

## Science Talk

# Digitalized Public Transport Systems: Understanding, Predicting, Improving

**Prof. Dr. Francesco Corman (IVT)**

**Prof. Dr. Francesco Corman**  
Institute for Transport Planning and Systems (IVT)  
D-BAUG, ETH Zürich



Public Transport systems are so pervasively interacting with our life that we sometimes even forget we are benefitting from them. To match future sustainability and policy goals, their usage, performance and resource efficiency needs to improve. To this end, digitalization enables the possibility to understand, predict, and to some extent control transport supply and transport demand.

This talk reviews mathematical models to describe the complexity of interacting aspects in real life large-scale public transport systems, showing their interconnection and the need for highly precise models, to describe and control observed emerging effects. Predicting future evolution requires balancing computational power and understandability of the approaches. The increasing degree of automation in the system allows large potential for automatic control and decision support.

Including also users' reaction, the possibility for even better solutions increases, at the cost of an even larger complexity of the problems to be solved. Overall, the impact of automation and digitalization expands beyond the single resources, towards the entire transport system and how we would use it.

**D-BAUG** aims at engineering a sustainable world by focusing on research domains related to societal grand challenges – urbanization, sustainable infrastructures and changing environment – for which public transport systems and their efficiency play a central role.

**Monday, 06 December 2021**  
5 to 6 pm via **Zoom** (click to join)

**Host**

Prof. Dr. Paolo Burlando  
Head of Department D-BAUG, ETH Zürich

The slides will be available after the talk at  
[www.ivt.ethz.ch](http://www.ivt.ethz.ch)