

Measure title: **Security Action Plan for Suburban Railway in Greater Stuttgart**

City: **Stuttgart**

Project: **CARAVEL**

Measure number: **08.12**

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## **A Introduction**

### **A1 Objectives**

The measure objectives are:

- **Improve PT security through a comprehensive strategy.**
- **Substantially improve the subjective feeling for safety and security** focused on PT user groups like young, female, and elderly people.
- **Implement measures to ensure the reached high level of safety and security** on a continuing basis.

### **A2 Description**

Main aim of this measure is to improve security in public transport, especially on a suburban railway line by designing an integrated transport security concept for the suburban railway in Greater Stuttgart, in particular by the development and conduction of a prototype workshop for train and (night) bus drivers. Efforts were coordinated with the railway operator and the bus companies to prepare the workshop design. Those buses are operating during the nights on weekends when the regular railway service is terminated. Passenger interviews were made to give a basis for a first draft of a security concept. Security aspects from the viewpoint of suburban railways focused on the FIFA World Championship 2006.

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## **B Measure implementation**

### **B1 Innovative aspects**

**Innovative Aspects:**

- New conceptual approach
- Use of new technology/ITS
- New mode of transport exploited
- Targeting specific user groups
- New economic instrument
- New policy instrument
- New organisational arrangements or relationships
- New physical infrastructure solutions
- Other – *please describe*

The innovative aspects of the measure are:

- **New conceptual approach** – The design of a wide security plan for PT passengers aiming at specific user groups in suburban railway, highlighting different means of communication and underlining social control without negotiating existing technical solutions and assistance (like video surveillance e.g.) is unique in the separated field of responsibilities for safety and security. As

in Greater Stuttgart there are buses for the weekend substituting the suburban railway at special times, this scheme was applied in a first step also for transport by buses and may serve as an approach for an integrated security concept for the whole PT in the area.

- **Targeting specific user groups** – Improve PT security through a comprehensive strategy. Substantially improve the subjective feeling for safety and security focused on special PT user groups like young, female, and elderly people.

## B2 Situation before CIVITAS

Safety and security for passengers is to be considered in a standard way in Stuttgart PT. Health and integrity of passengers are subject to the same conditions like anywhere in public but up to now there are no integrated security plans adapted. Different partners like the “traffic association”, the PT operator or the police are responsible for security and are working on special segments of the transport chain. The conception of an integrated action plan is missing. Casual events could have an unforeseen effect on public opinion and can make criticism very unobjective and unhelpful.

Focus of the work should be for example the situation in the evening. While the majority of passengers feel safe and secure in the stations as well as in the vehicles during day time, there is a great difference in the evening – especially for female passengers.

The transport chain, consisting of the three sectors station, vehicle and surroundings that are each represented by different responsibilities, is a synonym for different approaches to the subject as each group has its own definition about safety and security: local authorities for the public way to the station, private companies for the trains and the stations inside. There exists a variety of solutions for safety and security on each part of the journey, but there is no integrated view to specific target groups.

The social control, for example by the tool of face-to-face communication between the train driver (in his separated driver cab) and the passengers in the compartment just beside the driver is to be established even in older trains where this is quite complicated. Up to now both parties are not used to this kind of communication and especially passengers do not benefit from it.

## B3 Actual implementation of the measure

The measure was implemented in the following stages:

**Stage 1: Workshop design (01.12.2005 – 31.10.2008)** – Workshop design and assessment of user needs of the target groups. A set of expert workshops to improve the possibility of addressing specific user groups /customers individually in combination with a special training for PT operators staff, founded on the results of passenger interviews, to assure in the long term.

**Stage 2: Workshop for bus drivers (April 2007)** – Participants: 11 participants, 11 of 12 operating bus companies participated; date: 24 April 2007. Concrete elements (tools) were: Behaviour-communication (handling of conflicts, basic knowledge and concrete action approaches) de-escalation (behaviour in extreme situations (emergencies)), legal component, (intervention possibilities, liability), external support, drugs/alcohol (effects, how to behave towards passengers that consumed drugs, impacts, how to handle passengers that consumed drugs, factors that improve the situation).

**Stage 3: Workshop for train drivers** (beginning in November 2008 – long term integration to the regular training programme) – Approx. 300 traction vehicle drivers were trained in small groups of approx. 10-12 participants. The topics were among others like official regulations and guidelines, company sets of rules, braking

regulation, etc. the conclusions of the security action plan: better audible and visible presence especially in the evening, awareness raising towards passenger needs concerning safety & security and clear separation of additional service aspects from assigned duties.



Fig. 1: Cover page/last page of train driver training brochure (source: Verband Region Stuttgart, 2008)



Fig. 2: Last page of train driver training brochure containing feedback form (source: Verband Region Stuttgart, 2008)

**Stage 4: Implementation of integrated security concept for public transport by suburban railway system in Greater Stuttgart.(01.10.2006 – 31.10.2008 2008)**

Based on the deeper analysis of the supposed situation / problems the existing components from the PT operator, the traffic and fare association and the counties have been linking up with the activities of the Verband Region Stuttgart. In succession the decision was made to improve the technical hardware (video and sounding) for better information and surveillance. The recommended course of action including the refined monitoring, the institutionalised passenger dialog and the above mentioned network approach, is the general basis for the revision of the classical information and instruction media.

