SUSTAINABLE TRANSPORT CONTROL STRATEGIES: DEVELOPMENT AND IMPLEMENTATION

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Short Description
New technology provides great opportunities for increasing urban transport sustainability, but to be most effective, technology must be combined with new ways of thinking. The paper outlines an approach that combines new thinking with technology and provides a railway example.

Main part
Many of the real benefits of autonomous vehicles come from precise control of the vehicles (e.g., safety of pedestrians, better traffic flow). Therefore, if we could better control vehicles, we could achieve many of these benefits – without autonomous cars, which are proving more difficult to get on the road than expected.

The research describes a process that can be used to develop and implement new urban transport control strategies designed to help increase safety, use of sustainable transport modes and liveability by taking full advantage of new technology. The approach links new technologies such as sensors, control systems, processors, communications, etc., with new multimodal-oriented control strategies designed to, for example, better control vehicles as in the example above.

Many control strategies used today focus on moving motor vehicles. Applying new technologies to these strategies leads to simply moving motor vehicles more efficiently. This fails to take full advantage of new technology's ability to do different things – like encouraging a shift to sustainable transport. For example, a new strategy could be to provide an all direction walk phase at a traffic signal when sensors indicate there is no more traffic in the queue. By reducing pedestrian wait times this strategy would encourage more people to walk.

Developing new control strategies that consider all transport modes highlights one of the most common problems faced by established organisations when they seek to apply new technology. Namely, they apply new technology to old ways of working. In contrast, truly innovative organisations apply technology differently. They do new – often unimaginable in advance – things with new technology.

The sustainable urban transport control strategy idea is similar. Today it is impossible to even imagine that we could identify a structure underlying multimodal urban transport and then develop strategies for controlling it. But, it's all just data, the key will effectively utilising new technologies to collect and analyse urban transport data, develop real time strategies based on this data to support the use of sustainable transport, and then communicate these strategies to new and existing traffic control devices (e.g. traffic signals).

The presentation will outline the importance of re-thinking existing processes before applying technology, describe how this approach is being used to develop a more efficient method for railway traffic management, recommend ideas for building an urban traffic control strategy, and finally, present an example application.

The presentation is intended to be provocative and the proposed control strategy would certainly be a disruptive technology for creating new realities.

What is new?
The project will develop a set of transport control strategies designed to encourage the use of sustainable transport by taking full advantage of new technology. Many existing transport control strategies are based on old paradigms such as moving private automobiles – because the technology was not available to implement more complex multimodal strategies.

What is transferable to other cities and regions?
The approach and specific research results can be used by other cities and regions.

What are outcomes and conclusions?
The goal of the presentation is to stimulate interest in the idea and identify cities and regions which would like to work on projects and research to develop and test the idea of using comprehensive urban transport control strategies to create sustainable cities.

Who are the main target groups?
Cities, regions, agencies, research institutes, and others interested in working on the idea.

And what now? - what will change? - what is the relevance for the future?
New traffic control strategies are needed now more than ever. We will have fewer resources, we need to use these resources as carefully as possible. On a tactical level, for example, we may not be able to build a protected cycling lane immediately: could we change traffic signal timing to improve the feeling of safety? Or, could we change timing to encourage people to walk? On a strategic level, re-thinking traffic control strategies to consider broader and more complex social needs is exactly what needs to happen throughout society if we are to solve the daunting problems facing humanity today from the climate crisis to inequality to our current (and future) pandemics.

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