

Towards a Czech Road Safety Information System

Saskia de Craen & Fred Wegman

D-2003-3

Towards a Czech Road Safety Information System

A feasibility study

Report documentation

Number: D-2003-3
Title: Towards a Czech Road Safety Information System
Subtitle: A feasibility study
Author(s): Saskia de Craen & Fred Wegman
Project number SWOV: 69.171
Client: Transport Research Centre AVV, the Netherlands

Keywords: Report of visit, program (computer), data bank, information documentation, traffic, safety, Czech Republic.

Contents of the project: This project is a feasibility study into the successful implementation of a Road Safety Information System in the Czech Republic.

Number of pages: 18 + 14
Price: € 10,-
Published by: SWOV, Leidschendam, 2003

SWOV Institute for Road Safety Research
P.O. Box 1090
2260 BB Leidschendam
The Netherlands
Telephone +31-703173333
Telefax +31-703201261
Internet www.swov.nl

Summary

The Czech Republic aims at improving its road safety and in the last years it achieved significant successes in reducing the number of road traffic casualties. Increasingly, road safety measures have to be taken in an effort to lower the number of accidents.

A Road Safety Information System (RSIS), which contains relevant and qualified information on key traffic and safety data, is a helpful tool in the preparation and evaluation of road safety programmes.

SWOV, commissioned by the Dutch Ministry of Transport, Public Works and Water Management, and in co-operation with the Transport Research Centre AVV, made an assessment of the availability and quality of information for the implementation of an RSIS in the Czech Republic as a prerequisite for its actual development and implementation.

The study led to the conclusion that a number of problems need to be solved and questions need to be answered before a fully functional RSIS can be realised. SWOV recommends to start a pilot using the concept of the Dutch road safety information system and the Dutch experiences with operating the system.

Contents

1.	Introduction	7
2.	Set-up of the feasibility study	9
3.	General characteristics of a Road Safety Information System	10
4.	Requirements for a successful implementation of an RSIS	12
5.	The visit to the Czech Republic	13
6.	Main findings and conclusions	14
7.	Recommendations	16
	References	17
	Appendix	
	Presentation by Saskia de Craen at the plenary meeting on March 28, 2003	19

1. Introduction

The Czech Republic aims at improving its road safety and in the last years it achieved significant successes in reducing the number of road traffic casualties. Recently, several actions have been taken in the field of road safety. In 2000, the Road Safety Council of the Ministry of Transport and Communications was restructured so that different bodies dealing with road traffic safety were represented in an Advisory Council. In 2001, the Czech Government adopted a Safety Programme and many safety-oriented measures were introduced in the Traffic Code.

It is well known that the success of road safety policies depends to a large extent on the staff that prepares and implements the policies. One of the ways of supporting them in their tasks is to give them easy access to recent, relevant and qualified information about road safety issues. A computer application is a helpful tool in making such information available. Scarce time of road safety professionals is better spent on preparation and evaluation of road safety programmes than on gathering of information. Information is used in a broad sense here: key traffic and safety data, the quality of these data (possibilities and limitations when drawing conclusions), interpretation and explanation of trends, and effectiveness and efficiency of measures. All this information together forms a Road Safety Information System (RSIS).

The Netherlands has good experiences with such systems. It has proven to be possible to develop and maintain such a road safety information system. The Dutch system, developed by SWOV and now accessible through the Internet (<http://www.swov.nl/>), has been operational since 1993 and is used by a still growing number of road safety professionals at national, regional and local level. A similar instrument could be useful to assist road safety professionals in the Czech Republic to improve road safety further. Such a Czech RSIS would need to contain general information about the road safety situation in the Czech Republic and information about issues identified as main problems to be addressed. However, the value of an RSIS fully depends on the information it contains. The information system is only as useful as the information that builds the system. Availability and good quality of data and information is therefore of crucial importance for the successful implementation of an RSIS. For that reason it was decided to carry out a feasibility study. The main objective was to assess the availability and quality of information for the implementation of an RSIS in the Czech Republic as a prerequisite for its actual development and implementation.

The study was agreed upon in the framework of the Memorandum of Understanding between the Ministries of Transport of the Czech Republic and the Netherlands, which aims to achieve a close co-operation by, amongst other items, the exchange of knowledge, expertise and practical information and experiences in the field of road safety. The study was carried out by SWOV and was commissioned by the Dutch Ministry of Transport. The study was carried out in good co-operation with the Czech Transport Research Centre CDV and the Dutch AVV Transport Research Centre .

We thank all organizations and people who helped us to carry out this study. They are listed in the *Appendix*, in Sheets 25 and 26 of the presentation given in Prague on March 28, 2003.

2. Set-up of the feasibility study

The feasibility study contained three major phases. First, based on the experiences with the Dutch RSIS, the general characteristics and prerequisites for a successful RSIS were identified. Secondly, during a four days visit to the Czech Republic several experts and potential users were visited to make an inventory of the availability and quality of relevant data as well as the wishes and demands of the potential RSIS users. Thirdly, on the fifth day of the visit, the main findings and conclusions were presented and discussed during a plenary meeting with several of the potential stakeholders. During the visit and at the plenary meeting the issues were illustrated and explained by means of a PowerPoint presentation. At the plenary meeting also the main findings and conclusions were included in the presentation. The *Appendix* contains a copy of this presentation.

3. General characteristics of a Road Safety Information System

In order to develop an effective and efficient road safety policy, many questions have to be answered, such as which are the priorities, which measures are available, which effects can be expected, and what costs are involved. In order to be able to answer all these questions, data, knowledge, and information are needed to give a comprehensive and objective picture of the road safety problems and of the effectiveness and efficiency of potential road safety measures. An RSIS would need to comprise all of this data (Wegman, 2001; Brouwer, 2002). The unique advantage of a good working RSIS is that it:

- deals with information relevant for policy making;
- contains up-to-date information;
- integrates information from various sources;
- links data with explanatory text.