**Stage 5:** Launch of media set using the results of the workshops (01.02.2006 – 31.12.2008). Different media products like brochures and flyers to inform the target groups about the aims of the project and the results of the workshops, e.g. personalized folder for train drivers 10/2008, revision of the instructional material(s) for young PT users in 11/2008, a general information brochure to improve orientation focusing on safety and security on trains and stations which includes female and elder passengers.

Personal feeling	Men (%)	Women (%)
Feel unsafe and insecure during day time – vehicle	3.7	8.5
Feel unsafe and insecure during day time – station	8	9.3
Feel unsafe and insecure during night / evening – vehicle	21.5	35.9
Feel unsafe and insecure during night / evening – station	29.5	45.9

Fig. 3: Personal feeling on safety and security - men/women, Source VRS 2003

From the core statements of Fig. 1 all interviewed persons obviously feel more unsafe and insecure during night/evening times. Generally women feel more unsafe and insecure as men. The subjective feeling of unsafety and insecurity is higher at the stations than in the vehicles for both men and women.

## B4 Deviations from the original plan

The deviations from the original plan comprised:

- **Deviation 1 Launch of media set using the results of the workshops -** (01.06.2008 – 30.09.2008) was extended until Dec. 2008.
- **Deviation 2 Workshop train drivers** – delayed until November 2008. Deviation due to Deutsche Bahn – internal reorganisation/initial public offering of the organization. Finally DBRegio took over the conception for in-house workshop design. Last but not least the situation of train drivers' strikes during 2007 hampered the whole process considerably. The workshop was postponed to March/April 2008. However, in Spring 2008 Deutsche Bahn cancelled all non-obligatory staff trainings for a non-defined period. The solution was to connect the workshop to the obligatory staff training and to produce a print media of the training including feedback form for the train drivers. At the beginning of November 2008 these train driver trainings that were completely stopped in Spring 2008 were taken up again. Finally, the core elements of the commonly worked out subjects (between Deutsche Bahn and Verband Region Stuttgart within CARAVEL) will be taken up as permanent elements into the training programme.

## B5 Inter-relationships with other measures

The measure is related to other measures as follows:

- **Measure 11.4 Sustainable mobility marketing in Stuttgart.** – Security action plan supports mobility management and vice versa.

## C Evaluation – methodology and results

### C1 Measurement methodology

#### C1.1 Impacts and Indicators

Evaluation Category	N°	Indicator	Units	Source of data	Methodology for indicator construction (survey, modelling, etc)	Baseline Date
Society	13	Awareness level	According to the number of interviews Number of criminal acts	Verband Region Stuttgart Federal Police	Survey (interview): 6 interviews per year with PT users Statistics: Criminal acts at light rail stops	01/2007
Society	14	Acceptance level		Verband Region Stuttgart Stuttgart Transport Tariff Association VVS	Survey (interview): 6 interviews per year with PT users	01/2007
Transport	17	Perception of PT security	Number of criminal acts	German Federal Police	Survey (interview): 6 interviews per year with PT users Statistics: Criminal acts at light rail stations	01/2007 2006
Society		Gender aspects			Survey (interview): 6 interviews per year with PT users	04/2007
Society		Users/operators' feedback			Structured interview/ feedback about the measures	04/2007

Detailed description of the indicator methodologies:

- **Awareness level** – Survey (interview): 6 interviews per year with PT users. In an interview the importance / the ranking of the subject gives an indicator for awareness
- **Acceptance level** - Survey (interview): 6 interviews per year with PT users. The influence of the personal estimation on the decision to use PT or to seek different means of transport
- **Perception of PT security** - Survey (interview): 6 interviews per year with PT users: Personal estimation of the target groups
- **Gender aspects** – Survey (interview): 6 interviews per year with PT users. Comparison of existing indicators for male and female passengers focused on the subject feeling on trains and stations.
- **Number of criminal acts** - Statistics from the federal police (every year)

- **Users'/operators' feedback** - Structured interview / feedback about the measures (after the Workshops for bus drivers (4/2007), and train drivers (starting in 10/2008 by adding a feedback form to the personalized train drivers' folder).

### **C1.2 Establishing a baseline**

For suburban underground specific quality surveys are practiced for the regional authority together with the local PT operator DB Regio by an external company since 2003 to get a subjective and an objective process evaluation. The results are part of the remuneration system and provide an incentive for good quality. While the procedure for the night bus is quite similar it is done with less time and effort subject to the number of passengers.

Surveys build the basis for the yearly statistics available since 2002. These are conducted by the transport and tariff association Stuttgart (VVS) based on at least 640 interviews with real passengers per year and at least 220 visited stations per year.

Since 2006 data on criminal acts in Stuttgart (and the region) are available from the Federal Police; the data are distinguished according to kind of criminal act and location (stop, station).

