# UITP
ADVANCING PUBLIC TRANSPORT

JUNE 2015

STATISTICS BRIEF

VIDEO SURVEILLANCE IN PUBLIC TRANSPORT

INTERNATIONAL TRENDS

Video surveillance is a very common technology used in public transport, especially for security purposes. UITP, together with industry expert Axis Communications, conducted a survey among public transport organisations to get an understanding of video surveillance in public transport, particularly for security. This brief outlines the international trends in terms of current usage, equipment, regulations, positive effects as well as potential barriers in using the technology. It also outlines a vision for the future in terms of the needs of the sector and upcoming trends in video surveillance.

REGIONS
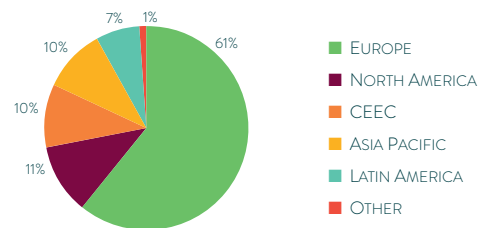
The majority of responders are public transport operators (73%), with a number of public transport authorities also taking part (21%). A very small number of responders are infrastructure owner/managers or separate station owners (6%).

Most responders (87%) cover urban areas, with 37% of responders from regional or state-wide systems and then finally 4% with national coverage. Most responders come from Europe, with some other regions represented too.

TRAFFIC ZONES
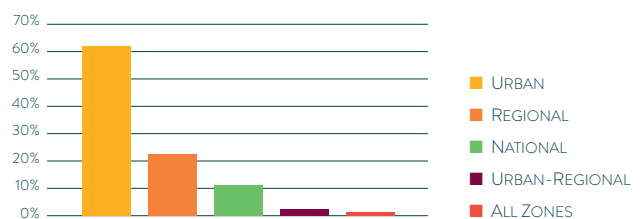
Responders cover a variety of modes including bus/trolleybus, light rail/tram, metro, commuter rail, main line rail and ferry.

EQUIPMENT

Cameras can either be analogue or network/IP. Approximately two thirds of responders report that they have network/IP cameras as part of their surveillance systems today. Over half of the responders have a hybrid surveillance system with a mix of analogue cameras and network/IP cameras. Another quarter of the responders are still using solely analogue cameras. For the future, the majority of responders stated that they will consider network/IP cameras. While this clearly shows a tendency towards network cameras for the future, legacy analogue cameras will clearly still have an important presence in public transport systems for the foreseeable future.

When acquiring new surveillance systems, specifications for the system are designed using in-house competence for 38% of respondents. 27% and 14% rely on cooperation with system integrators or surveillance camera manufacturers respectively. The use of consultants is noticeably less than the four other collaboration alternatives (10%).

As for the barriers of investing in new technology, responders report "other priorities within their organisation" (31%) and "difficulty in getting funding" (20%) as the two largest categories of obstacles.

TYPE OF SURVEILLANCE CAMERA SYSTEM

- 55% Hybrid (mix)
- 25% Analogue cameras
- 13% Network/IP cameras
- 7% Don't know
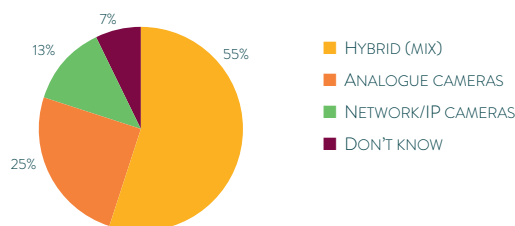
USAGE

Almost all responders do have surveillance cameras installed in their systems with only 3% of responders stating that they did not. Video surveillance is certainly one of the most widespread technologies used for security in public transport. For example, one responder reported having 22.000 cameras installed.

