

Center for Sustainable Future Mobility Symposium

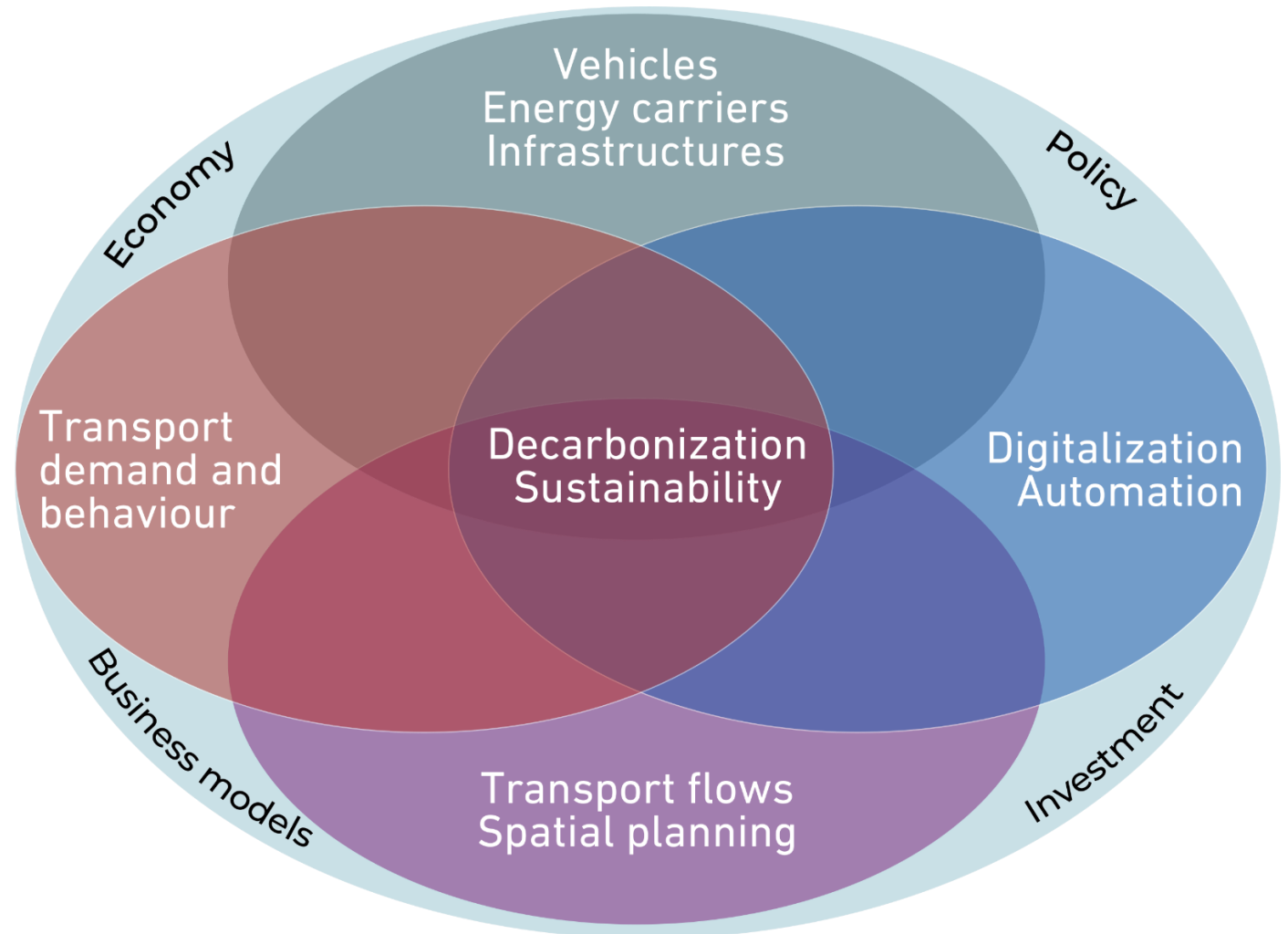
ETH Zurich, 29 May 2024



Sustainable future mobility

The challenges ahead

- **Energy demand (37 % in CH)**
- **CO₂ emissions (48% in CH)**
- Land use
- Congestion
- Safety
- Increasing demand
- Logistics
- Mobility-as-a-Service (MaaS)
- External costs
- Sharing economy
- Regulation



Main objectives of the CSFM

- Link groups with complementary competences to better **address the challenges** regarding the future of (Swiss and global) mobility systems
- Facilitate **knowledge transfer**
- Foster the **cooperation** with industry / business / federal administration offices (e.g. UVEK)



Main activities of the CSFM



Research Program «Future Mobility»



Integrative project «Digital Twin of the Swiss Mobility System»



Knowledge transfer events



Continuing Education

Research Program “Future Mobility”

Mobility Initiative

- Structured around yearly calls:
 - Relevance for Industry
 - Scientific quality
 - Interdisciplinary approach
- long-term commitment (10 years)
- From 2018 **49** projects were submitted and **27** projects funded
- Strategic partnership:



SIEMENS

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CSFM Seminar Series



The transition to electric vehicles:
Implications for public revenues and
funding of roads

24.10.2023



The CSFM Seminar Series are open to researchers, professionals, and everybody interested in sustainable future mobility.