### **C1.3 Building the business-as-usual scenario**

Safety and security are basic conditions for PT users. It means that passengers expect a certain level, which should not differ too much from the perceived level in other public places, slight fluctuations are accepted. In addition, the detected differences, for example, between night and day are usually not differentiated according to the means of transport (e.g. suburban underground, regular train, night bus).

Altogether in the long-term safety and security are perceived to be on a constantly good level, i.e. a deterioration is not perceived by PT users. Such big public events like the FIFA World Championship in 2006 or the UCI Road World Championship in 2007 slightly distort the discussion of safety and security in PT, as it is a more frequently topic in public discussion as usual.

Although a reliable prediction about the further development is not possible as even "small" transgressions could cause a broad discussion e.g. in public media together with the corresponding perception by the customers; big deviations are not expected for the future. The measure is not expected to have a direct measurable or quantifiable effect, even if the developed set of tools is more precisely adjusted to individual problems and situations.

The reached level of safety and security in trains and at stations is stable and has a clear range since 2003 (see Fig. 5 Passengers' satisfaction with suburban railway - school grades). So even if a precise forecast is not possible big deviations are not expected for the future.

## **C2 Measure results**

The results are presented under sub headings corresponding to the areas used for indicators – economy, energy, environment, society and transport.

### **C2.4 Transport**

**Indicator: Perception of PT security**



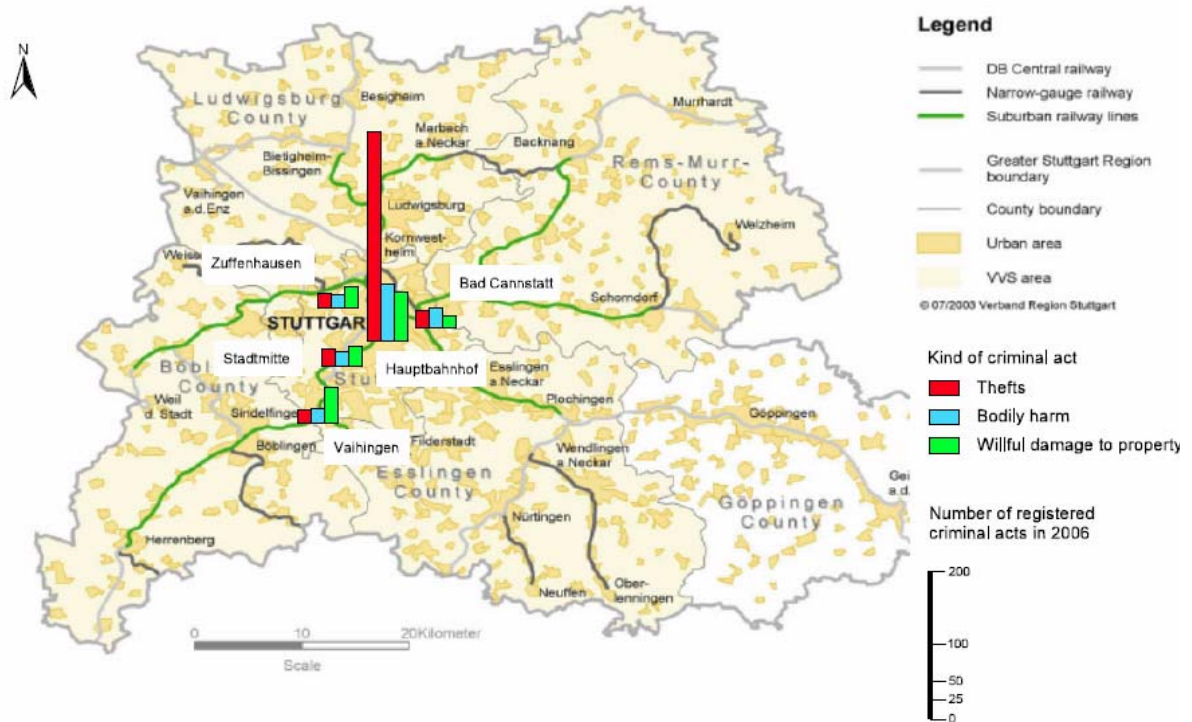


Fig. 4 Criminal acts at the most important light-rail stations in the Greater Stuttgart Region 2006

Source: Map: Verband Region Stuttgart (2006) and SSP-Consult (2007); Data: Federal Police Office (2006).

The above figure shows the three most important criminal acts located in Greater Stuttgart, recorded for the year 2006. Only offences which are reported within a railway station of the federal railway of Germany (Deutsche Bahn), in this case these are the main station and the stations of the suburban railway, and commuter trains are mentioned.

As expected, most criminal acts are reported at the most frequented stations like the main station and Stuttgart-Bad Cannstatt. Obviously the main station shows a concentration of thieveries, whereas in the peripheral stations dominates wilful damage to property or bodily harm. Based on a statement of a federal police officer, the total number of criminal acts in 2007 has increased only very little since the previous period (2006).

