

## Identification of Accident Location by Use of GPS and Possibilities of its Application

MIKULÍK Josef, TESAŘÍK Josef Czech Republic

4<sup>th</sup> IRTAD CONFERENCE Road safety data: collection and analysis for target setting and monitoring performances and progress

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#### Overview

 Methods of Accident Location
 Introduction of GPS by Czech Police
 Application for Wider Public Use
 Conclusions

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Implementation of efficient safety measures demands:

accurate location of individual accidents exact distribution of accidents on road network information describing road parameters and equipment

Basic methods of accident location identification:
stationing
node system
GPS

#### a) stationing

- the most common method
- location is identified by the distance from the zero
- distances are marked by special road signs
- significant disadvantage:
  - complicated adaptation to the changes of the length
- flexible update system is needed

#### b) node system

- network of nodes and sections
- nodes are usually placed in the junctions
- other objects (bridges) can be used
- simple adaptation of changes
- numbers of nodes, administration unit, municipality,
- node characteristics, other information
   e. g. traffic volumes.

#### c) GPS

- the most fast, accurate and cheap system
- localization in the geographic coordinates
- suitable for safety analysis issues
- different background maps can be used
- enables the most precise examination of the accident causes and its circumstances

### 2. Introduction of GPS by Czech Police

extensive reconstruction of roads
road administration introduced the node system
traffic police continued to keep the stationing system
significant changes in the administration of roads since 2000
traffic police didn 't change the former system

### 2. Introduction of GPS by Czech Police

- joint project of the Ministry of Transport and Traffic Police
- elaborated by CDV Transport Research Center
- started in 2004 with modification of the accident registration system
- traffic police equipped with 200 pieces of GPS devices "GEKO 201"
- police units were instructed
- introduced as the standard procedure since July 1, 2006



### 2. Introduction of GPS by Czech Police

The on-line system of visualization of accidents, including all registered parameters for each accidents was opened for the internal use of traffic police in 2007 It enables:

- to use the automatically updated information about accident situation and its development
- to streamline supervision and enforcement activities to the most sensitive areas.

### Crash sites with killed; 2008



#### Prague, 2008 (30 251 accidents)



#### Prague, year 2008 (bridge of Barrand – over river Vltava)





- the last phase of the project for the professionals outside of the traffic police
- INFOBESI system for the efficient solutions of the locations with high concentration of road accidents
  - The procedure consists of:
    - identification of the accident location/s in the selected area or on the selected road according to the defined criteria,
    - evaluation of the accidents in the chosen spots and elaboration of the collision diagrams,

- comprehensive assessment of accident circumstances and contributing factors,
- determination of the main causes of accidents,
- proposal for the safety improvement measures,
- estimation of the costs of the proposed measures and of the expected benefits, calculation of the cost benefit ratio,
- ranking of the priorities of the spots to be improved,
- preparation and implementation of the improvement measures,
- monitoring and evaluation.

Since November 2008 accident data also available for general public access in Geographical Information System "Unified Transport Vector Map" (JDVM) operated by CDV – Transport Research Center Each accident is described by all parameters registered by the police in the investigation form. Information can be also printed in pdf format.

The selection data include:

- code number of accident
- type of accident
- impairment by alcohol
- visibility
- type of vehicle
- number of involved vehicles
- consequences killed /heavy injured / slightly injured
- responsibility for accident
- fuel leak
- road number
- name of the community
- time period (date: from / til)



#### Evidence of road traffic accident in the JDVM system

#### Searching in JDVM by locality



#### The system

- brings important source of information for public administration
- facilitates the introduction of safety measures

Surprising interest of the public.
during the first week more than half million hits
first 5 months 2009 - 1, 6 million, 50 thousand visitors
30% of visitors were from abroad
English version of the web pages is under preparation.



### 4. Conclusions

- The use of GPS secures the desirable level of accuracy
- offers possibilities how to better use the information on accident parameters collected by traffic police
- Implementation was based on project financed by the Ministry of Transport and
- undertaken by Transport Research Centre in the close cooperation with traffic police
- efficient way of cooperation between traffic police and road safety research

Thank You very much for Your attention Josef Mikulik

josef.mikulik@cdv.cz

