SIAM
Security Impact Assessment Measures

WP 3

Impact analysis on criminal actions

Deliverable D 3.2
Local Security Technology effectiveness report

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Summary

The security situation in public rail transport systems is, in contrast to airport security, being described by expertsd as quite good and even becoming better. A major objective in security planning is the increase of passenger's perceived degree of security, which is thought to be impacted by a large number of factors ranging from individual experiences, the atmosphere of stations and vehicles and the presence of public rail transport personnell. Being an open infrastructure system, public rail transport system are much more difficult to control than airports. A comprehensive assessment of SMTs in this context needs to address the issue of individual perception of security.

1. Introduction

1.1 Objectives

The objective of the report is to gain a first-hand understanding of what frequent and/or dangerous criminal actions are in German public railway transport and how the impact of SMTs on these criminal actions is being assessed. Based on these findings, assessment criteria, attributes and questions for the Assessment Support Tool are summarised in a table in an annex to the report.

1.2 Methods

The findings of the report are based on conversations with three public transport security experts and an analysis of relevant research literature and statistics. None of the experts agreed to be cited or to be recorded. Due to the lack of interview data, the report draws on some relevant literature in order to substantiate the line of reasoning. The data has been analysed using the uniform guidelines sent out by the work package leader for work package 3 case study reports. The guidelines pre-defined the structure of the report. The results will be further elaborated in the final synthesis report of work package 3.

2. Findings

2.1 Frequent and dangerous criminal actions

The most frequently recorded criminal actions in public rail transport systems are theft, fare evasion, inter-personal violence and vandalism. When it comes to describing dangerous criminal actions, a difference has been established in the discourse distinguishing between threats to the subjective feeling of security and threats to the objective security situation. Frequently recorded criminal actions are thought to be the cause for perceptions of threat for the subjective feeling of security. These 'minor' offenses do however not pose a threat to what is described as the objective security situation. Dangerous criminal actions for the objective security situation are attacks on the public

transport infrastructure with bombs, sabotage or CBRN[1] material. These actions occur very rarely[2], but they are percieved as more dangerous because they create more damage to passengers and infrastructure.

Looking at figures for German transport systems and Transport for London, it needs to be highlighted that, even for the category of frequently recorded criminal actions, a decline of the offenses that are being recorded can be identified for the last few years. Stakeholders for public rail transport security, including the police, infrastructure providers, customer organisations and official agencies agree that the security situation in public rail transport is already quite good and that it is constantly becoming better.[3] This constitutes a discoursive framework for public rail transport security that differs largely from the one for airport security.[4]

Frequentently registered criminal actions

It is difficult to obtain comparable crime statistics for public rail transport because the offenses are recorded by both the federal police and the state police and crime statistics usually do not entail paragraphs focussing on public rail transport. If they do, they often include both over- and underground as well as bus services. For all three public transport systems, different frequencies apply across different locales. However, a number of special reports, usually by stakeholder networks in urban settings, on crime statistics exist that suggest a coherent image of the most frequent criminal actions. The following list of frequently registered criminal actions is derived from those reports and does not suggest an order of occurrence of the offenses. All of these offenses are in decline in the official statistics:[5]

- Theft
- Inter-personal violence

[1] Chemical, Biological, Radioactive, and Nuclear material.

[2] Sarin gas attack on the Tokyo underground in 1995.

[3] For Germany, see https://www.allianz-pro-schiene.de/presse/pressemitteilungen/2013/008-positionspapier-zu-mehr-sicherheit-im-oeffentlichen-verkehr/positionspapier-sicherheitsempfinden-oeffentlicher-verkehr.pdf; for London see SIAM deliverable 7.2.

[4] See SIAM deliverable D3.1.

[5] An exemption from this are offenses against security personell or other employees in public transport, which are reported to be increasing.

- Vandalism
- Drug dealing
- 'Anti-social behavior'[6]
- Fare evasion

It needs to be emphasised that while the frequency of recorded crimes may vary and difficult to compare, there appears to be a widespread shared understanding of factors influencing passenger's subjective feeling of security. A starting point here is the assumption that the subjective feeling of security seems to be deteriorating in many locales despite the fact that crime numbers are in decline. A major characteristic of the security rationale in public rail transport security is therefore the desire to enhance passenger's security perception. This is important when it comes to assessing the effectiveness of security technologies.

Why do they occur frequently?