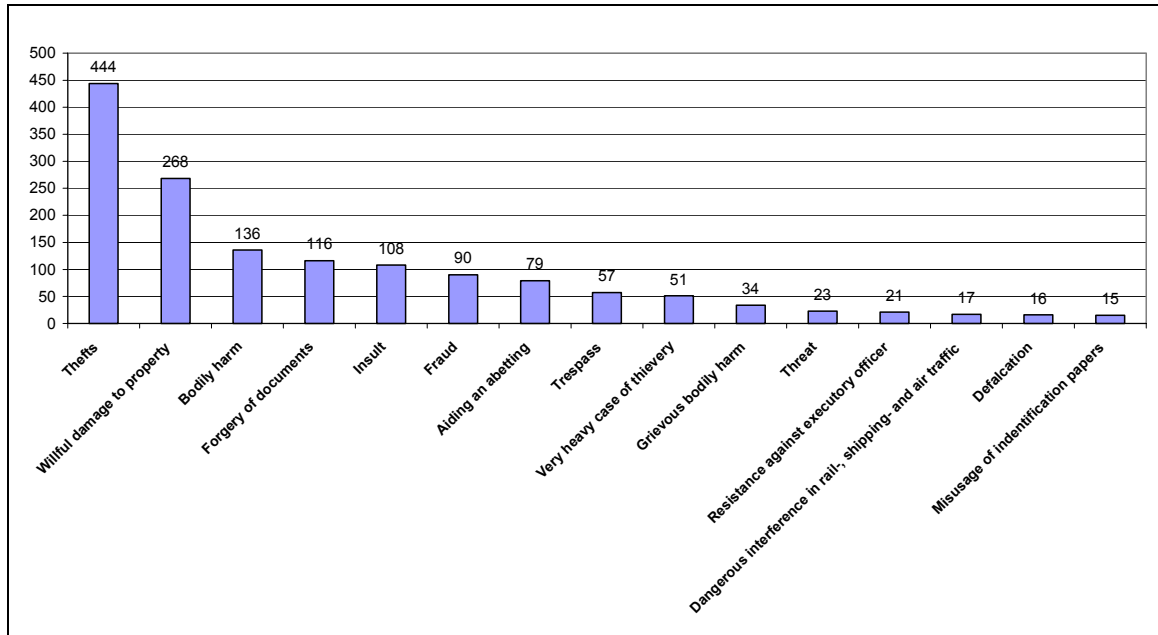


Fig. 5 Number of criminal acts in Stuttgart (City), 2006 (the 15 most frequent)

Source: Federal Police Office (statistics 2006)

Fig. 5 shows the 15 most criminal acts within the municipal border of Stuttgart in absolute numbers. It should be pointed out that again only offences in commuter trains and suburban railway stations are recorded.

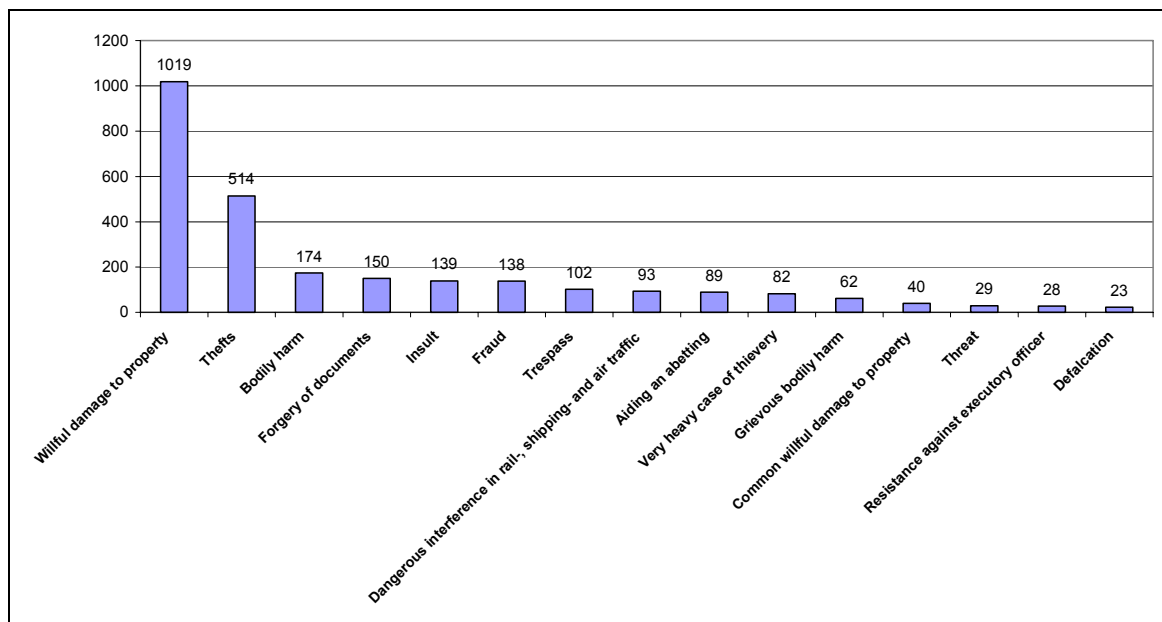


Fig. 6 Number of criminal acts in Greater Stuttgart (Region), 2006 (the 15 most frequent)

Source: Federal Police Office (statistics 2006)

In Greater Stuttgart, the number of wilful damages is nearly twice as high as the other criminal acts recorded.