Information that needs to be available in an RSIS includes first of all numbers and characteristics of road crashes, injuries and fatalities. In addition, the numbers would need to be related to relevant exposure data (e.g. mileage, time in traffic or particular traffic conditions) in order to allow for calculating road safety risks. Indications about road safety risk have policy relevance, for example:

- To assess the risks of different means of transport, age-groups, or traffic situations;
- To detect the road traffic circumstances with high risks;
- To monitor time-series and to determine the effects of measures (and to assess whether or not the number of victims have declined because of less exposure or because of a smaller risk).

However, this is not sufficient. With this information a few essential types of information for monitoring the effects of a road safety policy are not taken into account. At first, factual information on the safety measures and safety programmes is required, i.e. the interventions made for the improvement of road safety, the implementation of a policy, such as the number of police hours spent on enforcement. These interventions should lead to certain changes in road traffic, the second additional type of information.

Nowadays these changes are known as Safety Performance Indicators (ETSC, 2001), and they have a causal relationship with crashes and casualties/victims. Well-known examples of Safety Performance Indicators are data on seat belt use, helmet use, speed, and drink driving.

There are several reasons why we need safety performance indicators. The reporting of crashes and injuries in official road accident statistics is incomplete and biased towards those crashes involving motor vehicles; the number of road crashes or injuries is subject to random fluctuations. The number of crashes does not tell anything about the process that leads to crashes. In other words, the purpose of using Safety Performance Indicators is to be better able to interpret the road safety developments and to improve understanding of the impact of policy interventions. Information and data on Safety Performance Indicators may help to estimate the effects

of safety measures in terms of number of crashes or casualties. A last additional type of information refers to the social costs of accidents. This concerns the damage that society judges to be negative, and therefore should be prevented.

Quantitative targets should go together with targeted programmes. Targeted programmes should be monitored and the progress achieved should be compared with the targets. That is why New Zealand has developed a very useful target hierarchy (LTSA, 2000). The keywords for this target hierarchy are:

- credibility (knowledge used and choices made are visible),
- transparency (other assumptions and choices can be calculated),
- consistency (the basis is formed by the same data and logics),
- disaggregation (targets for parts can be defined), and
- accountability (performance indicators can be derived for all actors).

This hierarchy is one of the building blocks of the ETSC report *Transport Safety Performance Indicators* (ETSC, 2001). In the meantime, the European Commission, after consultation in the European High-Level Group on Road Safety, has decided to use this concept as starting point for benchmarking purposes within the European Union. Since then, the SUNflower project (in which benchmarking is an important component) has adopted the target hierarchy as part of the research method (*Figure 1*).

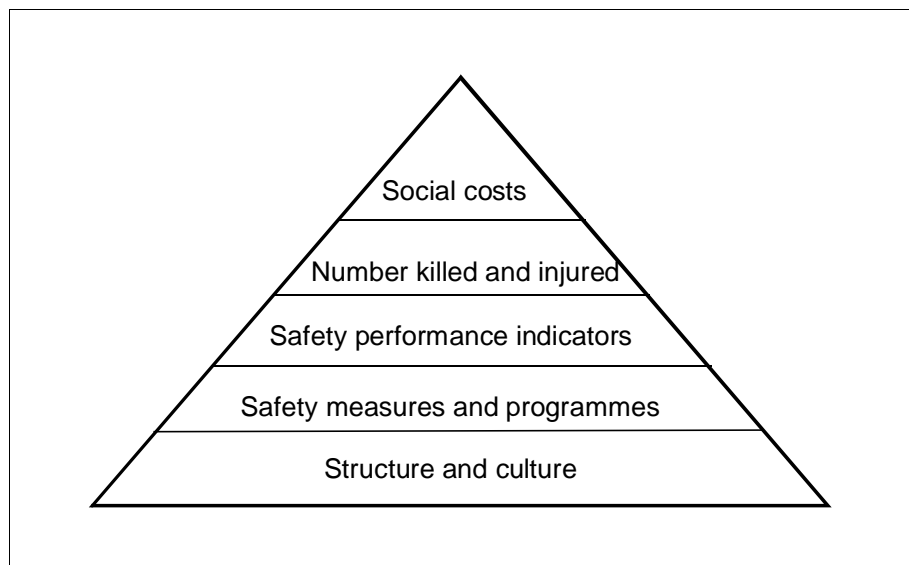


Figure 1. *The target hierarchy based on the New Zealand model and adapted for the SUNflower study (Koornstra et al., 2003).*

When data at all five levels is available, the process leading to crashes can be described, analysed and better understood. This knowledge can then serve as a basis for a rational safety management, in order to lower the social costs related to road crashes.

4. **Requirements for a successful implementation of an RSIS**

Roughly, two basic requirements for the successful implementation of an RSIS have to be met: data availability and data quality.

With respect to data availability, at least some key data and information with respect to the issues mentioned above have to be available. There should be some interpretation and explanation of trends by experts in order to prevent that every user comes up with his or her own interpretation of what the data means. Also, some general expert knowledge concerning road safety issues should be available.

The level of quality of the data that is needed may vary substantially according to the aim of the usage. For some questions or studies very detailed and precise data is necessary, while for other questions or studies a more general picture is sufficient. Therefore it is not crucial to incorporate only top-quality data in an RSIS. However, it is crucial to give clear information on the quality of the data. As such, every user can decide for him or herself whether the level of quality is sufficient for the desired usage.

Beside the technical requirements with respect to the data and information, there are a number of organisational and procedural requirements. These include:

- sufficient potential users of the system;
- availability of an efficient way to make the information available (e.g. by internet or by CD-ROM);
- financial resources to develop, implement and maintain the system;
- an organisation willing and capable to be responsible for the development and maintenance.