Efforts to increase passenger's perception of security encompass a wide range of measures, dependent on the factors deemed to be influential in this regard. A recent paper by a wide range stakeholders in public rail transport offered the following list of factors that are crucial:

- Passengers in buses appear to feel safer from violence and harassment than those travelling on trains.
- Passengers on trains tend to feel safer from violence and harasment than passengers waiting at bus stations or train stations.
- Passengers feel safer at day time than at night time.
- Passengers above the age of 60 and below the age of 30 tend to feel more unsafe than those between 30 and 60.
- Women feel more unsafe than men.
- Being a victim of crime increases the feeling of insecurity.
- The appearance and the architectural features of the infrastructures impact on the feeling of security.
- There is a proven impact of media reporting on crime and an increased

[6] As defined in UK law.

fear of crime.[7]

The individual perception of security is a combination of the individual experiences and mediated experiences. Experts assume that the individual perception of security is a decisive factor in the decision to make us or not to make use of public transport. A core indicator for the effectiveness of measures to enhance the individual perception of security is therefore an increase in passenger numbers. Another important feature of the individual perception of security is that it is often tied to specific locales like city centers, main stations or unfamiliar neighbourhoods.

What are the most dangerous criminal actions?

Dangerousness on the individual level is certainly dominated by inter-personal violence. On a threat level, terrorist acts are the most dangerous threats to public transport security because they bear the potential to create massive harm to a large number of people and assets. A number of recent attacks, described in detail in SIAM deliverable D6.3, have shown the destructive potential of those acts.

What makes these actions dangerous?

Next to the potential damage and harm of terrorist attacks on public transport, the difficulty to prevent them in open transport systems is higher than compared to closed systems like airports. Immense number of possible entry points to the system, the impossibility of complete surveillance of the infrastructures and the large number of passengers are among the factors that make potential terrorist attacks so difficult to detect and to prevent. Associated with these challenges are the immense costs that the deployment of detection technologies or the introduction of security checks prior to boarding trains would imply.

[7] https://www.allianz-pro-schiene.de/presse/pressemitteilungen/2013/008-positionspapier-zu-mehr-sicherheit-im-oeffentlichen-verkehr/positionspapier-sicherheitsempfinden-oeffentlicher-verkehr.pdf (p. 8)

2.2 SMTs

Compared with airports for example, public rail transport systems tend to be less technology intensive in the security domain. Technological 'fixes' appear not to be the dominating solution to security problems but rather one solution among organisational, personnel and architectural measures.

What kind of SMTs are being operated to deal with these criminal actions?

Despite a large number of safety technologies which can also be thought to increase security, practically two core SMTs are relevant in the public rail transport sector: CCTV and security personell. CCTV is by now installed in many stations and local transport vehicles, but largely absent on rural stations and on long-distance trains. Major efforts have been made to change the architecture of both stations and vehicles to abolish dark corners. Technological solutions for passengers to call for help and assistance have been introduced in many networks. These measures are flanked by a number of preventive measures to raise the awareness of security problems, by security partnerships. The effort to increase the perceived security is widely seen as a political task for a wide range of societal actors that lies not only in the are of responsibility for security actors like the police or private security companies.

Are there any major technological innovations that have been introduced?

There are experiments with increased patrolling activities and with automatic pattern recognition systems for CCTV systems ongoing.

Are any technological innovations expected that will enhance the possibility to deal with them?

Innovations at stake range from the use of drones for patrolling infrastructure networks to audiosurveillance systems for detecting acts of vandalism. Another area of research is detection systems for dangerous substances that could be installed in entrance areas for stations and vehicles.

2.3 Impact of SMTs on criminal actions

Regarding the impact of CCTV on crime, deliverable 3.5 entails a detailed review of the relevant studies and literature. This content will not be repeated here. The important results for effectiveness assessments that can be drawn

from the report are the temporal dimensions where impact can be measures: documentation, prevention, and pre-emption. Another issue applying for public rail transport is the fact that most infrastructures are part of the public space. In Germany, according to the recent paper by core stakeholders, there exists no institution that deals with security in public transport and the perception of security analytically or conceptually with a federal scope. Frequently, a loose network of stakeholders from federal agencies, regional agencies, city administrations, infrastructure providers, private companies and event companies cooperate to increase security in an ad-hoc manner.[8]

Discussions about effectiveness tend to focus on single aspects of security like CCTV or a prohibition of alcohol consumption. Most assessments are therefore local, with little possibility to compare or transfer them across different cities. Another security research project provides for a comprehensive evaluative model and approach and some case studies for the impact of SMTs in public transport security. The results can be accessed at www.susi-team.de.

In which way have the SMTs contributed to security, and are there different dimensions of security affected?

Studies for CCTV that have been reviewed for SIAM deliverable D3.5 have shown that CCTV cannot generically be described as effective or ineffective. Rather, the effectiveness of CCTV is a matter of a case-to-case assessment. Some general trends indicate that CCTV is not suitable to reliably reduce crime in public transport networks. It has been shown however to be supportive for criminal investigations after crimes have occurred by providing evidence and images of suspects. In contrast, patrols by security personnel is considered as being quite effective in at least displacing criminal actions to outside of the transportation systems and at the same time to increase passenger's perceived security.[9]

What is the impact of SMTs on crime?