### C2.5 Society

#### Indicator: Awareness level

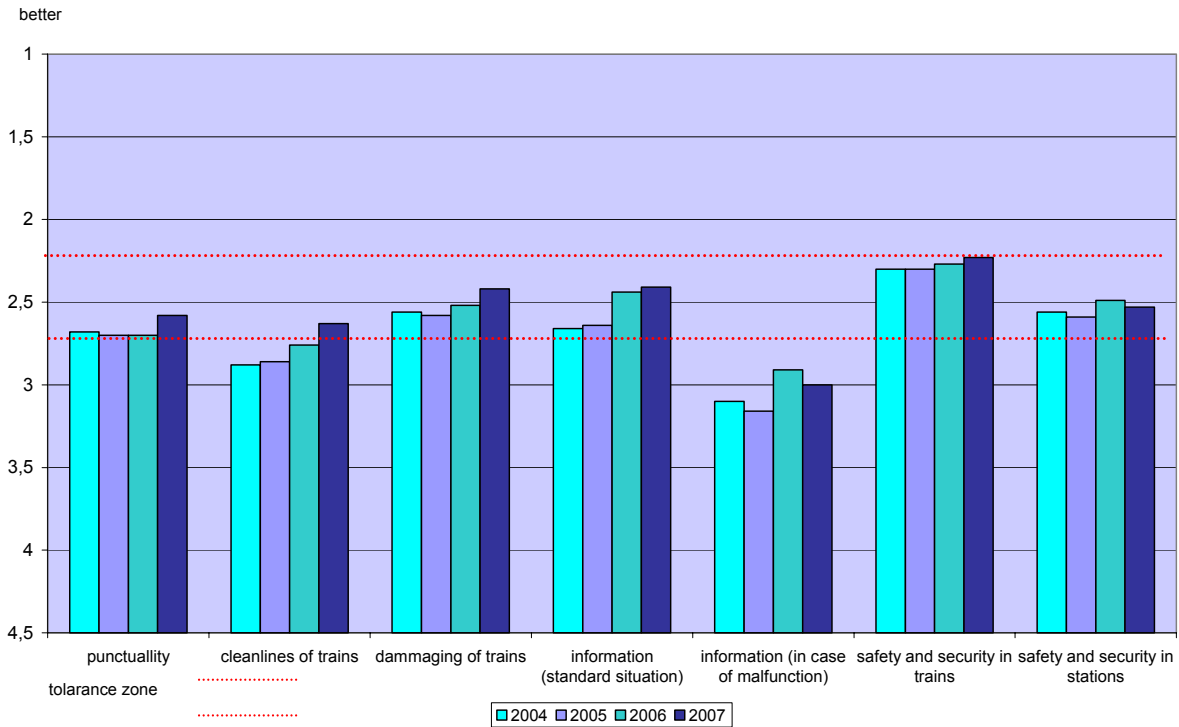
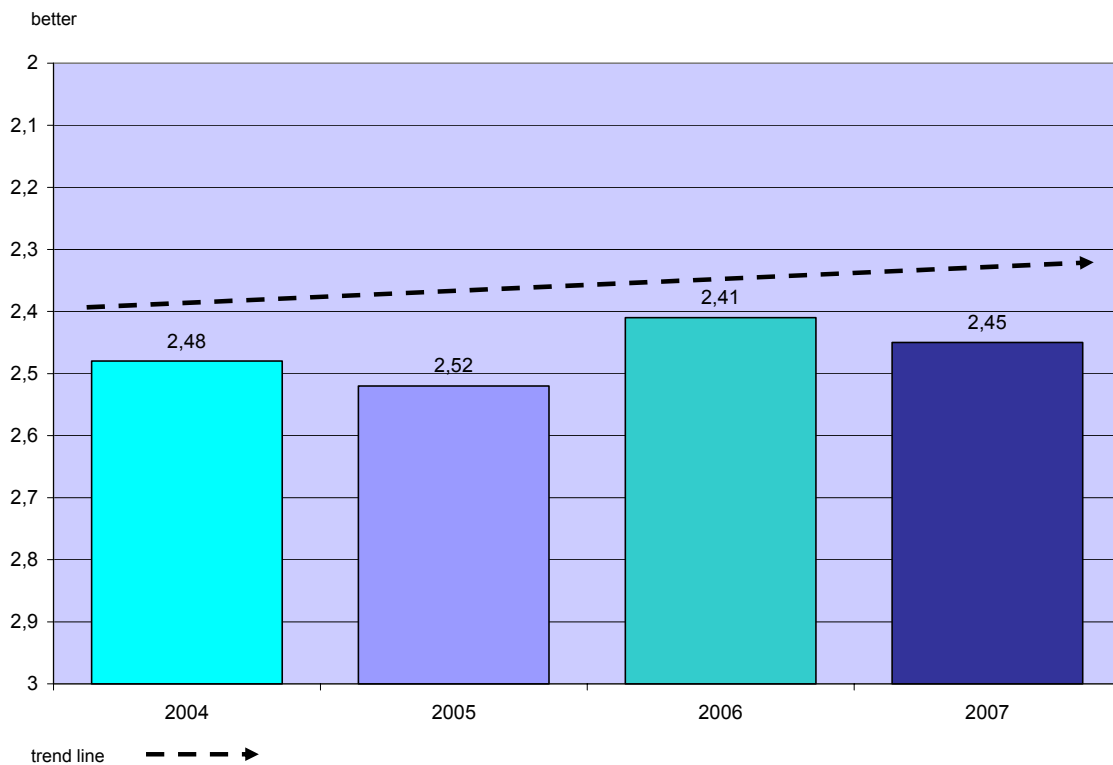


