

Protran Technology

Blind Spot Awareness / Safe Turn Alert

Bus to Pedestrian Mitigation with Collision Avoidance

Safe Turn Alert (STA) and Blind Spot Awareness (BSA) are two safety products from Protran, geared at addressing potentially dangerous conditions that arise when buses make turns in busy traffic intersections.

This article describes how these two products help bus operators reduce accidents that occur when buses collide with pedestrians and bicyclists.

Buses are designed to protect passengers in the event of catastrophic roll-overs. The Roll-Over Protection System (ROPS) includes structural beams, designed to take the weight of the bus in case it flips over. The so-called 'A-pillar' is the one at the front of the bus. Because it is structurally re-enforcing, it typically has a large cross-section.

As a result, it blocks the view of the driver, as shown in **Figure 1**. The bus industry has not been able to solve this problem other than offering surveillance camera-based solutions, but those may distract the driver. **Figure 2** shows the blind spots during a right turn. **Figure 3** shows a busy intersection in a major US city. Note the pedestrian in or very close to the driver's blind angle.

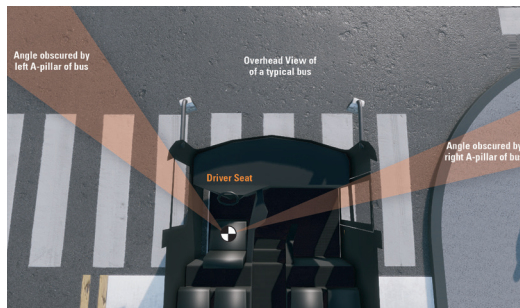


Figure 1



Figure 2

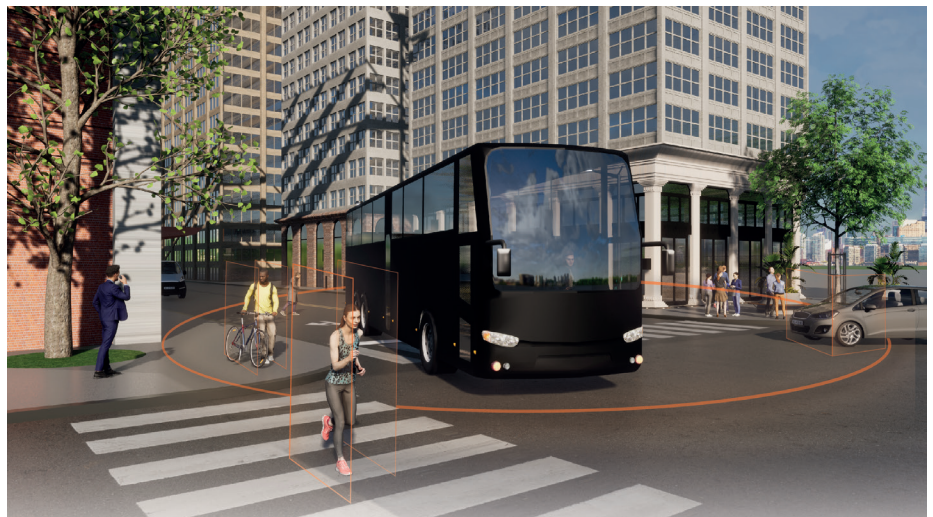


Figure 3

Safe Turn Alert (STA)

STA consists of a sensor and a control unit that detects when a

bus-driver initiates a turn. The STA system delivers an audible alert to pedestrians and bicyclists on the outside. The message comes out of

The Roll-Over Protection System (ROPS) includes structural beams, designed to take the weight of the bus in case it flips over. The so-called ‘A-pillar’ is the one at the front of the bus.

speakers mounted on the outside. During a turn, the bus makes an announcement such as ‘Attention, bus is turning’.

By alerting pedestrians through an audible warning, pedestrians and bicyclists get roughly two additional seconds to react to a turning bus – which often is the difference between an impact and a non-impact.

STA has GPS capability, which requires an internal GPS antenna to be mounted on the exterior of the bus. The STA system can be complemented with an additional product, the BSA.

Blind Spot Awareness (BSA)

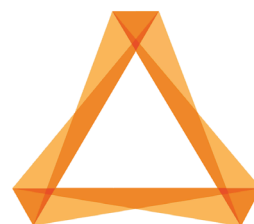
BSA is an optional addition to the STA system. It requires the STA to be present on the bus and cannot be sold separately.

The BSA consists of sensors mounted in the front left and right corners of the bus. The BSA sensor uses radar technology plus advanced signal processing to track individual pedestrians or bicyclists and can make intelligent determinations about the potential danger based on locations, angles and speeds.