5. The visit to the Czech Republic

The visit to the Czech Republic took place from 24 until and including 28 March 2003. The Dutch delegation consisted of Mrs Saskia de Craen of the SWOV Institute for Road Safety Research and Mr Joop Kraaij and Mr Eugène Banach of the Transport Research Centre AVV of the Ministry of Transport, Public Works and Water Management. During the first four days of the visit several key stakeholders in the field of road safety policies in the Czech Republic and some representatives of potential end-users of an information system were visited:

- The Police Academy of the Czech Republic
- The Police of the Czech Republic (Department of Accident Data)
- The Ministry of Transport
- The Road and Motorway Directorate Brno
- The Transport Research Centre CDV
- The city of Nový Jičín
- The Road and Motorway Directorate Ostrava

The plenary meeting was attended by the deputy Minister of Transport, by the head of the Safety Branch in the Ministry, and by Mr. Fred Wegman, managing director of SWOV.

6. Main findings and conclusions

During the visit it became clear that the Czech Government has the intention to prepare a concrete Road Safety Action Plan to be implemented in 2004. This plan will probably come too early to be monitored by a Road Safety Information System. But the monitoring of the foreseen, more long-term, Road Safety Strategy may be a very good start for a Road Safety Information System in the Czech Republic.

In general, the accident registration is good in the Czech Republic, as was stated by various sources. However, there was some uncertainty whether the accident data can be made available on a structured, regular basis. Furthermore, there appeared to be some problems with the information on the location of crashes. Currently, there are three different systems to classify the location of crashes. Different police forces use different systems to classify the location of an accident, which makes nation-wide conclusions on accident location impossible. Whereas this may provide problems for detailed accident analysis studies, it is probably not a major problem for use of the RSIS for more general policy purposes.

Data and information on Safety Performance Indicators were found to be lacking almost completely. It was stated that some information is available, for example on speed measurements and seatbelt wearing, but this is only recorded in individual, small-scaled projects and, consequently, cannot be regarded as a good indication of the actual state of affairs in the Czech Republic as a whole. Expert knowledge on road safety appears to be widely available. There is, however, no good overview of available expertise throughout the country, or of the quality of this expert knowledge.

During the visit a majority of the potential users expressed their interest in using a Czech RSIS in the future. It was clarified that the recommended concept of a Road Safety Information System is to present key data and knowledge about road safety problems and measures through a computer application. Such a computer application is not meant to answer all questions that may arise; the power of the system mainly lies in giving direct access to a relevant selection of information. The main criterion for relevance is the usefulness for the user groups on a more or less regular basis. For all incidental questions an information desk can be set up.

With respect to the technological requirements it can be concluded that there are no serious problems to be expected. Both a CD-ROM and an Internet application are possibilities. Because of its higher flexibility and better possibilities to keep the data and information up-to-date, it is recommended to choose for an Internet application.

A number of questions related to financing and organisation remain which have to be answered before an RSIS can be actually developed and implemented in the Czech Republic. Although only a limited amount of resources is needed, there is no certainty about where these resources will have to come from. It seems to be case that the National Government, and more precisely the Czech Ministry of Transport, could see a task in organising adequate funding for a Czech RSIS. Some legal problems

concerning ownership, organisation and admission to the data have to be solved. The responsibilities concerning the development and maintenance of the Road Safety Information System have to be assigned. And, finally, arrangements should be made for training and help-desk facilities.

7. Recommendations

Based on this feasibility study, it is recommended to start a pilot on a Czech Road Safety Information System using the concept of the Dutch road safety information system and the Dutch operating experiences. The pilot could, for example, be carried out by the CDV, in co-operation with SWOV. Since there are no prohibitive restrictions to be expected for developing a successful Czech Road Safety Information System, it is recommended to develop a 'real' prototype in the framework of the new Safety Strategy in the Czech Republic.

To make sure that eventually a system is launched which is attractive and useful for the users, it is recommended to start off with a test phase, offering (a beta-test version of) the system to a restricted group of users for a limited period of time, e.g. six months. The aim of the test phase is to get user feedback on the application (aspects like functionality and ease of use), the contents (issues like selection of subjects and type of information; clarity) and to find out which support is needed and to what extent. Later on, it can be decided, based on the experiences during the pilot and knowing more about the Czech Safety Strategy, to incorporate the Road Safety Information System in that strategy.

References

Brouwer, M. (2003). *A Road Safety Information System for Poland; Guidelines for implementation*. R-2001-15. SWOV Institute for Road Safety Research, Leidschendam.

ETSC (2001). *Transport safety performance indicators*. European Transport Safety Council ETSC, Brussels.

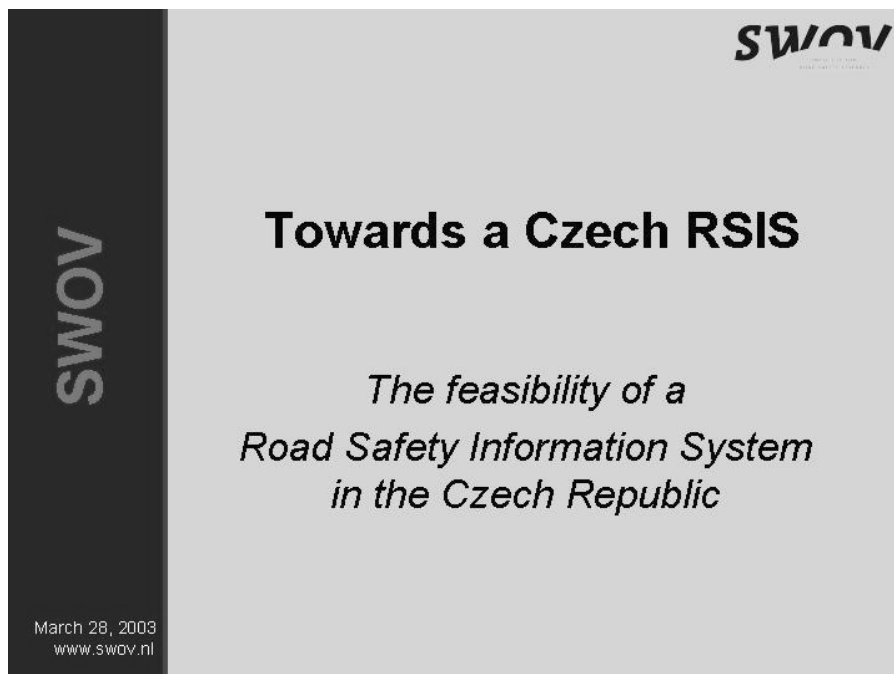
Koornstra, M., Lynam, D., Nilsson, G., Noordzij, P., Petterson, H.-E., Wegman, F. & Wouters, P. (2002). *SUNflower: a comparative study of the development of road safety in Sweden, the United Kingdom, and the Netherlands*. SWOV Institute for Road Safety Research, Leidschendam.