Fig. 7 Passengers' satisfaction with suburban railway – school grades (1= very good, 6 = very bad)

Source: Verband Region Stuttgart (2007).

In a yearly survey, the customer of the suburban railway system in Greater Stuttgart checks the passengers' satisfaction of its transport system. Most important in terms of the measure is the assessment of safety and security. Keeping in mind, that feeling "safe" and "secure" is a subjective perception and is often recognized worse than the situation is in real, the results are satisfying.

**Indicator: Acceptance level**

*Fig. 8 Passengers satisfaction – complete system – school grades (1= very good, 6 = very bad)*

Source: Verband Region Stuttgart (2007)

Altogether, the passengers' satisfaction has been on a constant level for the suburban underground system in Greater Stuttgart since 2004. The trend line shows that there is even a slight improvement. Due to the fact that most of the single aspects have continuously received better results during the last four years (Fig. 4) the complete product is well estimated by the customers.

**Indicator: Gender aspects**

Even when passengers' satisfaction regarding safety and security is on an average level during daytime, it is very important to get a deeper analysis especially in the evening and night.

The figure shows that for all passengers the situation is not satisfying in the evening – for women it is even worse. Therefore particular attention should be paid to personal safety and security focused on the trains and stations of the suburban railway net.

Reasoning the mentioned facts each measure improving safety and security especially at the stations will gain recognition by all passengers – in particular female PT users.

Passenger satisfaction differentiated after male/female/time of day		2006		2007	
		male	female	male	female
Train	daytime	2,3	2,59	2,62	2,73
	evening	2,89	3,53	3,14	3,54
Station	daytime	2,43	2,72	2,69	2,86
	evening	3,03	3,65	3,28	3,63
number of interviews		291	405	163	203
period / date		18.01. – 16.12. 2006		15.01. – 17.12. 2007	

Fig. 9 Passengers satisfaction – safety and security – male-female and daytime-evening

Source: Transport and Tariff Association Stuttgart (VVS), 2007.

Passenger interviews made by telephone show the above results on a 5- point-scale from (1) completely satisfied / good to (5) dissatisfied / bad

### Users/Operators' feedback

#### Workshop for bus drivers (night bus driver module)

- Time: 24 April 2007, one-day workshop.
- Participants: Night bus drivers (11).
- Subjects: Behaviour-communication-conflict situations-emergency cases; concrete approaches for action.
- Professional trainer: *combus* training.

#### Success:

- 11 of 12 night bus operators participated.
- Workshop is one of the first that fulfils **new EU standard** for transport operators/accepted as bus driver qualification needed for license prolongation, serves now as model.
- Implementation of EU standard promoted within a European project (no costs for participants).

The number of night bus passengers has considerably increased during the past few years. The service will be therefore further extended (up to now only on weekends). The Verband Region Stuttgart decided in November 2008 to maintain the operation of the night buses until 2012 at least.

