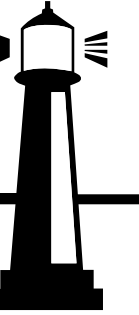


KONVOI



SECURED PARKING
EVERYWHERE



CARGO THEFT

Cargo theft is a serious problem that causes enormous financial losses in the transport and logistics industry every year. In Europe alone, these losses amount to over 8 billion euros per year. With KONVOI, we make it possible to identify cargo theft at an early stage, react quickly and take proactive measures.



Data visualization:

First, the data that is collected by our motion sensor is displayed using our visualization program.



Identification of movements:

We are analyzing the data visualization to identify all movements or activities around the trailer.



Analysis of unusual activities:

If an unusual or suspicious movement is detected, we compare GPS and shock data of the trailer at that time.



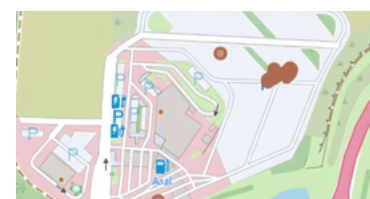
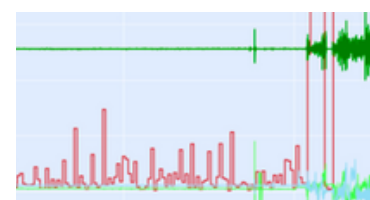
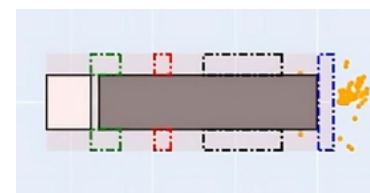
Context-based conclusion:

Based on the location and movement patterns in the shock data, it is determined whether the activity is (not) concerning.

SAMPLE SCENARIO

In this example, a movement in the immediate area around the back door of a trailer is classified as suspicious.

This can be recognized by looking at several data sources:



MOTION SENSOR DATA

Movements around the vehicle can be detected and visualized using a Point Cloud. In this example, activity can be seen at the back door.

SHOCK SENSOR DATA

Initially, the shock data shows no movement, as the truck is parked. This is followed by a measurable spike, which indicates that the back door has been opened or similar activities.

GPS DATA

The truck is parked at a gas station. Since, in this example, there is no reason for the driver to open the back door at such a location, it appears to be an unauthorized activity.

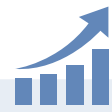
Using these second-by-second data sources, we are able to bring maximum transparency to the issue of cargo theft through systematic approaches to the evaluation and interpretation of captured movements.

WITH KONVOI, VALUABLE CARGO IS PROTECTED AT ALL TIMES!

2

DIESEL THEFT

Diesel theft is a growing security problem for the transport and logistics industry, which poses considerable challenges. Financial losses of up to 2,000€ per incident can be expected, as well as further expenses and delays in restoring operations.
With KONVOI, we can identify diesel theft at an early stage, react immediately and take preventive measures.



Data visualization:

First, the data that is collected by our motion sensor is displayed using our visualization program.



Focus on the diesel tank areas:

To monitor a diesel theft, our focus is on the zones of the detection area where the diesel tank is located.



Checking of behavior:

If someone is detected being at/in the diesel tank areas, we begin investigating the person's behavior.



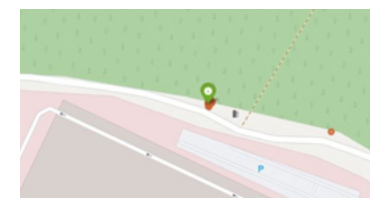
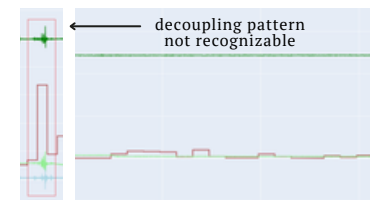
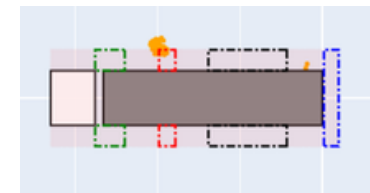
Context-based conclusion:

Based on the location and movement patterns in the shock data, it is determined whether the activity is (not) concerning.

SAMPLE SCENARIO

In this example, a movement in the immediate area around the diesel tank of a trailer is classified as suspicious.