LTSA (2000). *Road Safety Strategy 2010. A consultation document*. National Road Safety Committee, Land Transport Safety Authority, Wellington, New Zealand.

Wegman, F. (2001). *A road safety information system; from concept to implementation*. D-2001-14. SWOV Institute for Road Safety Research, Leidschendam.

Appendix

Presentation by Saskia de Craen at the plenary meeting on March 28, 2003



SWOV

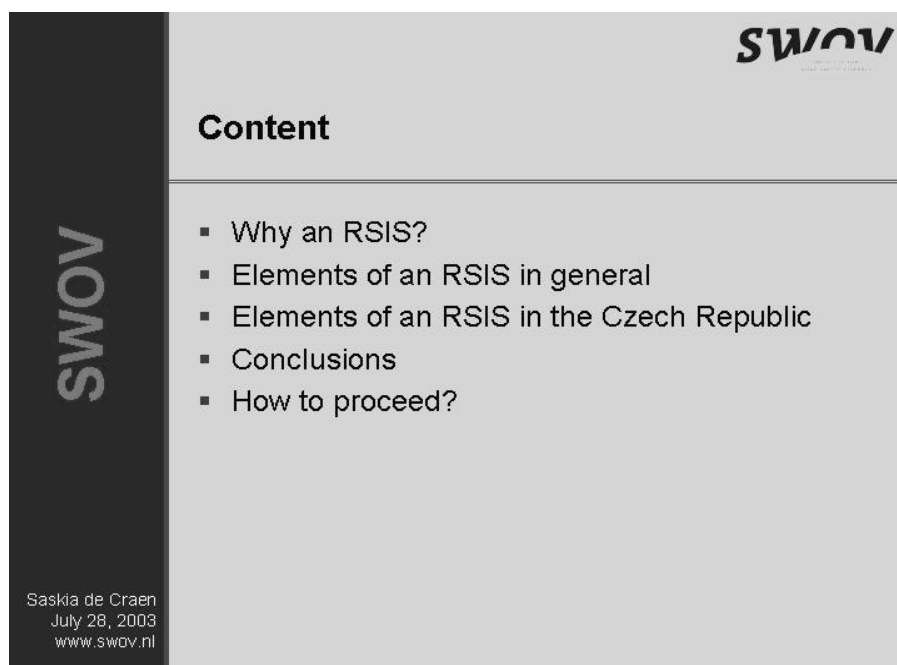
Towards a Czech RSIS

*The feasibility of a
Road Safety Information System
in the Czech Republic*

March 28, 2003
www.swov.nl

SWOV

Sheet 1



SWOV

Content

- Why an RSIS?
- Elements of an RSIS in general
- Elements of an RSIS in the Czech Republic
- Conclusions
- How to proceed?

Saskia de Craen
July 28, 2003
www.swov.nl

SWOV

Sheet 2

SWOV
SWOV is a part of the Dutch Road Safety Board

Why a Road Safety Information System?

SWOV

Questions in the field of Road Safety:

Which effects to expect?

What costs are involved?

What can we learn from...?

How do we perform, compared with...?

Which measures to take?

Where to find information?

Which conclusions can I draw?

Which priorities to set?

Saskia de Craen
March 28, 2003
www.swov.nl

Sheet 3

SWOV
SWOV is a part of the Dutch Road Safety Board

Why a Road Safety Information System?

SWOV

- Answers:
 - Data (numbers)
 - Knowledge
 - Information
- A road safety information system

Saskia de Craen
March 28, 2003
www.swov.nl

Sheet 4

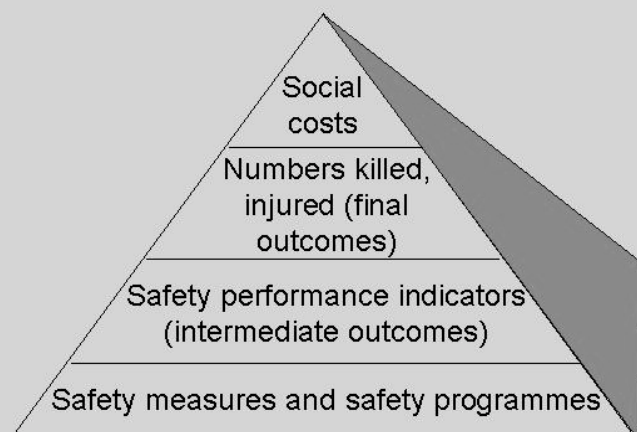
Unique advantages of an RSIS

- Deals with information relevant to policies
- Up-to-date information
- Integration of information from various sources
- The best information available (valid, accurate)
- Easy to use (one stop-shop)
- Tailor made for user
- Data + explanatory text