See deliverable SIAM D3.5 for answers on this question for CCTV. Regarding patrols by security or other public transport personnel, studies suggest that their presence reliably increases passenger's perception of security.

[8] See also the SIAM work package 9 deliverable on the legal framework regulating public transport security (D9.x)

[9] http://www.susi-team.de/images/stories/Downloads/band7summary.pdf

How is the impact being assessed / measured?

Established Methods applied to measure the impact are customer surveys and statistics.

When is a SMT considered ineffective?

This again is a question for case-to-case assessments and difficult to generalise. After internal evaluations, German railways has taken a cautious approach to introducing more CCTV equipment because they have shown that those technologies often fail to deliver the desired effects. It is important to understand that at least in Germany, there tends to be a favor for a holistic approach for the assessment of the effectiveness of measures. Stakeholders frequently try to avoid to overload single measures with expectations but instead argue for a holistic approach to security and then to measure the effectiveness of the 'whole package'.[10]

How do notions of crime and security change in the course of the introduction of SMTs?

Studies have shown that being a victim of crime has a major impact on fear of crime, independent of security measures. However, the most successful measures to enhance the notion of crime and security appear to be architectural improvements in stations and vehicles as well as an increase of the presence of public rail transport personnel. As these measures tend to be cost-intensive, there is a tendency in political debates to favor technological fixes. Recently, this has led to the situation where the Ministry of the Interior forced German railways to increase CCTV surveillance despite the fact that German railways publicly challenged this decision, arguing that CCTV is not suitable to achieve the desired gain in security.

Which unintended consequences have been observed after the implementation of the specific SMT?

It is difficult to determine on a general level whether or not the following consequences are intended or unintended. Regarding the impact on freedoms, it can be assumed that processes of displacements of certain user groups and behavior are being deliberately planned because this is thought to increase majority of the passenger's perception of security.

[10] http://www.susi-team.de/images/stories/Downloads/band7summary.pdf

- *Unintended Consequences on criminal actions*

While hopes in the preventive effect of CCTV has proven difficult to achieve, CCTV in public transport systems has proven to be very effective in supporting criminal investigations after crimes have occurred by delivering evidence about the acts and suspects.

- *Unintended Consequences on freedoms*

The perception of unfamiliar people and 'disorderly' environments and behavior as factors contributing to a preception of increased insecurity has led to measures that de facto displace quite a large number of groups (homless people, drinkers, skaters, beggars, loiterers, drug consumers) of people from stations and vehicles, limiting their possibilities to use 'public' space. The installation of cell phone receivers in many public transport networks has also created the possibility to reconstruct and/or track passenger's movements using the cell phone data.[11]

- *Unintended Consequences on organizational routines (function creep)*

The prominence of individual security perception has led to a change of strategy regarding the use of security personnel. While many operators used to cut down personnel in order to save costs they now tend to see it as a good investment in customer satisfaction. The reliance on technological fixes to the complex area of public transport security is in many cases led to a decrease in the perceived security on an individual level.

3. Conclusion

The security situation in public rail transport systems is, in contrast to airport security, described as quite good and even becoming better. A major objective in security planning is the increase of passenger's perceived degree of security, which is thought to be impacted by a large number of factors ranging from individual experiences, the atmosphere of stations and vehicles and the presence of public rail transport personnel. Being an open infrastructure system, public rail transport systems are much more difficult to control than

[11] Some authors like Stephen Graham (2010) have intepreted the growing technological possibilities to monitor passengers in public transport as an indicator for the militarisation of urban security, implicating massive infringements on freedoms.

airports. A comprehensive assessment of SMTs in this context needs to address the issue of individual perception of security.

4. Annex

The following table is a first attempt to present the result of this report in the form of a table that is structured along the major dimensions of the SIAM assessment tool. It will be further elaborated in cooperation with the partner Kingston University in the final data integration report of work package 3.

Dimension	**Topic**	**Aspect**	**Question**
Security	Individual Perception of Security	Individual experiences	Does the SMT address passenger's individual experiences?
		Unfamiliar behavior	Does the SMT address unfamiliar behavior?
		Unfamiliar groups of people	Does the SMT address unfamiliar groups of peole?
		Gender	Does the SMT address Gender?
		Daytime	Does the SMT apply to a specific time of the day?
	Atmosphere	Stations	How are stations being perceived of?
		Vehicles	How are vehicles being perceived of?
	Establishing and maintaining a state of security	Indicators	Development of passenger numbers
		Indicators	Crime Figures
		Indicators	Deployment rates of personnell
		Indicators	Architectural Improvements
		Indicators	Cleanliness
		Indicators	Locale

5. References

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