This can be recognized by looking at several data sources:



MOTION SENSOR DATA

If a person is in the diesel tank area, motion sensor data alone is not enough to conclude that diesel has been stolen. Usually, drivers are also standing there during the coupling and uncoupling process of a trailer.

SHOCK SENSOR DATA

Shock data is crucial for distinguishing between normal coupling processes and possible diesel theft. In this example, there are no recognizable coupling and uncoupling patterns. Nevertheless, since the motion sensor data indicates that someone is standing in the diesel tank area, this situation can be considered unusual or suspicious.

GPS DATA

GPS data provides additional confirmation of the suspicious nature of the incident. If the truck is parked in an unknown location, as in this case, the probability that it is a case of diesel theft increases.

By integrating second-by-second motion sensor data, shock data and GPS data, we can assess and identify potential diesel thefts more accurately.
With the help of a systematic approach, we are able to bring clarity to the issue of diesel theft.

WITH KONVOI, VALUABLE FUEL IS PROTECTED AT ALL TIMES!



DAMAGED TRAILERS

Damage to trailers presents a complex challenge, both in terms of identification and transparent, localized allocation as well as in the processing of insurance claims. With KONVOI, we are able to reliably decipher damage histories to enable direct action to be taken.



Information:

There is suspected damage or we have already registered an incident.



Data visualization:

First, the data that is collected by our motion sensor is displayed using our visualization program.



Analysis of unusual data patterns:

We examine the shock data for suspicious patterns. GPS/motion sensor data from this point in time can be used to obtain a more accurate picture.



Notification:

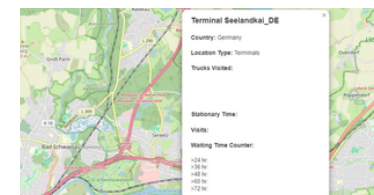
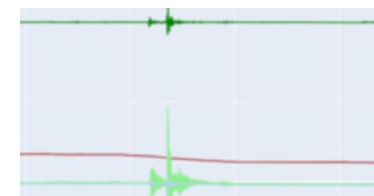
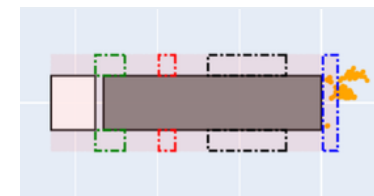
We will send a notification of the identified damage to predefined contacts as soon as possible. *

* It contains all relevant information - from the exact time of the damage through to the location of the incident.

SAMPLE SCENARIO

In this example, the bottom left-hand corner of the back door of a trailer is damaged.

The circumstances of damage are broken down as follows:



MOTION SENSOR DATA

Additional details about the circumstances of the damage can be determined by consulting motion sensor data. In any case, activity can be detected in the relevant area of the vehicle - here at the back door.

SHOCK SENSOR DATA

Shock data provides the decisive perspective on whether the processes are regular (e.g. loading/unloading the trailer) or unusual (such as damage). The graph shows that the intensity of the data curve is high and the duration of the spike is low. This is often the case with sudden impacts and therefore indicates damage.

GPS DATA

Additional details about the circumstances of the damage can be determined by consulting GPS data. For this example, we are dealing with a terminal stop.

With concentrated data power, we are able to track damage down to the second and examine it in more detail using a systematic approach. This makes it much easier to coordinate repairs to restore the trailer's functionality and process insurance claims.

4

EQUIPMENT THEFT (E.G. TYRES, PALLETS)

Equipment theft threatens individual components as well as the overall functionality of a vehicle. The theft of essential components, such as tyres/ pallets/ etc., impairs smooth operations and can also be very expensive. For example, a loss of 600€ per tyre can quickly add up to 3,600€ for the entire trailer. With KONVOI, we ensure that equipment theft is broken down transparently so that direct action can be taken.



Data visualization:

First, the data that is collected by our motion sensor is displayed using our visualization program.



Focus on specific detection zones:

To identify equipment theft, we focus on specific areas, such as the zones where the tyres are located.



Checking of behavior:

If someone is detected being at/in the equipment areas, we begin investigating the person's behavior.