When the BSA system determines that a pedestrian or bicyclist may pose a danger (e.g. a collision may occur), it alerts the driver immediately through visual and audible alerts in the instrumentation panel.

The lights are shown in **Figure 4**.

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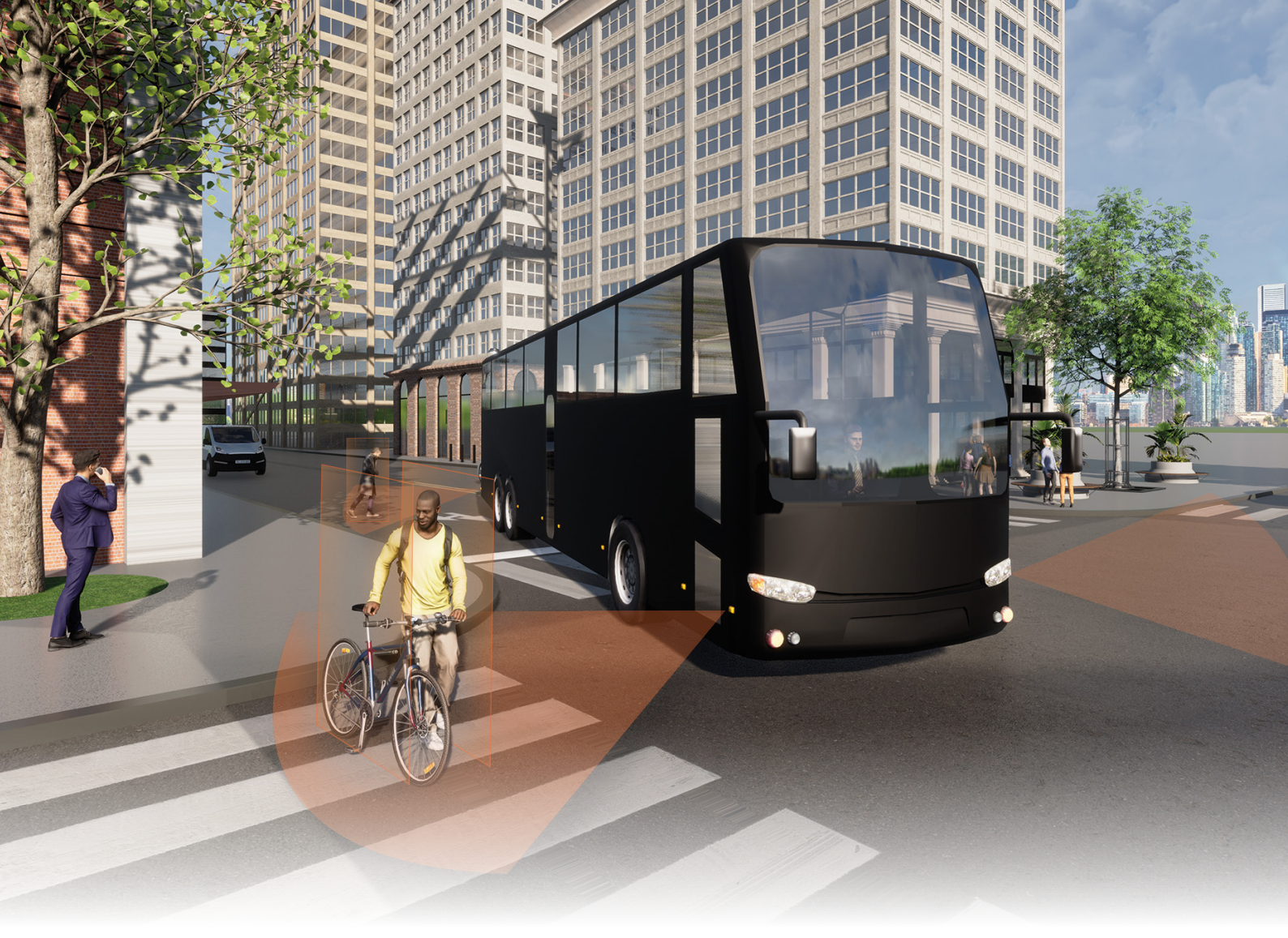


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Figure 4



BLIND SPOT AWARENESS/ SAFE TURN ALERT

Bus to Pedestrian Mitigation with Collision Avoidance



System Features:

- Outside warning announcement
- Audible and visual alerts sent to operator
- Passive system requiring no driver interaction
- Volume automatically adjusts based on ambient noise
- Multiple recordable messages

Learn more at: emea.harscorail.com