



University of Padova

Department of Civil, Architectural and Environmental Engineering  
Transportation Lab

Seminar

## **Cargo - Bikes Sharing System as a form of Micromobility. Solving a Fleet Location and Composition Problems for Cargo Bikes**

**Prof. Jacek ŻAK**

Poznan University of Technology, Poznan, Poland

The lecture will present major features of Cargo Bikes as transportation means both for passengers and freight movements. The application of cargo bikes in the urban metropolitan areas will be demonstrated. The cargo bikes sharing system will be described and characterized as a real life business undertaking. The case study will refer to Wroclaw city in Poland. The combined fleet location and composition problems for cargo bikes will be formulated as a multiple criteria mathematical programming problem. The multiple criteria character of these problems will be explained. The solution procedure of the problems will be presented. It is composed of two stages, including: Generation of the Pareto optimal solutions; Review of the solutions and their ranking. As a result of solving the problems the locations of cargo bikes rental stations will be defined and the composition of rented fleet for each station will be generated. The results of computational experiments will be demonstrated.

**Key words:**

Cargo Bikes, Fleet Location and Composition Problems, Multiple Criteria Mathematical Programming

**2025 October 14, 14.30-15.15**

**Aula "M" - DICEA**



University of Padova

Department of Civil, Architectural and Environmental Engineering  
Transportation Lab

Seminar

## **Decision Aiding for Transportation and Logistics. Decision Aiding Tolls as a Support to Decision Makers**

**Prof. Jacek ŻAK**

Poznan University of Technology, Poznan, Poland

The lecture will explain the role and major features of DECISION AIDING in Transportation and Logistics. The Decision Aiding Paradigm will be presented and the Decision Aiding Process will be explained. The differences between Decision Making and Decision Aiding Processes will be pointed out. The roles of major actors/ stakeholders participating in the Decision Aiding will be characterized and the generated output will be described. The major rules/ principles of Decision Aiding methodology will be explained, including basic terms of Multiple Criteria Decision Aiding. Different tools of Decision Aiding applied in Transportation and Logistics will be presented, including: Multiple Criteria Decision Aiding Methods, Artificial Intelligence Methods, Computer-based Decision Support Systems. Certain real life case studies of DECISION AIDING applied in Transportation and Logistics will be demonstrated. The lecture will explain what is the state of the art in solving complex transportation - logistics decision problems.

**Key words:**

Decision Aiding, Transportation & Logistics, Multiple Criteria Decision Aiding, Artificial Intelligence

**2025 October 14, 15.15-16.00  
Aula "M" - DICEA**