CASE STUDY

An AI Camera in the Operator Cab

A successful proof of concept for a transit authority: how ISC transformed a safety need into a solution integrated with the existing infrastructure.

CLIENT	Transit authority (light rail, metro and bus)
ASSETS INVOLVED	More than 100 light rail vehicles (LRVs)
SOLUTION	Directional infrared AI camera and Genetec NVR
STATUS	Successful proof of concept

BACKGROUND

A major transit authority operates a mixed fleet of light rail vehicles, metro trains and buses. More than 100 light rail vehicles (LRVs) are involved in this project.

The client was upgrading its onboard video surveillance (CCTV) system. It saw an opportunity to go further: improve operator and passenger safety by integrating new technologies into its existing infrastructure.

The client turned to ISC to transform its requirements into a practical solution validated through a proof of concept.

THE CHALLENGE

The client wanted to automatically detect certain events during service, primarily related to operator behavior: yawning, looking away, absence from the driving position, cellphone use, being distracted, etc.

The solution also needed to:

- record detected events;
- trigger alarms;
- send real-time notifications to wayside systems;
- integrate with existing systems without rebuilding the entire infrastructure.

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In the future, similar technology could also detect events involving passengers or the surrounding environment.

WHY ISC?

The client chose ISC for three reasons:

- **Its ability to integrate with existing systems;**
- **Its recommendations on the most suitable components;**
- **Its expertise with Genetec solutions, already deployed by the client.**

THE SOLUTION

ISC designed a proof of concept built around two key components.

An AI-enabled camera

- Directional camera
- Built-in processor that analyzes behavior directly onboard
- Multiple configuration options

A Genetec NVR

- Recording of events detected by the camera
- Connection to the client's network
- Real-time transmission to wayside systems as needed
- Multiple configuration options

The project brought together the client's IT, security, operations, maintenance and project management teams, an essential collaboration for integrating the solution into the actual operating environment.

THE RESULTS

- **Successful proof of concept**
- **Integration qualified for the client's environment**
- **Next step: internal acceptance among unions and employees**

> *"...impressed by the behavior-detection capabilities..."*
>
> *"...I am certain that this type of technology will be deployed in the future."*
>
> Client representatives

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WHAT WE LEARNED

1. **The technology works, but it remains an innovation in the industry. Public transit is only beginning to explore this type of solution.**
2. **Internal acceptance is a key success factor. A solution that affects operators must be designed with them in mind.**
3. **Camera placement is critical. It must be positioned so it does not interfere with the driving interface, helping support operator acceptance.**
4. **Information privacy must be ensured from the design stage.**

WHAT'S NEXT?

This proof of concept demonstrates that AI can be integrated into the operator cab while leveraging existing infrastructure.

Have a similar project in mind? Contact the ISC team to discuss it.

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