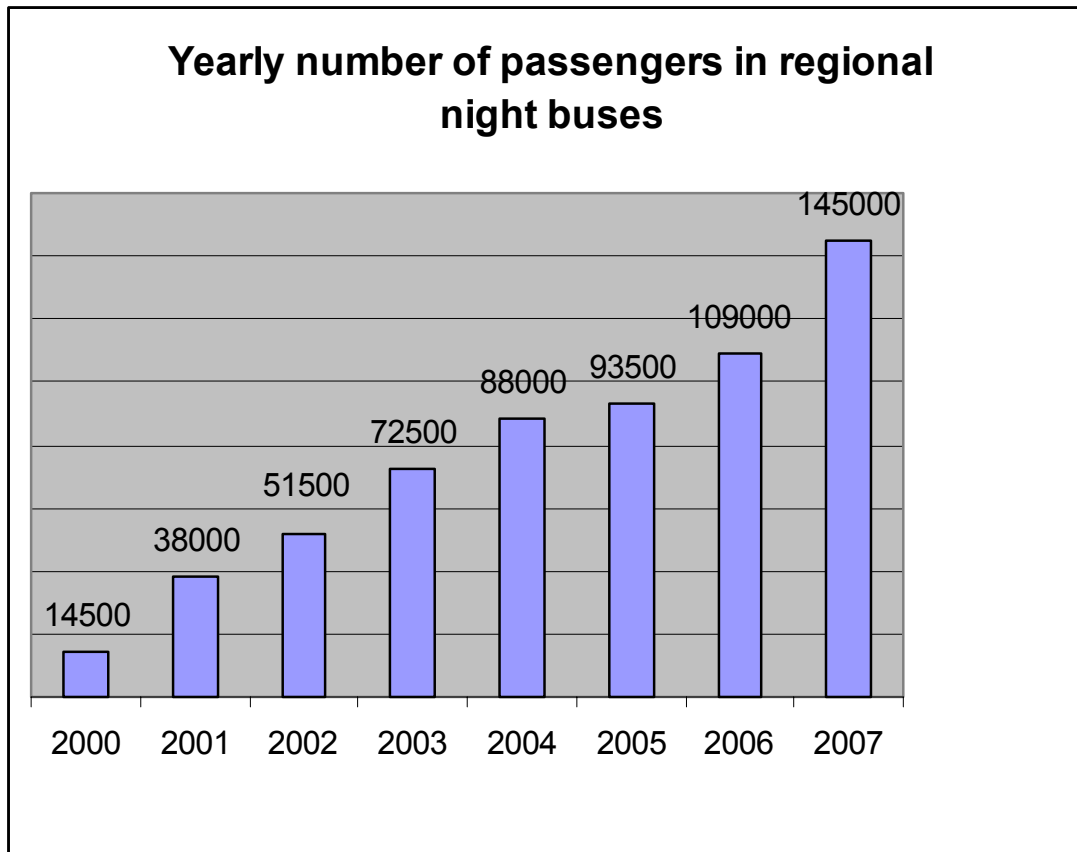


Fig. 10: Yearly number of passengers in regional night buses (Source: Verband Region Stuttgart)

#### Workshop for train drivers

- Starting in November 2008 the adaptation of the regular training measures for the train drivers was implemented, using the essential parts of the design of training modules which has been developed together with the Verband Region Stuttgart.
- Participants: all train drivers (300) of the suburban underground within Stuttgart Region take part in small groups (10-15).
- Subjects: showing more presence towards passengers, clear differentiation of technical duties and service oriented behaviour, improvement of communication skills to de-escalate conflict situations as well as concrete approaches to avoid irritations, appease standard situations by personal presence in the forefront of any personal disturbance of passengers.
- Professional trainer: Internal trainer.

#### Success:

- Long term integration of the subject to the regular drivers' curriculum.
- Personal response during the discussion about the developed feedback form by train drivers and the responsible supervisor.
- Feedback form itself bundles the essential substance of the interaction train driver-passenger.

#### Special target groups (young, women, and elderly)

Even if the subjective feeling about safety and security of young female passenger is evidently worse than that of all other pt-users, specific information could be suggestive of the idea that public transport is less safe for that group. General information for all passengers

can improve orientation and decrease insecurity also for that user group and will diminish associated behaviour like avoiding public transport in the evening or night.

Publishing of information media like flyers:

- orientation flyer for passengers with reduced mobility and handicapped people (4/2007)
- flyer with common information about safety and security, better orientation, amicable behaviour with other passengers (design 11/2008 – published 1/2009), comportment in critical situations and operational disturbances including practical advices for women and elderly passengers



Fig. 11: Brochure barrier-free mobility (elderly/disabled); (Source: Verband Region Stuttgart)

**C3 Achievement of quantifiable targets** (will be done at the end of the evaluation)

No.	Target	Rating
1	The security concept for suburban railway comprises 6 suburban lines and about 330 000 passengers per day from Monday to Friday. <ul style="list-style-type: none"> <li>• The security concept for suburban railway comprises 6 suburban lines and about 330 000 passengers per day from Monday to Friday (a passenger classification according to gender and age result from the survey). A set of questions exists that was prepared for the interviews and can be used regularly or on special demand.</li> </ul>	
2	Passenger classification according to gender and age (set of questions prepared for the interviews can be used regularly or on special demand).	
3	Increase/stabilize percentage of suburban railway passengers feeling safe and secure at stations and in vehicles, especially female passengers in the evening and at night, should increase or at least be stabilized. More detailed data collection focused on real needs and wishes of the target groups found in the workshops (basis for the security action plan). <ul style="list-style-type: none"> <li>• The different workshops and media themselves can be enhanced if necessary and will ensure on the long range the results of the interviews about the subjective perception of safety and security in PT.</li> <li>• The lasting involvement of other partners, such as local police, local authorities, education and youth services, the traffic association, the PT operator and the responsible partner for the stations will prove the grade of integration of these tools and ideas.</li> </ul>	
<p><b>NA = Not Assessed    * = Not achieved    ** = Achieved in full    *** = Exceeded</b></p>		

## C4 Up-scaling of results

The improvement of the subjective feeling of safety and security should be done on two classical fields: a) within the train b) on the station itself and the way passengers can reach it. Following the results of the detailed analysis coming from this measure (see Fig. 12 *Passengers satisfaction – safety and security – male-female and daytime-evening*) the regional parliament decided to invest more than 1.6 million Euro in new video surveillance at all stations of the suburban railway net in Greater Stuttgart. Each station will be equipped with web cameras for video surveillance together with an improvement of the sounding of the stations. Announcements and passenger information especially in case of malfunction of the transport system can be done more precisely – the simultaneous effect of an improvement of safety and security can be facilitated by the centralized automatic monitoring of all these video cameras by national police. A special Coordinating Office will be installed with cooperation of the German railway company for stations' infrastructure "DB Station & Service" and the national police. Even if an area-wide coverage of the whole station is not possible the focus on the main access points will have good prospects of success.