Cameras are predominantly used onboard rolling stock, in public station areas, depots and rail yards and on platforms. They are often specifically targeted at key areas (help points, ticket gates, escalators, elevators). With the exception of depots and rail yards, it is the areas where customers are present which tend to be the most heavily covered by surveillance cameras. Cameras can also be found, although to a lesser extent, in non-public areas (staff entrances, crossings, tunnel entrances, along the infrastructure, inside tunnels, at bridges, depots).

AREAS COVERED BY SURVEILLANCE CAMERAS

- Cameras exist
- Recordings are made
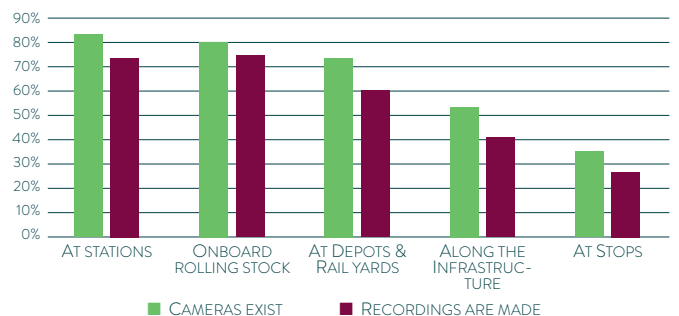
Video footage can either be recorded, viewed in real-time[1], or both. Real-time usage of video footage is generally used in static locations (stations, depots). Real-time surveillance on-board rolling stock is less common with 28% of responders using this. However, more than half of responders reported that video surveillance would be installed onboard rolling stock in the coming 12 months which suggests that onboard cameras will become more common. Other parts of the system (stations, depots etc) will also see more cameras installed and only a quarter of responders do not plan any investments in video surveillance at all in the next 12 months.

[1] Real-time usage of video surveillance is viewing video live (monitoring) or using live video as a tool during an incident. Additionally, video analytics can be added to support the detection of an incident.

Most responders reported that video surveillance is firmly a cross-functional tool, also used for safety and operational purposes on top of security.

In terms of practical use, today video surveillance is considered most useful in increasing the perception of security among passengers and staff, as well as improving actual security levels by minimising, deterring and managing criminality such as theft, graffiti, vandalism, aggression, violence and so on. Terrorism did not rate highly as a potential use for video surveillance.

In terms of the life-cycle of an incident[2], using video footage for investigations into crime, injury, suicide, accidents and so on is considered useful. Indeed, the vast majority (86%) find this forensic element the most valuable concrete use. Detection in real-time of incidents also scored highly (72%), indicating this is a trend to come.

Nearly half of responders (42%) can share live video with other parties such as police or other authorities.

REGULATION

The legal situation regarding video surveillance varies widely from country to country. 42% of responders reported that surveillance monitoring is a legal requirement. For this group, regulations tend to cover passenger areas (stations, onboard vehicles). For more than a third, surveillance outside the areas related to the public transport system is not allowed, and a further third would need specific permits for this.

In terms of the recording of video footage, almost all responders report that the recording of video footage is legally possible, but almost all of those are subject to limitations for example limited storage/retention time (ranging from 48h to 100 days) or for police usage only.

Sound recordings are permitted for well over half of responders, although the vast majority of these have legal limitations in terms of usage. For approximately a third, sound recording is not allowed at all.

For nearly two thirds of responders the quality of video to be valid evidence in court is regulated in some way, mainly either by law or by police directives. This gives assurance to the public transport system that video footage can be used as evidence.

[2] Incident lifecyle : detection ➔ prioritisation ➔ response ➔ re-prioritisation ➔ investigation ➔ follow-up

VALUES

The vast majority of responders claim that the positive effects of using video surveillance systems are to increase the actual and perceived security among passengers and staff, as well as minimising, deterring and managing various types of criminality. A third of responders mentioned helping investigations into crimes, injuries, suicides and accidents, including disproving false claims. Reducing fare evasion was only relevant for a small minority.