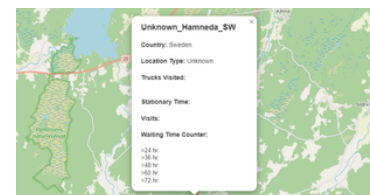
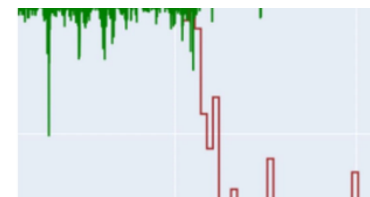
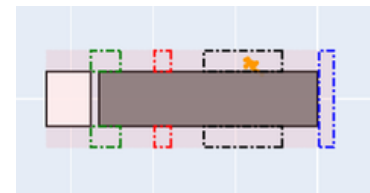
Context-based conclusion:

It is determined whether the activity is (not) concerning. Location and shock data can be used for the evaluation.

SAMPLE SCENARIO

In this example, an activity at the vehicle, which is localized in the zone of the detection area where the tyres are located, is classified as suspicious.

The circumstances of damage are broken down as follows:



MOTION SENSOR DATA

The motion sensor data is the most important basis for identifying tyre thefts, as there is no reason for drivers or other persons to be in the vicinity of the tyres for a longer period of time during normal operation.

SHOCK SENSOR DATA

Additional details about the circumstances of the tyre theft can be determined by using shock data. It is possible to see to the second when parking processes, couplings and other events take place.

GPS DATA

Additional details about the circumstances of the tyre theft can be determined by using GPS data. If the truck is parked in an unknown location, as in this case, the probability of a dangerous situation increases.

Using these second-by-second data sources, we are able to bring maximum transparency to the issue of equipment theft through systematic approaches to the evaluation and interpretation of captured movements.

WITH KONVOI, VEHICLE EQUIPMENT IS PROTECTED AT ALL TIMES!



STATIONARY TIME OPTIMIZATION IN INTERMODAL TRANSPORT

Stationary time optimization is a key factor in intermodal transport. If operations lack transparency or aren't managed time-efficiently, unproductive waitings quickly arise and prevent optimal use of resources. KONVOI enables us to reliably identify unproductive stationary times so that direct measures can be taken.



Information:

There is a suspicion of unproductive long-term stationary time or we have already registered such.



Data visualization, conclusion:

Motion sensor data is visualized. To determine whether it is a longer, unused stationary time, GPS data is included.



Notification:

We send a notification about the identified stationary time to predefined contacts as quickly as possible. *



Notification by time periods:

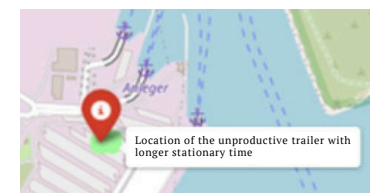
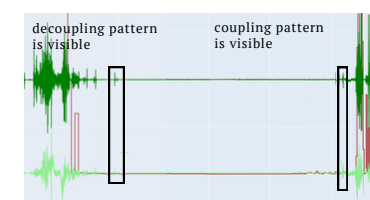
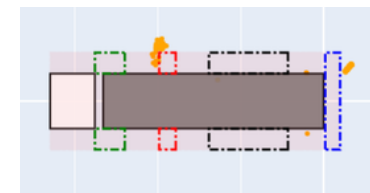
An individual notification rhythm can be set depending on the urgency level. Weekends are taken into account.

* It contains all relevant information - from the specific duration of the event to its exact location.

SAMPLE SCENARIO

In this example, a trailer is uncoupled at the terminal and remains unused there for a long time until it is loaded onto the ferry.

This can be recognized by looking at several data sources:



MOTION SENSOR DATA

Additional details about the circumstances can be determined by consulting motion sensor data. For example, movement in the diesel tank zone can be detected, which is due to the implementation of coupling processes.

SHOCK SENSOR DATA

As soon as the first uncoupling pattern of the trailer is visible in the shock data, it is considered parked in the terminal and waits to be loaded onto the ferry. The parking period ends when the trailer is coupled, moved and uncoupled for the last time before the ferry departs.

GPS DATA

Unproductive stationary time is characterized by a trailer's location remaining unchanged for a longer period of time. Movement patterns (such as further coupling and uncoupling processes) that occur between parking and continuing the transport are regarded as processing time - the location changes only minimally within the same area.

Using these second-by-second data sources, we are able to bring maximum transparency to the issue of stationary time optimization through systematic approaches to the evaluation and interpretation of captured movements.

WITH KONVOI TO PERFORMANCE-OPTIMIZED OPERATIONS!

6

DRIVER ASSAULTS

Assaults on truck drivers are a serious problem. The lives and safety of these people, in an industry that is already 425,000 skilled workers short, are invaluable. The fact that the entire transportation sector would grind to a standstill without them makes their protection even more urgent. With KONVOI, we are able to transparently break down cases of assaults on drivers and support them in a threatening situation with a range of preventive, customizable measures.



