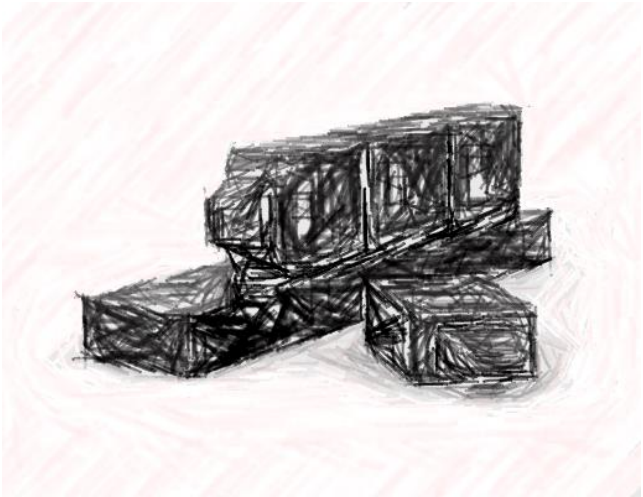
RESEARCH AND DEVELOPMENT OF A SYSTEM FOR FRICTION MANAGEMENT BETWEEN WHEEL AND RAIL USING SOLID MODIFIERS FW06010012

Program: TREND

Duration: 01/2023 – 12/2025 (36M)

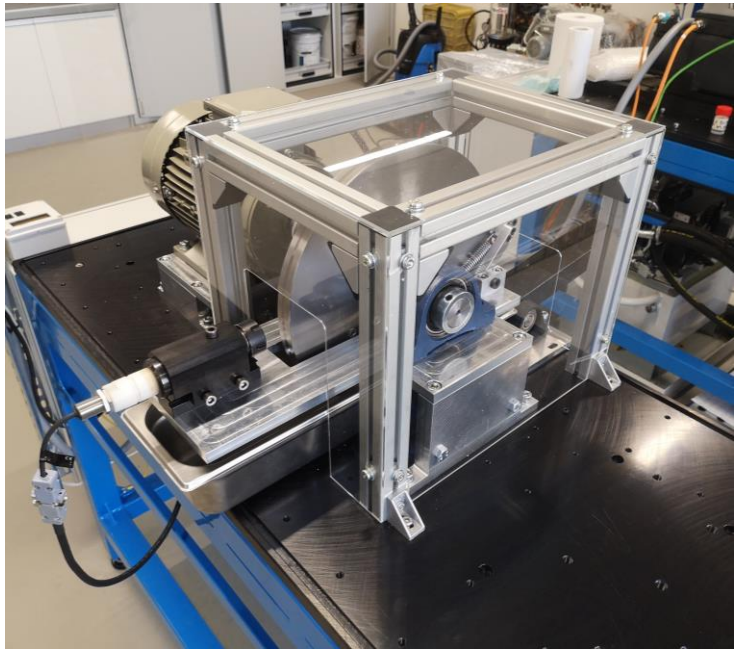
Project goal: Development of an advanced system for the application of solid sticks