Saskia de Craen
March 28, 2003
www.swov.nl

Sheet 5

Essential elements of an RSIS



Saskia de Craen
March 28, 2003
www.swov.nl

Sheet 6

Basic requirements of an RSIS: Availability and quality

- Availability
 - Key data (numbers) at all levels
 - Interpretation and explanation of trends
 - Expert knowledge concerning Road Safety issues
- Quality
 - Level of quality needed is dependent on the usage of the data
 - Meta-information

Saskia de Craen
March 28, 2003
www.swov.nl

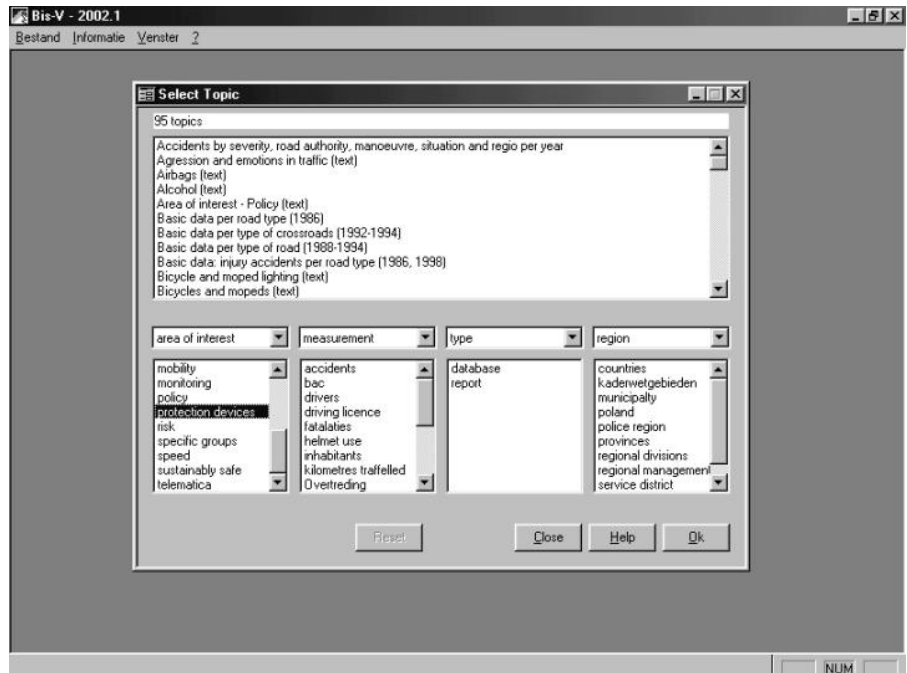
Sheet 7

Structure of the Dutch RSIS

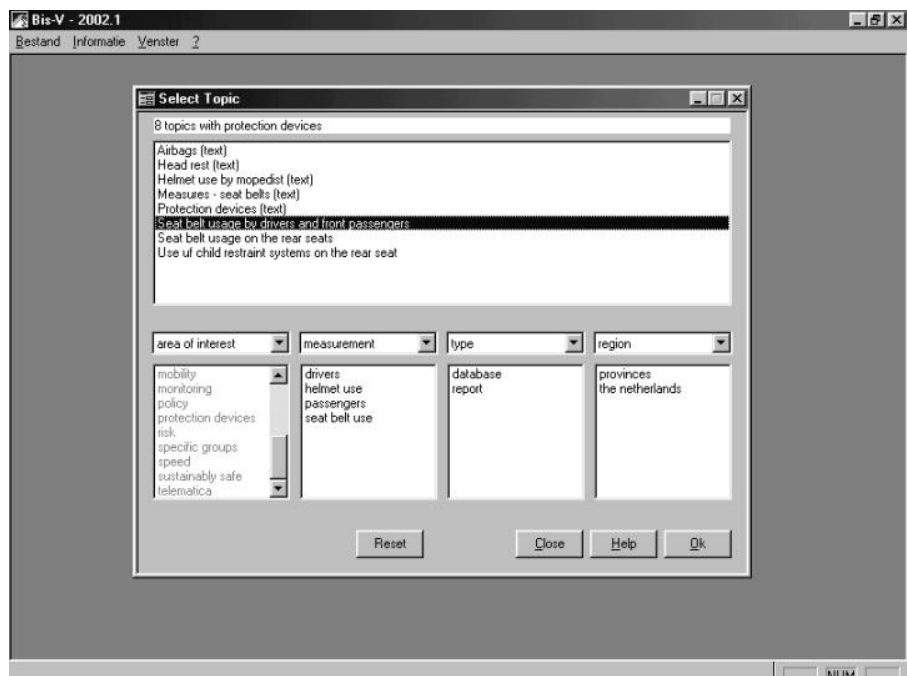
- Different selection boxes which make a selection on personal criteria possible
- Selection and combination of variables by the user
- Key data, interpretation and explanation by experts and information on quality are available in the following way:

