



KTH ROYAL INSTITUTE
OF TECHNOLOGY

Workshop on Advances in Public Transport Control and Operations

Conclusions and Lessons from ADAPT-IT

June 16, 2017, Dept. of Transport Science, KTH





ADAPT-IT

*Analysis and Development of Attractive Public Transport
through Information Technology*

Joint research project with Technion Israel Institute of
Technology and KTH Royal Institute of Technology within the
EU program ERANET Transport

August 2014 - July 2017

Swedish part funded by Vinnova and KTH (TRENOP, CTS)



Real-time Public Transport Control

Adapting the planned service to current conditions

- Traffic delays and congestion, sudden surges in passenger demand, incidents and events, etc.

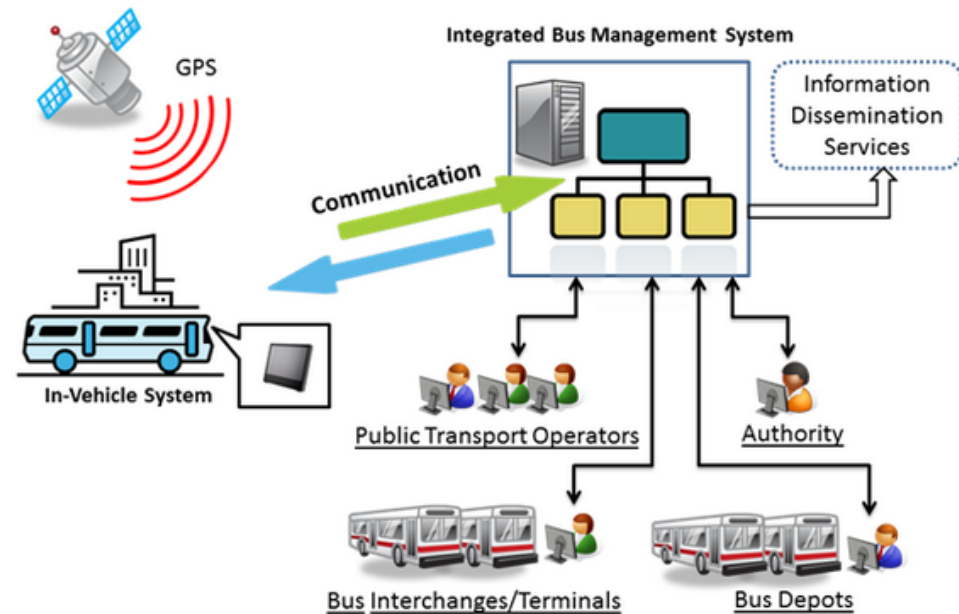
Maintain regular service and recover from disturbances and disruptions





Technological Advances

- Data generation
 - Automatic vehicle location (AVL)
 - Automatic passenger counting (APC)
 - Automatic fare collection (AFC)
- Communication (V2X)
- IT systems

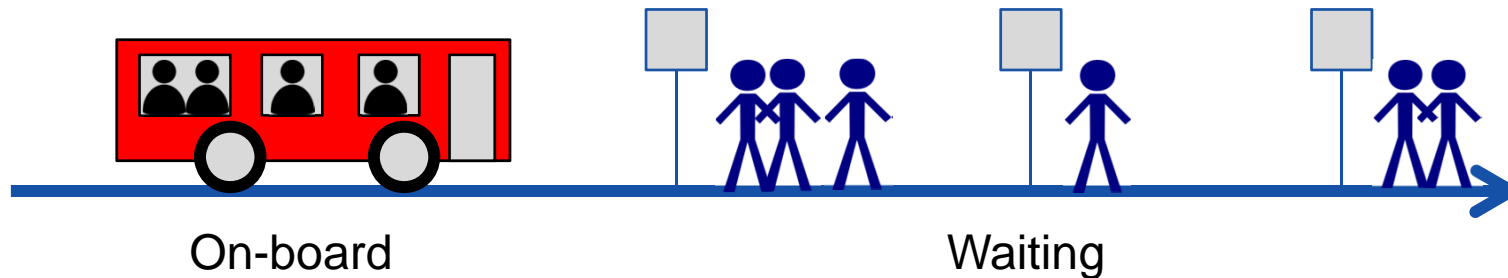




Project Scope

Develop and evaluate new real-time operational strategies based on advances in data collection and communication

Passenger-oriented strategies considering various traveller groups



Framework integrating advances in traffic simulation models, operational strategies, prediction models and behavioural modelling



Academic Output

- Laskaris, G., Cats, O., Jenelius, E., Viti, F. (2017) Coordinating merging public transport operations using holding control strategies. To be presented at *6th hEART Symposium* in Haifa, Israel, 12-14 September.
- Leffler, D., Cats, O., Jenelius, E. and Burghout, W. (2017) Real-time short-turning in high frequency bus services based on passenger cost. To be presented at the *5th IEEE International Conference on Models and Technologies for Intelligent Transportation Systems (MT-ITS)*.
- Gavriilidou, A., Cats, O., Leffler, D. Corman, F., Hoogendoorn, S.P. (2017) Real-time transfer synchronization of public transport services using passenger data. *TRB 96th Annual Meeting Compendium of Papers*.
- Laskaris, G., Cats, O., Jenelius, E., Viti, F. (2016) A real-time holding decision rule accounting for passenger travel cost. *2016 IEEE International Conference on Intelligent Transportation Systems (ITSC)*, pp. 2410-2415.
- Manasra, H. (2016) *Real Time Control for Transit Systems with Transfers*. M.Sc. Thesis, Technion Israel Institute of Technology.
- Gavriilidou, A. (2016) *Real-time Transfer Synchronisation for Public Transport Services Using Passenger Data*. M.Sc. Thesis, TU Delft.
- Laskaris, G. (2015) *A Real Time Control Strategy for Multiple Bus Routes using a Shared Transit Corridor*. M.Sc. Thesis, KTH Royal Institute of Technology.



Agenda

- 9:10 **Real-time Holding Control Strategies
for Single and Merging Public Transport Lines**
Giorgos Laskaris, University of Luxembourg
- 9:30 **Real-time Short-turning in High Frequency Bus Services
Based on Passenger Cost**
David Leffler, KTH Royal Institute of Technology
- 9:50 **Real-time Transfer Synchronization of Public Transport
Services Using Passenger Data**
Oded Cats, TU Delft / KTH Royal Institute of Technology
- 10:10 **Real-Time Control for Transit Systems with Transfers**
Hend Manasra, Technion Israel Institute of Technology
- 10:30 Discussion and Coffee
- 11:00 **Optimization of Traffic Signal Plans with Transit Priority**
Tomer Toledo, Technion Israel Institute of Technology
- 11:30 **Towards Next Generation Public Transport Systems**
Francesco Viti, University of Luxembourg
- 12:00 Discussion and Conclusions