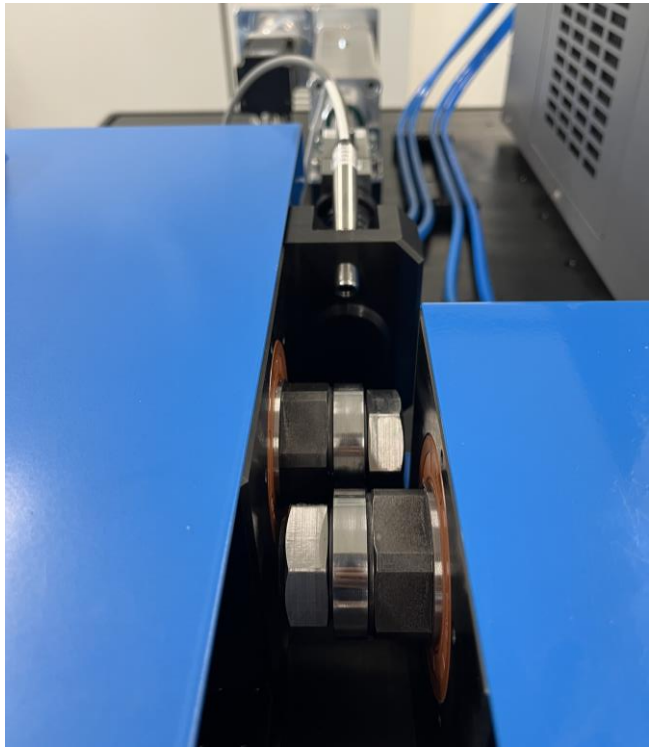
Results: 2x G_{funk} + F_{uzit}



APPLIED RESEARCH PROJECTS

RESEARCH AND DEVELOPMENT OF A SYSTEM FOR FRICTION MANAGEMENT BETWEEN WHEEL AND RAIL USING SOLID MODIFIERS FW06010012





APPLIED RESEARCH PROJECTS

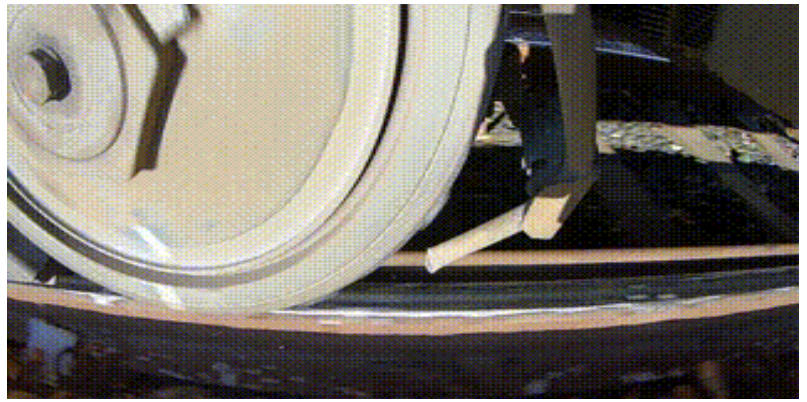
FAST CHANGE OF MOBILITY GHG EMISSIONS TN02000054/003N

Program: National Competence Center Program

Duration: 01/2023 – 06/2026 (38 M)

Project goal: Optimize transport with respect to Euro 7

Results: G_{funk}



APPLIED RESEARCH PROJECTS

WATER AS AN ENVIRONMENTALLY FRIENDLY MEANS OF ADJUSTING FRICTION BETWEEN WHEEL AND RAIL FW12010304

Program: TREND

Duration: 03/2025 – 12/2027 (34M)

Project goal: Optimize wheel-rail friction using water

Results: 3x G_{funk}

Project team: Radovan Galas
Milan Omasta
Daniel Kvarda
Martin Valena
Šimon Skurka