CSFM SEMINAR SERIES

External costs of transport as a tool to
achieve sustainable mobility

28.11.2023

CSFM Seminar Series:

New regulation for Autonomous Vehicles in Switzerland

With inputs from experts from academia, business and the federal office of roads.



11.01.2024

Factors influencing the adoption and charging of electric vehicles



19.03.2024

Members

Steering committee



Prof. E. Frazzoli
Dynamic Systems and Control (D-MAVT)
Chairman



C. Bach
Automotive Powertrain Technologies
(EMPA)



Prof. C. Onder
Institute for Dynamic Systems and
Control (D-MAVT)



Prof. U. Grossner
Advanced Power Semiconductors
(D-ITET)



Prof. M. Raubal
Geoinformation Engineering (D-BAUG)
Deputy



Prof. A. Patt
Climate Policy (D-USYS)



Prof. F. Corman
Transport Systems (D-BAUG)



Prof. T. Bernauer
International Environmental Policy
(D-GESS)

 Prof. A. Bardow Energy and Process System Engineering	 Prof. J. Kolar Power Electronic Systems	 Prof. Aldo Steinfeld Renewable Energy Carriers	 Dr. A. Kouvelas Traffic Engineering	 Prof. F. Yu Visual Intelligence and Systems	 Prof. T. Bernauer International Environmental Policy
 Dr. Miriam Elser Vehicle Systems EMPA	 Prof. M. Lukatskaya Electrochemical Energy Systems	 Prof. E. Frazzoli Dynamic Systems and Control	 Prof. M. Raubal Geoinformation Engineering	 Prof. B. Adey Infrastructure Management	 Prof. M. Filippini Energy and Public Economics
 Prof. P. Ermanni Lightweight Systems	 Prof. M. Mazzotti Carbon Capture and Storage	 Prof. M. Hutter Robotics and Intelligent Systems	 Prof. F. Dörfler Institute for Automation	 Prof. E. Chatzi Structural Mechanics and Monitoring	 Prof. V. Hoffmann Sustainability and Technology
 Prof. C. Frank High Voltage Engineering	 Prof. R. McKenna Laboratory for Energy Systems Analysis	 Prof. R. Siegwart Autonomous Systems Lab	 Prof. J. Lygeros Automatic Control Lab	 Prof. I. Hajnsek Remote Sensing	 Prof. A. Patt Climate Policy
 Prof. U. Grossner Advanced Power Semiconductors	 Prof. N. Noiray Power and Propulsion Systems				 Prof. T. Schmidt Energy Policy
 Prof. S. Hellweg Environmental Impact	 Prof. C. Onder Dynamic Systems and Control	 Prof. K.W. Axhausen Traffic Planning, Transport Modelling	 Prof. M. Pollefeys Institute for Visual Computing	 Prof. D. Kaufmann Urban Planning	 Prof. M. Stauffacher Science – Society Interface
 Prof. G. Hug Electric Power Systems	 Prof. T. Schmidt Electrochemistry	 Prof. F. Corman Transport Systems	 Prof. S. Tang Computer Vision and Learning	 Prof. K. Schindler Photogrammetry and Remote Sensing	 Prof. B. Steffen Climate Finances and Policy

Energy efficiency,
e-mobility and batteries

Autonomous driving
and robotics

Traffic and
transportation systems

Connected car, security,
control, vision, and
automation

Infrastructure,
maintenance, logistics,
and built environment

Policy and economics

Center for Sustainable Future Mobility

Symposium 2024 – 1/2

- 9:15 Modeling and Planning Urban Systems with Novel Data Sources, **Prof. Marta González**, University of California, Berkeley, Berkeley Lab.
- 10:00 Digital twins for mobility: The example from Mobility Lab Helsinki, **Dr. Juho-Pekka Virtanen**, Product owner digital twin, Forum Virium Helsinki.
- 10:45 *Break & Poster Session*
- 11:15 Young scientist – poster pitches (best poster award)
- 11:45 Panel discussion with **Marta González** and **Juho-Pekka Virtanen**, **Sara El Kabiri**, Future Mobility expert at the Swiss Federal Office of Spatial Planning (ARE) and **Patrick Bützberger**, Head of traffic planning at SBB, moderated by Emilio Frazzoli
- 12:15 *Lunch & Poster Session*

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Symposium 2024 – 2/2

- 13:30 Autonomy-enabling Infrastructure for future mobility systems (InsideOut), **Mingjia He**, Institute of Dynamics Systems and Controls (D-MAVT)
- 13:45 Power and energy for the future railways (RailPower), **Georgia Pierrou**, Power Systems Laboratory (D-ITET) & **Michael Nold**, Transport Systems (D-BAUG)
- 14:05 Multimodality in the Swiss New Normal (Multimodality), **Daniel Heimgartner**, IVT (D-BAUG)
- 14:20 CSFM Digital Twin project: Open Digital Twin Platform (ODTP): use case applications, **Stefan Ivanovic**, CSFM DT team
- 14:35 Leveraging Digital Twins for Causal Intervention: Evaluating Machine Learning Model Robustness in Mobility Prediction, **Yanan Xin**, MIE Lab, IKG (D-BAUG)
- 15:50 Final remarks
- 15:00 Closure & Apéro

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