Saskia de Craen
March 28, 2003
www.swov.nl

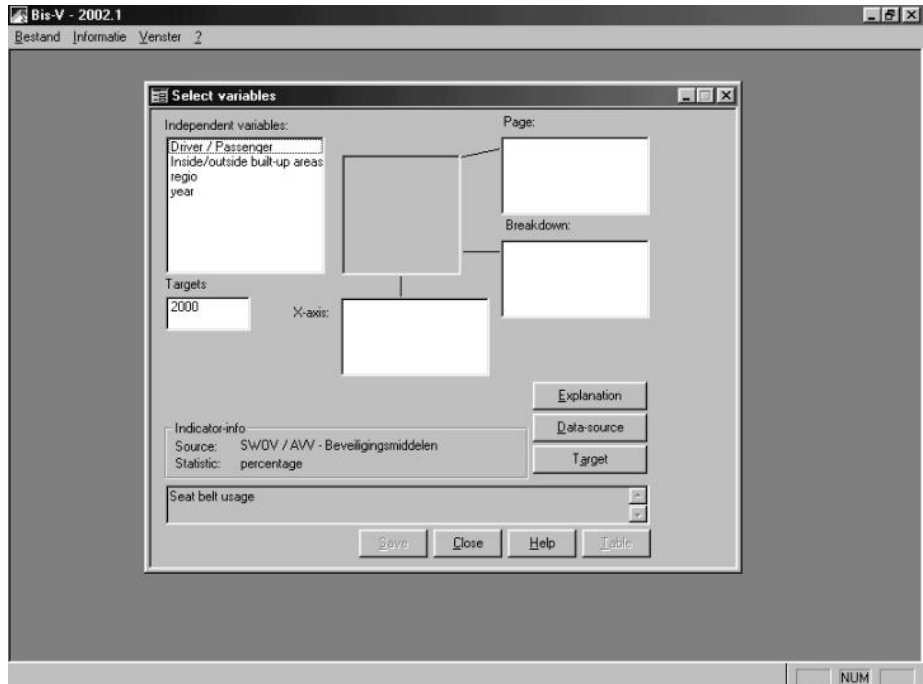
Sheet 8



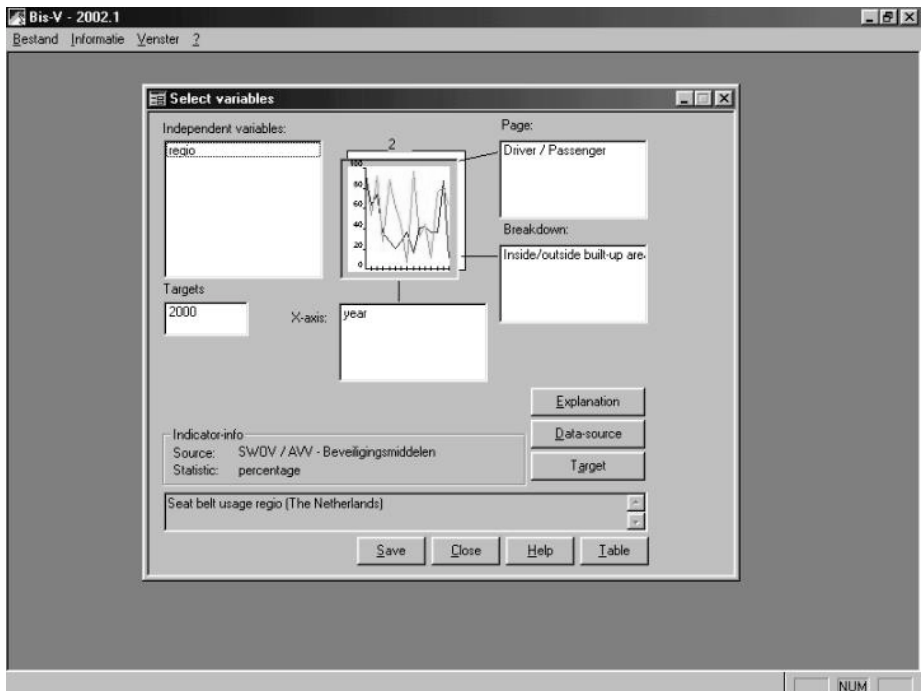
Sheet 9



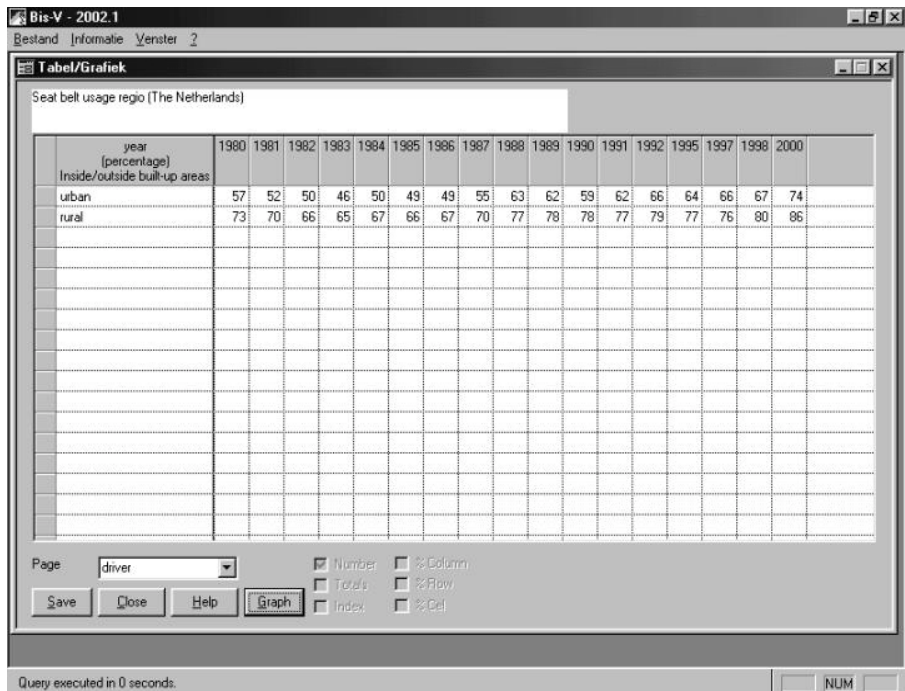
Sheet 10



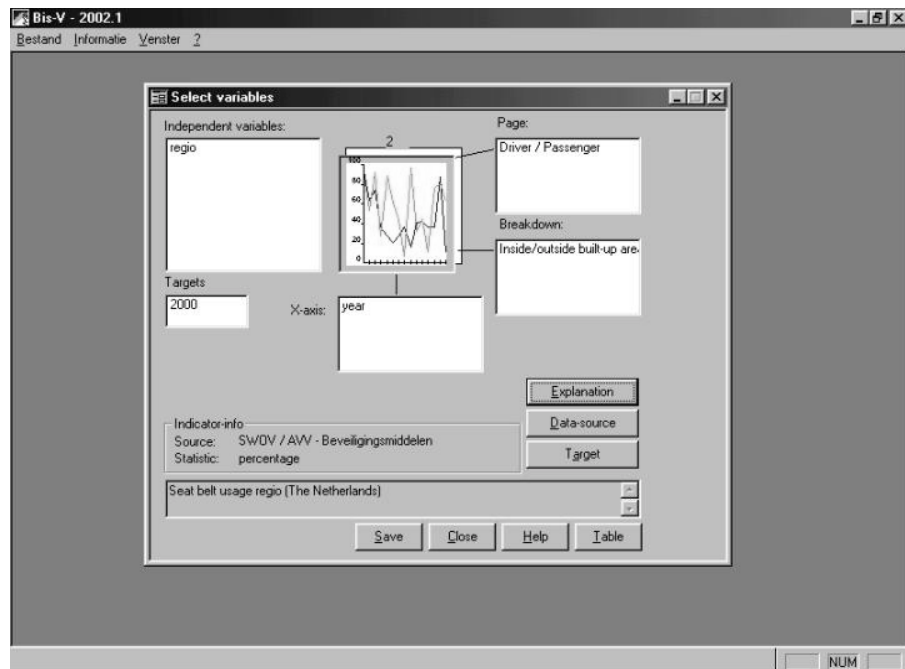
Sheet 11



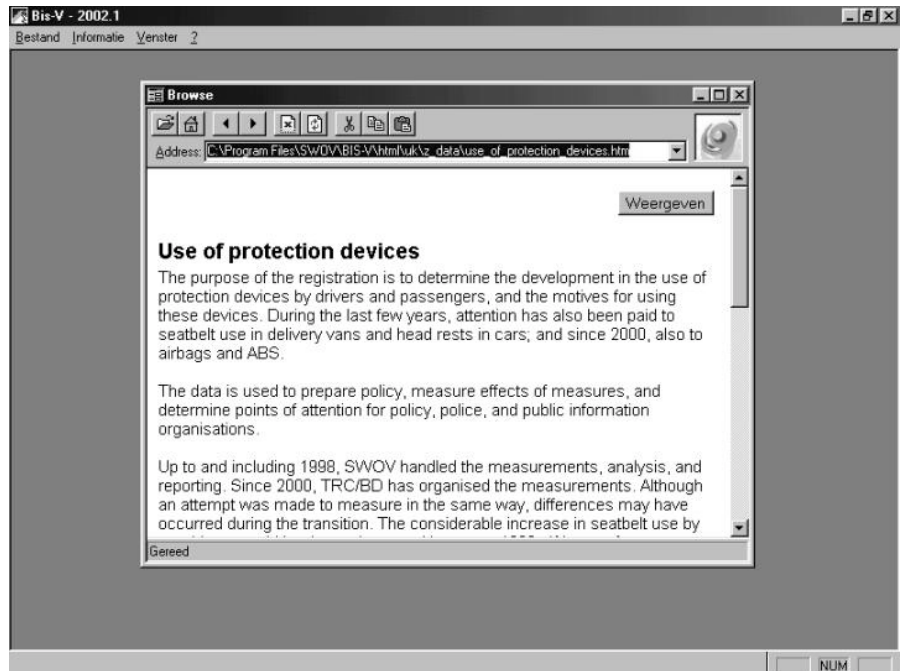
Sheet 12



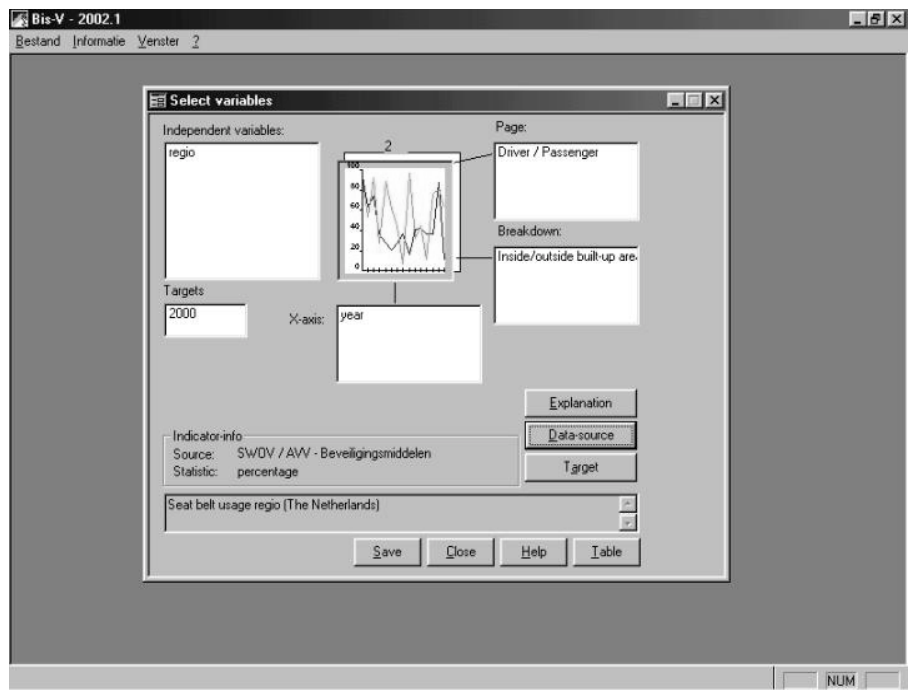
Sheet 13



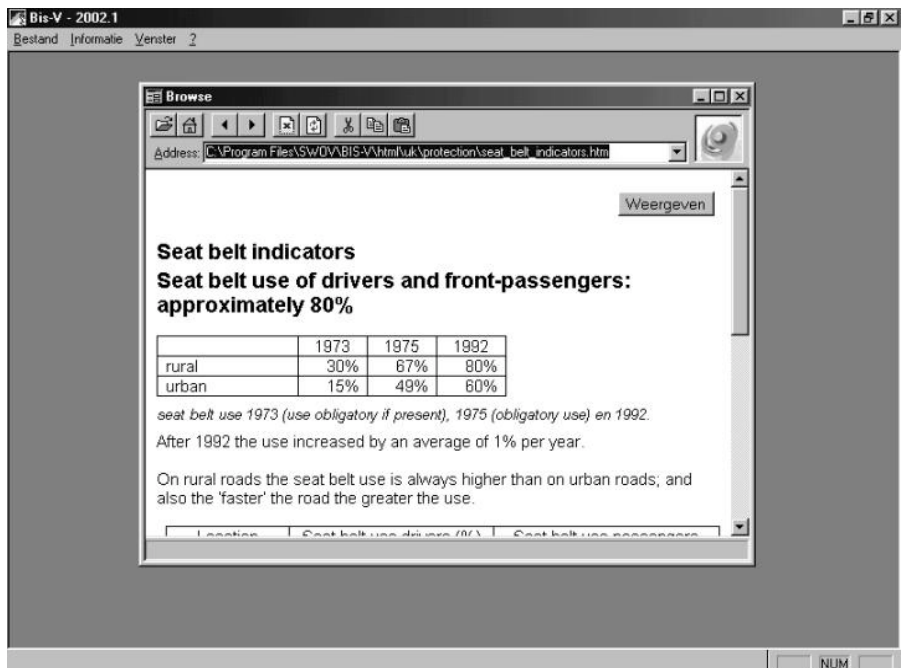
Sheet 14



Sheet 15




Sheet 16



Sheet 17

SWOV



Basic elements of an RSIS in the Czech Republic

1. Final outcomes (Numbers killed, injured)
 - Accident registration
 - Exposure data
2. Safety performance indicators
 - Behaviour (eg. speed, alcohol, seat belts)
 - Vehicles (eg. active safety, passive safety)
 - Road (eg. network quality, design quality)
 - Trauma management (eg. arrival time, quality of medical treatment)

Saskia de Craen
 March 28, 2003
 www.swov.nl

Sheet 18

Basic elements of an RSIS in the Czech Republic

3. Organisational aspects:

- Users
- Technological demands
- Budgets
- Development & Maintenance
- Help-desk facilities
- Ect.

Saskia de Craen
March 28, 2003
www.swov.nl

Sheet 19

Conclusions on availability and quality of information for Czech RSIS

1. Road Safety policies

- Action Plan 2004 and Road Safety Strategy?

2. General information

- Accident information good, however....
- Lack of data on performance indicators
