

**The benefits and limitations of ITS solutions
following its introduction into Gdynia's transport
planning and management system
Experience from CIVITAS Dynamo
project in Gdynia, Poland**

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Contents

- ▶ ITS and transport policy integration
- ▶ ITS within transport policy in Gdynia
- ▶ CIVIATS Dynamo's measures related to ITS
- ▶ Transport model and *Weigh in Motion* – evaluation indicators, implementation barriers and evaluation appraisal
- ▶ Conclusion



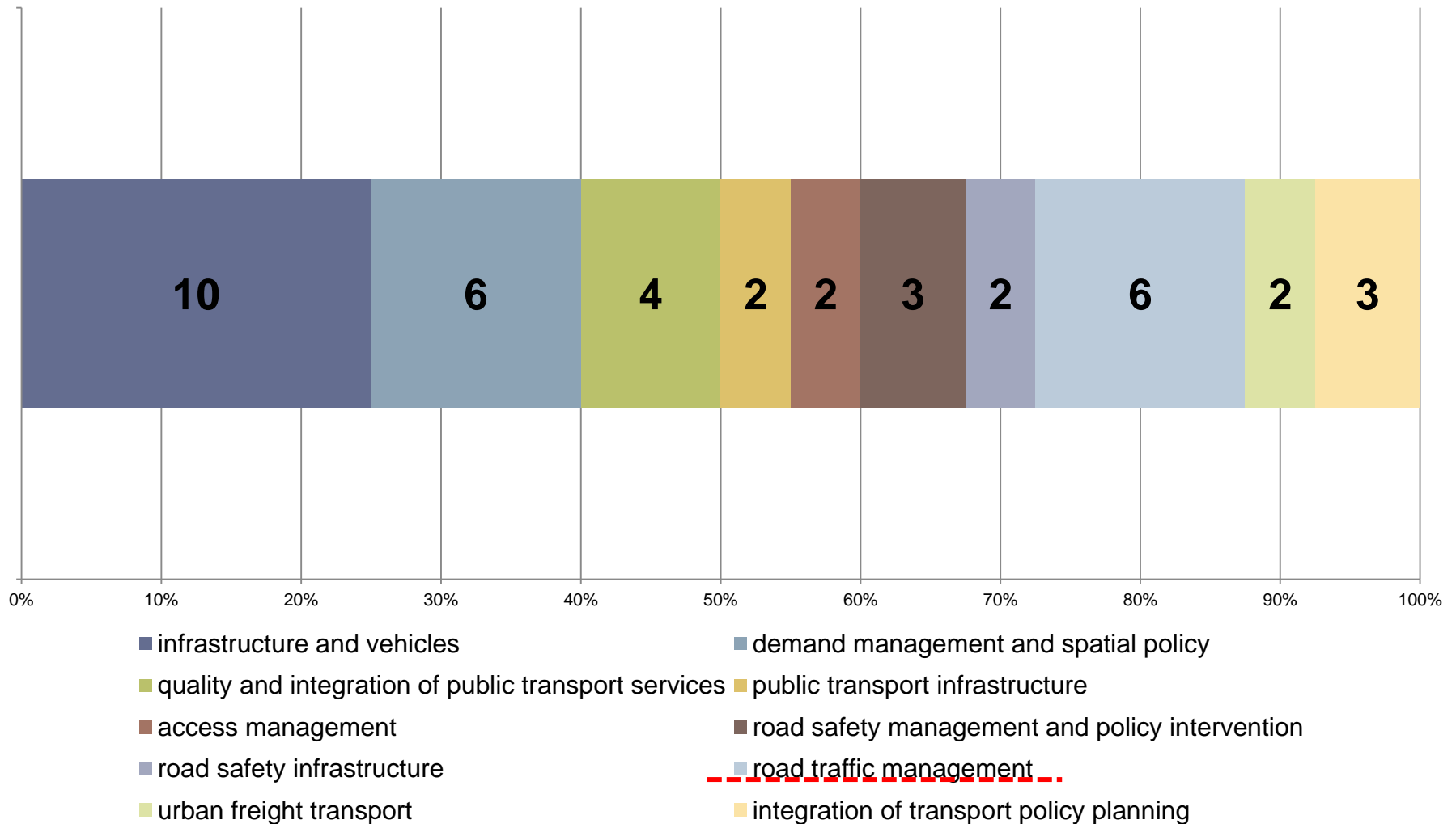
ITS potential for transport policy integration

- ▶ integration between policy instruments involving different modes – **planning, prognosis, evaluation**
- ▶ integration between policy instruments involving infrastructure provision, management, information and pricing – **simulation, monitoring, enforcement, information**
- ▶ integration between transport measures and land use planning measures – **prognosis, evaluation**
- ▶ integration with other policy areas such as health, education and economy – **planning, evaluation**

Main objectives of Gdynia's transport policy

- ▶ reduction of demand for transport and adaptation of parking capacity to road network parameters (5)
- ▶ increase in public transport quality and suppression of decline in its share in passenger transport (8)
- ▶ increase in transport safety (6)
- ▶ increase in road and traffic management capabilities (9)
- ▶ decrease in transport influence on inhabitants' quality of life (9)
- ▶ integration of transport planning system at metropolitan level (3)