BASIC RESEARCH PROJECTS

GAČR
GRANTOVÁ AGENTURA ČESKÉ REPUBLIKY

FRICTION PHENOMENA IN ROLLING CONTACTS CAUSED BY SUSPENSIONS 24-14624L

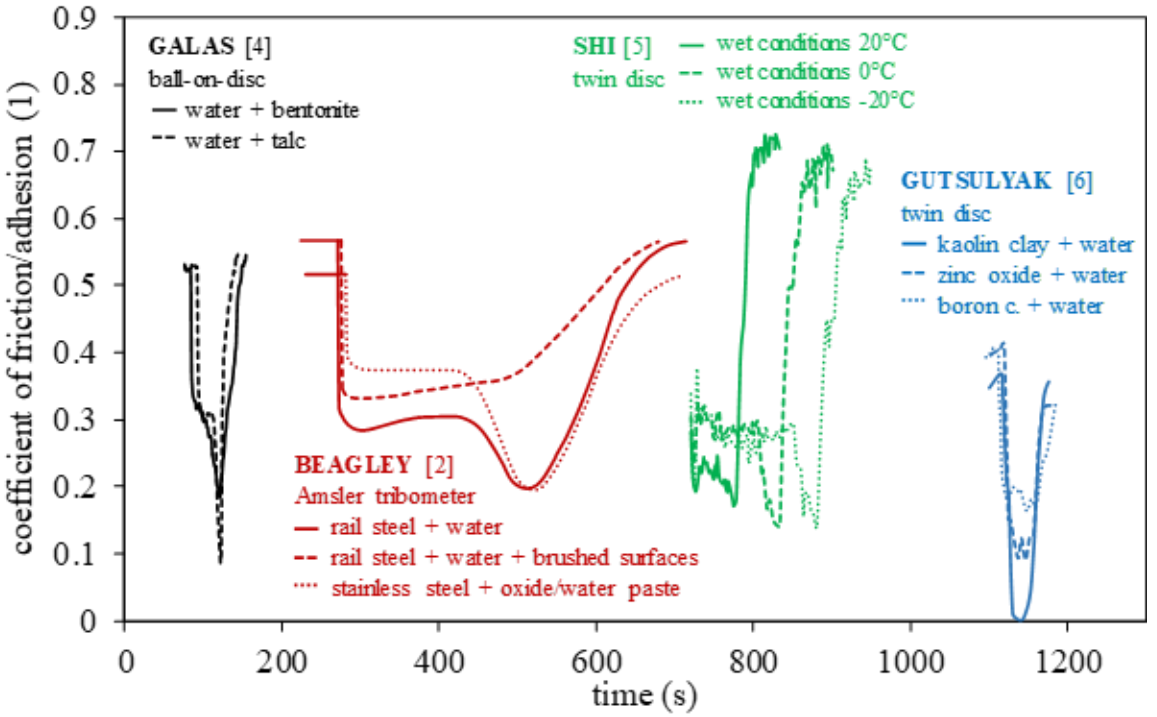
virtual vehicle

Program: Lead Agency (Rakousko)

Duration: 10/2024 – 09/2027 (38M)