- Expert knowledge on Road Safety is good

Saskia de Craen
March 28, 2003
www.swov.nl

Sheet 20

Conclusions on organisational aspects of a Czech RSIS

- Promising observations:
 - A majority of potential users expressed their interests
 - Technological demands no real problem: web site application is recommended
- Questions to be answered:
 - Limited amount of resources are needed
 - Ownership, organisation and entrance
 - Development of RSIS and maintenance
 - Training and Help-desk facilities

Sheet 21

How to proceed?

- Pilot phase to build a 'real' prototype in the framework of the new Safety Strategy
 - With a restricted group of users
 - With already available data
 - Feedback on the application (functionality and ease of use)
 - Feedback on the contents (selection of subjects and type of information)
- Based on pilot phase results how to incorporate RSIS in Safety Strategy

Sheet 22

Concluding remarks

- The implementation of a RSIS often results in more commitment and efforts in de collection of information
- This will subsequently improve the availability and quality of relevant information
- Users are good ambassadors of further use and dissemination of a RSIS
- A RSIS will often improve the quality of a safety policy, and has a positive effect on reaching road safety targets

Sheet 23

Appendix 1: References

- Wegman, F. (2001). *A Road safety information system; from concept to implementation*. SWOV, Leidschendam, D-2001-14.