Measures within the city's transport policy



Policy's tasks related to ITS

- ▶ systematic traffic analysis and forecasting
- ▶ transport information system within the city's spatial information system
- ▶ traffic management system for public transport vehicles, including PT priorities
- ▶ parking information system with access regulations,
- ▶ dedicated routes for HGV's with VMS system
- ▶ access restrictions and control for HGV's

Gdynia's SUMP proposed freight (traffic) component

effective
freight transport

seaport
accessibility

road and rail transport infrastructure

truck parking system integrated with TRISTAR traffic management system

sustainable and
efficient urban
distribution

regulatory system supporting urban delivery

integration of UFT stakeholders

modern
technologies in
urban freight

ICT/ITS for optimization of freight traffic

low emission solutions

Dynamo project within the transport policy context

- ▶ the need to give priority to public transport
- ▶ studies show that travel time on of the key reasons why people chose car over public transport
- ▶ significant share of HGV traffic related to port of Gdynia
development of port-related logisitcs services
- ▶ availability of Tristar traffic management system,
which could support futher ITS developments

Civitas Dynamo measures using the ITS

ITS a main focus:

- ▶ **Multilevel transport model for the city**
- ▶ **Weigh in motion pilot implementation (WIM)**
- ▶ Automated traffic incident detection (ATID)

Measures using ITS as a complementary solution:

- ▶ Dedicated bus lanes
- ▶ Implementation of the pedestrian zones



Transport model – the background

- ▶ before CIVIATS there were **no integrated city-wide planning tools** to help with tests and analysis of transport solutions
- ▶ each change in the transport system had to be analysed separately and often according to a different methodology
- ▶ transport models were developed according to specific project needs

Limited ability for policymaking

Selected implementation barriers

- ▶ delay in data delivery from the public transport management authority
- ▶ delivered PT data didn't match the required O/D level of detail
- ▶ difficult coordination of data and information managed by different city departments, ie.: statistical, education, economy
- ▶ time consuming calibration and adaptation of data to feed different levels of the model in coherent way
- ▶ calibration of the model was planned with data from the traffic management system TRISTAR, which was delayed by 6 months

Appraisal of the evaluation approach

- ▶ At the beginning, there were two approaches to model evaluation: the first considered it as a support tool for other planning measures, while the second had a technical approach related to model complexity and accuracy
- ▶ The project team had to change their approach to evaluation, this built on the experience regarding evaluation methods from other measures
- ▶ When advanced technology measures are considered, an additional effort is advisable to get common view on the problem, especially at the beginning of a project

Weigh in Motion – the background

- ▶ one of Gdynia's main transport policy goals is to reduce the negative impact of heavy goods vehicles going to and from the sea port
- ▶ vehicles are often overloaded – share of overloaded vehicles may be up to 25% according to data from other WIM stations
- ▶ increase in percentage overloaded vehicles from 0% to 20% can reduce the fatigue life of asphalt pavement up to 50%

WIM stations located outside the city limits at national roads, not as close to the port as possible

Selection of potential WIM locations in Gdynia

- ▶ Data from traffic counts (2012) were used to identify road sections with the highest HGV share
- ▶ Other factors were taken into account: share of overloaded vehicles, road technical conditions and type of traffic (local, transit)
- ▶ HGV's traffic was the heaviest within the Trasa Kwiatkowskiego – 8 600 veh. per day (ca. 20% of total traffic)
- ▶ Results for selected other sections were 2 300 – 3200 veh. per day (6% - 10% of total traffic).

The final set of considered WIM locations

Out of 14 preliminary locations 4 were selected for further analysis:



Selected implementation barriers

- ▶ number of WIM stations was reduced from 2 to 1 because of unfavorable investment's depreciation regulations
- ▶ there were no technology related barriers
- ▶ urban road authorities are legally required to conduct the checks only in the presence of Police or Road Transport Inspectorate officers – reduction of the system's usefulness
- ▶ under the current law WIM systems cannot be used to penalise drivers operating an overloaded vehicle
- ▶ the weights can only be used for weight pre-selection

Requested changes in legislation

- ▶ Extension the remit of municipal gaurds to allow them checks for non-normative elements (incl. mass and and axle load)
- ▶ Changes in ordinance concerning the location, marking and measurmentts by recording devices
- ▶ Permission for those acting on behalf of road authority to check for overloading vehicles using recording devices (ie. Traffic management center operators)

Appraisal of the evaluation approach

- ▶ Where was only one WIM station installed, what is a main factor defining potential to achieve tangible results
- ▶ The measure alone is unlikely to influence city's transport system as a whole
- ▶ However, because of its proper location at the main access route to the port, WIM station would influence driver behaviour
- ▶ Despite low direct impact, the implementation of weigh pre-selection could be considered as a guidance for future development of freight traffic management measures

Conclusions

- ▶ ITS measures, although of technical nature, are a subject to influence from internal and external factors during their implementation
- ▶ Measures are often closely linked to each other, what makes them prone to delays
- ▶ ITS based system cannot be built from scratch in one go
- ▶ Consecutive steps increasing system's functionality should be planned and carefully evaluated to get best results

Thank you for attention

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