An additional equipment of the trains with video cameras could be done during the regular renewal of trains – although it should be set for medium priority.

Another approach for more safety and security is the recruiting of additional security forces for the evening and the night time. Good results were reached in the past with specially trained personnel who could do the ticket control during their patrol. With regard to the running time intervals of 30 minutes for the evening and the problem of transport logistics from one station to the other, an engagement seems more effective inside the trains, even if the problem is not so evident there.

Among others we have been collecting experience in the last few years with two measures that are designed to close the gap between personal, private engagement and the professional standard of cleanliness and damage-free equipment established by the operator of the stations DB Station & Service AG:

1. The so called "public transport assistants" are especially looking for the appearance of the station. They help to keep the station clean and on their job they will do a first investigation of damaged equipment at the station and the surrounding. It is a kind of provision of a job for unemployed by the national employment agency.
2. A patronage by volunteers for a specific station is a second project which is on the same hand a successful tool to complete the above mentioned activity. To assure the good results and to stabilize them a kind of mentoring on county level could be installed for the future like it has been done in the region Rems-Murr-Kreis.

## C5 Appraisal of evaluation approach

to be done (at the end of the evaluation)

## C6 Summary of evaluation results

The key results are as follows:

- **Key result 1** – description text description text description text description text description text description text description text
- **Key result 2** – description text description text description text description text...

to be done (at the end of the evaluation)



## D Lessons learned

### D1 Barriers and drivers

#### D1.1 Barriers

- **Institutional barrier** – Reorganization/privatization of Deutsche Bahn AG caused delays of the project due to changes of competencies. Strategy for overcoming: to avoid dependency on a single local transport operator there are regional and national contacts which helped to assure the expected quality of training. Nevertheless, the workshop for train drivers had to be postponed, which had, however, no substantial impact on the project, as the measure was originally planned to be finalized in 2007 already.
- **Organizational barrier** - As a result of exclusive contracts between the actual partner DB AG and the supplier for the interviews there was the risk of some restrictions for additionally needed information. In case of non-specific responsibilities it would have been necessary to charge another company with the interviews on a common basis, adaptable to existing investigations. With regard to this situation additional efforts for harmonization with the partner have been done up to now.
- **Organizational barrier** - The situation of train drivers' strikes during 2007 hampered the whole process considerably. The workshop for train drivers was postponed to March/April 2008. A pilot workshop was designed at the end of 2007. However, in Spring 2008 Deutsche Bahn cancelled all non-obligatory trainings for an un-defined period after the strikes. The solution was to connect the workshop to the obligatory staff training courses and to produce a print media of the training including feedback form for the train drivers.

#### D1.2 Drivers

- **High public awareness** - after press releases concerning (negative) incidents in the context of PT means, such as incidents concerning sexual harassment of women, violence, vandalism etc.
- **Big events** - like FIFA World Championship in 2006, which focused the subjects of security in general as well as passenger security.
- **Training of personnel (drivers)** – i.e. bus and train drivers to increase competences in critical situations and to raise awareness of staff towards passenger needs in terms of security (individual perception of security). The related marketing actions helped to raise awareness towards the subject on both sides (transport operators and public transport users).
- **Marketing activities** - (brochures, press releases) - on positive developments (passenger satisfaction) concerning security, punctuality, cleanliness etc. (yearly surveys among passengers with positive results concerning also subjective feeling of security).

## D2 Participation of stakeholders

- **Transport operator – operator of rapid transit trains (Deutsche Bahn AG).**
- **Regional bus operators**, night bus operators
- **Train drivers, bus drivers**
- **Women** – Organisation of the Stuttgart Region called FrauenRatschlag
- **Disabled/elderly persons** – Organisations for seniors and disabled persons were consulted during the process.
- **Media** - local press was involved to special workshops with public attendance (women, elderly/young people).

## D3 Recommendations

- **Recommendation 1** – Apart from other activities the high level of safety and security should be expanded into the contractual level between the responsible local authorities and the PT operator.
- **Recommendation 2** – The periodic updating of the developed media should be accompanied by a regular monitoring of the subjective feeling about safety and security of passengers. Ideally structured to age, gender, place and time of the passenger and the related itinerary.

## D4 Future activities relating to the measure

The accumulated material will be re-processed to be published on the website of Stuttgart Regions suburban underground [www.s-bahn-region-stuttgart.de](http://www.s-bahn-region-stuttgart.de).