Project goal: Explain the behavior of the low adhesion phenomenon

Results: 4x J_{imp}



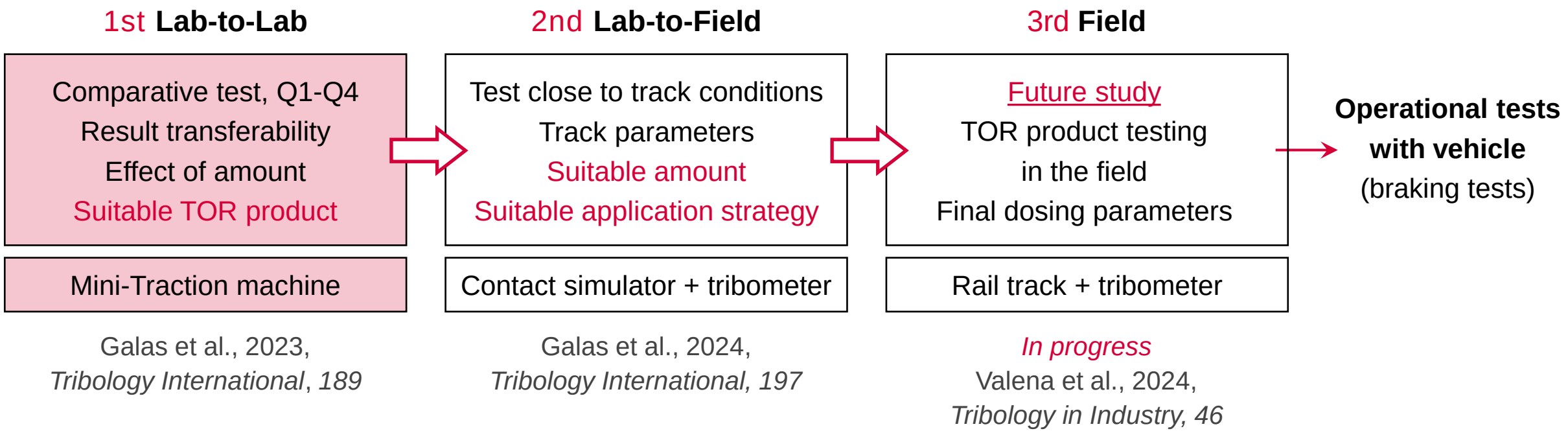
SUMMARY OF RESULTS AND PROJECTS **SINCE 2022**

G_{prot}	G_{funk}	Q1	Q2	Q3	Q4	Jsc
1	3	9	3	0	0	5

TAČR	GAČR	MINISTERSTVO PRŮMYSLU A OBCHODU
2	2	1

RESEARCH ACTIVITIES: **METHODOLOGY DEVELOPMENT**

Development of a multi-phase methodology for testing and selecting suitable TOR products for deployment in railway operations.



RESEARCH ACTIVITIES: **METHODOLOGY DEVELOPMENT**

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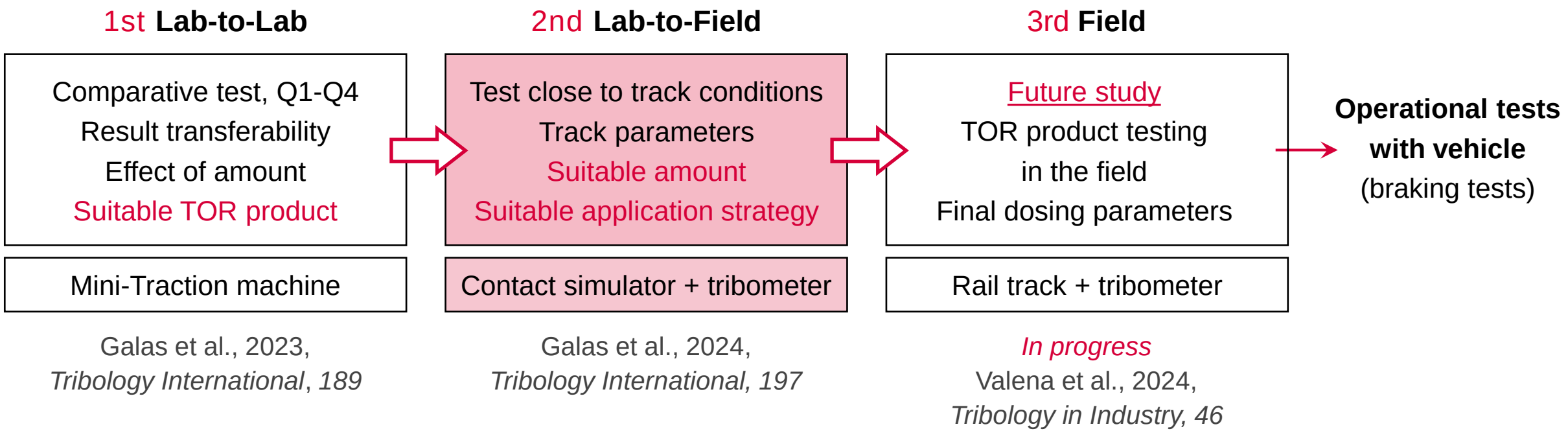


Galas et al., 2023,
Tribology International, *189*

Galas et al., 2024,
Tribology International, 197

In progress
Valena et al., 2024,
Tribology in Industry, 46

TEACHING AND STUDENT SUPERVISION 2022+

WINTER SEMESTR

5KS Machine Design - Machine Elements

ZD1 Diploma Project – Concept

ZDP Master Thesis Project - Methods and Results

on average **7.23**

SUMMER SEMESTR

6KT Machine Design - Mechanical Drives

ZD2 Diploma Project - Bibliography and Goals

ZD5 Master Thesis Project - Results and Discussion

ZTR Tribology

on average **7.38**

SUPERVISING STUDENTS

BACHELOR	1 (0)
MASTER	4 (2)
DOCTORAL	5 (4)