Focus on the driver's cab doors:

In order to monitor assaults on drivers, our focus is on detection zones in which the drivers' cab doors are located.



Checking of behavior:

If a person is detected who is at/in the areas of the cab doors, we start investigating the person's behavior.



Preventive measures:

If a situation is classified as dangerous, an individual alarm chain of measures starts to prevent unauthorized vehicle approaches*.



Preventive notification:

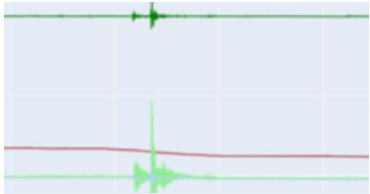
In case of danger, we alert security services preventively and in real time. Notification is also sent to predefined contacts.

* These can include light signals, an alarm sound or the alerting of a security service.

SAMPLE SCENARIO

In this example, a movement in the immediate area of the truck's cab doors is classified as suspicious.

This can be recognized by looking at several data sources:



MOTION SENSOR DATA

Movements in the immediate area around the vehicle are captured. Generally, human and non-human behavior patterns can be distinguished. In this example, unauthorized human activity can be detected at one of the cab doors.

SHOCK SENSOR DATA

Initially, the shock data shows no movement as the truck is parked. This is followed by a measurable spike, which indicates that the cabin door has been opened or similar activities.

GPS DATA

GPS data provides additional confirmation of the suspicious nature of the incident. If the truck is parked in an unknown location, as in this case, the probability of a dangerous situation increases.

By integrating second-by-second motion sensor data, shock data and GPS data, we can more accurately assess and identify potential assaults on drivers. With the help of a systematic approach, we are able to bring clarity to the issue of driver safety.

WITH KONVOI, DRIVERS ARE PROTECTED AT ALL TIMES!



TRANSPARENCY IN ALL LOGISTICAL PROCESSES

(loading & unloading, coupling, trailer movements with portal cranes)

Transparency of all transportation processes allows insights into operational processes. Lack of transparency arises there, especially when handling processes are carried out externally. One example of this is the force on trailers during coupling processes, which impact them with different intensities that require clarification. KONVOI reliably identifies (externally executed) processes and breaks them down transparently.



Data visualization:

First, the data that is collected by our shock sensor is displayed using our visualization program.



Focus on specific events:

We analyze the visualization to identify specific events (e.g. coupling and uncoupling processes).



Analysis and comparison of data patterns:

A data analysis of a process is performed. Comparisons of similar processes are made. A distinction is made between (externally) executed processes.



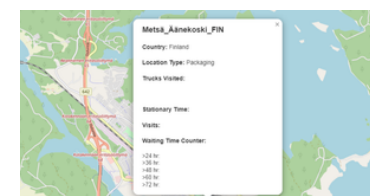
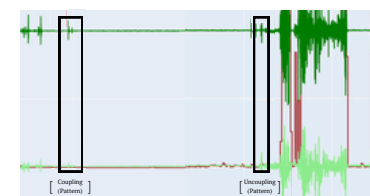
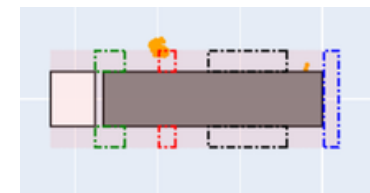
Context-based conclusion:

An insight into trailer handling is possible. This includes, for example, intensity differences of the force effects during coupling processes.

SAMPLE SCENARIO

In this example, coupling processes carried out by different parties are analyzed. A closer look at the shock data reveals differences in handling.

This can be recognized as follows:



MOTION SENSOR DATA

Additional details about the circumstances can be determined by consulting motion sensor data. During processes such as the (un-) coupling of a trailer, activity is visible in the corresponding detection area (here: diesel tank area).

SHOCK SENSOR DATA

Shock data provides the decisive perspective when it comes to processes with force effects that require clarification. The intensity of the spikes in data patterns can be used to determine the force acting on the trailer. Analog numerical values (such as coupling patterns) can also be compared with each other.

GPS DATA

GPS data provides additional details about the circumstances. The data patterns of operating processes can be differentiated, for example, by country, frequently visited locations or similar criteria.

Using these second-by-second data sources, we are able to bring maximum transparency to all logistical processes through systematic approaches to the analysis and interpretation of captured movements.

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