In terms of challenges, the most common problem of existing systems is the difficulty in monitoring the large number of cameras in the public transport system. Afterwards came a wide variety of issues ranging from poor image quality to resource intensiveness to technical issues. Almost a quarter reported no negative effects at all.

Staff is generally very positive towards the use of video surveillance with more than 83% indicating positive or neutral reactions, especially when usage of the system is well communicated to staff. A small number of responders do not gather feedback from staff, however from among those that do, no responder reported a negative reaction from staff.

In terms of passenger attitudes, more than two thirds report either positive or neutral reactions. A small number of responders don't gather passenger feedback, however from among those that do, no responder reported negative feedback.

Three quarters responded that passengers and staff would probably feel even more secure with surveillance systems used proactively to react in real-time to incidents.

ANALYTICS

The survey analyses awareness, present usage and future interest in video analytics to aid the responders' video surveillance work. The majority of responders is aware of video detection analytics for intrusion, perimeter breach, fire & smoke and rail track access. The same group of analytics range between 10-20% in actual usage amongst the responders already today. Future interest in these amongst the responders is high, approximately half of the responders have answered that they are interested in using them moving forward.

Graffiti behaviour detection was reported with less awareness than the group of analytics listed above but with high interest for future use by over half of responders. Face recognition is something that two thirds of responders is aware of but no responder reported using it today. For the future, more than half of the responders will want to use these applications moving forward.

TOP SIX ANALYTICS APPLICATIONS - AWARENESS AND INTEREST
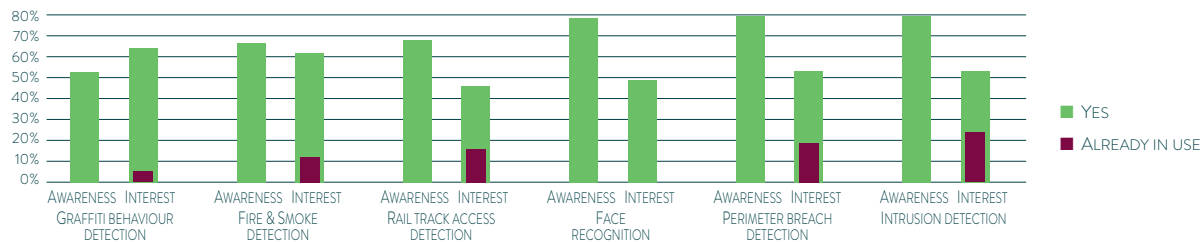
FUTURE TRENDS & CONCLUSIONS

There is a clear tendency towards network/IP cameras in terms of future investment, in particular up-and-coming analytics applications for specific issues such as graffiti behaviour detection. On the other hand, legacy analogue cameras will continue to have an important presence in public transport systems for the foreseeable future. Real-time usage with analytics is also on the rise as public transport systems seek to react to security events as and when they happen. With operators faced with hundreds of live feeds, alerts can assist in managing the large amount of data, helping with monitoring and prioritisation. With incidents reported in real-time, there will be more opportunity for live feeds to be shared with third parties than is reported today. Despite this drive towards real-time network/IP solutions, recorded footage for review purposes is still very helpful and will remain widely used in the foreseeable future.

In terms of regulation, local laws or rules for footage to be valid in court is very helpful as it gives assurance that the evidence can be used. Other regulations in terms of usage, storage and so on vary widely from country to country depending on privacy and data protection laws. Laws certainly define the scope of how video surveillance is used in each place but rarely seems to be a barrier for public transport systems.

The survey clearly demonstrates that video surveillance is a widely used technology in public transport, for security but for other purposes too. It is a solution which is highly valued by staff as well as passengers. Public transport systems clearly intend to invest further in these technologies in the coming years, and the technology has huge potential to assist public transport organisations in real-time. Video surveillance will firmly remain a cornerstone technology in public transport.

This is an interim summary brief according to data as of May 2015 (71 responders). A full and updated report will be available in Autumn 2015. UITP and Axis Communications would like to thank the responders who took the time to complete the survey.