OTHER ACTIVITIES AT IMID

SINCE 2018 **TUITION COORDINATOR**

4th and 5th year of the master's program

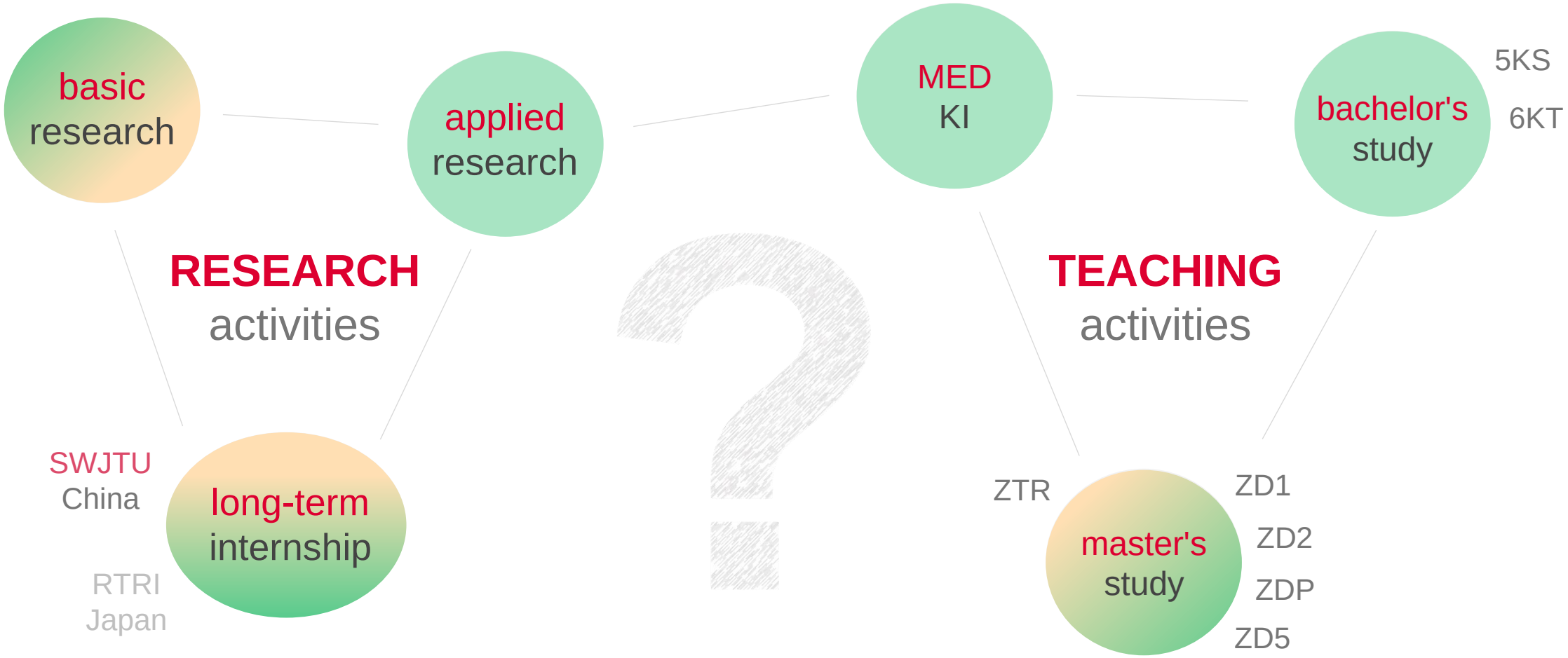
Mechanical Engineering Design

SINCE 2024 **ACADEMIC SENATE**

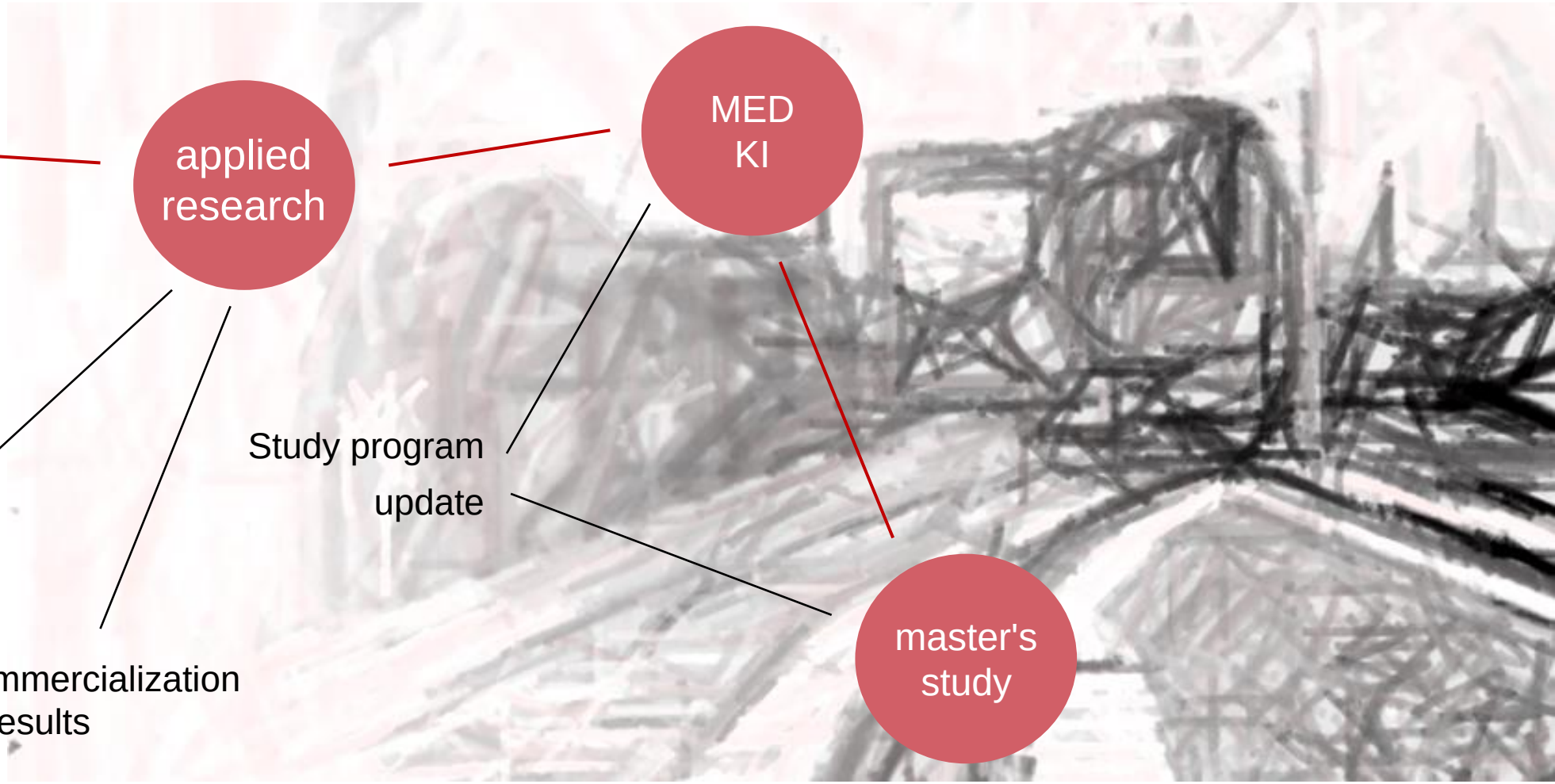
Research and Development Committee

Study Committee

FUTURE PLAN **FROM 2022**



FUTURE PLAN **FOR 2025+**



Thank you for attention

Radovan Galas

Radovan.Galas@vut.cz

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