- Brouwer, M. (2003). *A Road Safety Information System for Poland; Guidelines for implementation*. SWOV, Leidschendam, R-2001-15.

Sheet 24

Appendix 2: The Dutch delegation:

Mrs. Saskia de Craen
SWOV Institute for Road Safety Research

Mr. Joop Kraaij
Ministry of Transport, Public Works and Water
Management; AVV Transport Research Centre

Mr. Eugène Banach
Ministry of Transport, Public Works and Water
Management; AVW Transport Research Centre

Saskia de Craen
July 28, 2003
www.swov.nl

Sheet 25

Appendix 3: Organizations that were visited

The police academy of the Czech Republic:

Mr. K. Pavhcek
Mr. Zdeněk Kopecký

Police Czech Republic (Dep. Accident data):

Mr. Josef Tesařík

Ministry of Transport:

Mr. František Rochovanský
Dep. of Public Relation and Road Safety
Mr. Robert Štáštny

Mrs. Zuzana Ambrožová

Road and Motorway Directorate Brno:

Mr. Jiří Míšek
Mr. Miroslav Andrés
Mr. Roman Nekula

Saskia de Craen
March 28, 2003
www.swov.nl

Sheet 26

Organizations that were visited (2)

CDV – Transport Research Centre:

Mr. Josef Mikulík
Mr. Jaroslav Heinrich
Mr. Pavel Tučka
Mr. Karel Schmeidler
Mr. Josef Andres
Mrs. Jitka Rokytová
Mr. J. Tecl
Mrs. Simonova

City of Nový Jičín:

Mr. Ivan Týle
Mr. Jiří Raška

Road and Motorway Directorate Ostrava:

Mr. Petr Mahdal

Saskia de Craen
March 28, 2003
www.swov.nl

Sheet 27