



Secure transport  
– a bright future

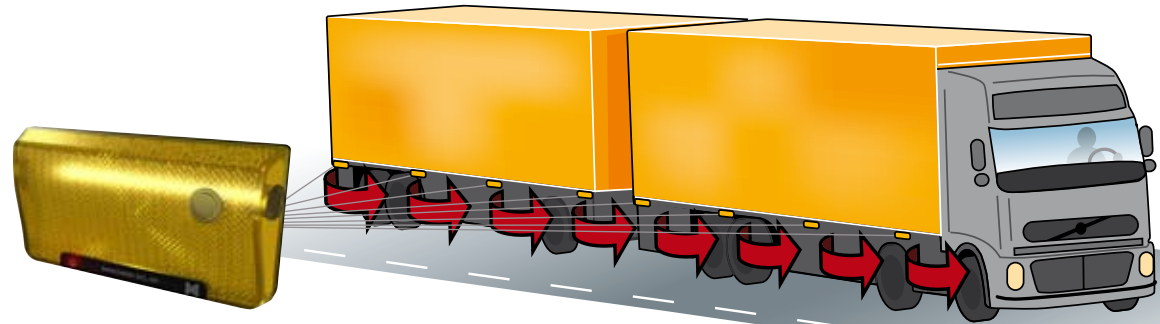
## New patented invention protects and improves the efficiency of truck transports

Within the EU alone thefts total 75 billion kronor every year – and to this is added all the resulting peripheral costs.

By modifying the side-marker lights, it is possible to create, in a simple way, an electronic “fence” around the truck that can detect if an unauthorised person is trying to access the truck’s cargo, steal its fuel or anything else from the vehicle.

These modified side-marker lights can be used for a lot else, thus creating an even more efficient and safe working environment within the haulage industry. This brochure presents several of the forthcoming features that will become possible.





The basic DataChassis component is a modified side-marker lamp where the basic lighting function of the lamp has been replaced with an almost everlasting LED lamp. This lamp also integrates a number of other functions that provide added security and assistance in a variety of areas:

- **Sensors** – to monitor whether anyone or anything is too close to the truck.
- **Radio communication** – a wireless network that can be retro-fitted, where each lamp is a radio node in the network that links both the truck and the trailer with the cab.
- **Downlight** – the lamps also switch on a downward-directed light as the truck reverses, making it easier for the driver to see if he is likely to bump into or scrape against something along the sides.

- **Buzzer** – to warn people near the truck when reversing, for instance.



The wireless network that is created via the side-marker lamps, D-Net®, is based on a general radio standard known as Zigbee (IEEE 802.15.4).

Using this global standard makes it easy to hook up third-party products.





## Innovative functions

The modified side-marker lamps, for which a patent has been sought, can be used for a variety of functions. The basis is the retrofit-compatible wireless network that the lamps permit by serving as radio transmitters in a network.

This network links not only functions on the truck but also encompasses the trailer, something that has so far been very difficult to achieve in practice. Positive effects are generated within three primary areas:

1. Transport security – several new functions that boost cargo security.
2. Traffic safety – several new functions that reduce the risk of injury in traffic.
3. Logistics streamlining – several new and profitable functions to improve efficiency.

1



In a truck equipped with D-Net® the driver's sense of security improves even if he spends the night in a non-secured car-park. When several vehicles equipped with D-Net® are parked up for the night, it is even possible to hook up a tandem alarm, that is to say the drivers cooperate and share the alarm protection with each other.

## Alarm during the night/while at standstill

A large number of trucks – many with high-value goods attractive to thieves – are parked at night throughout Sweden and Europe. Tight time margins and limited access to secured parking places mean that many trucks spend the night in locations that are not patrolled and where there is a risk of break-ins.

It is estimated that one in every six drivers has been the victim of crime over the past six years and the risk of people leaving the profession allied to greater difficulty in recruiting replacements has increased. D-Net® with its built-in alarm function can be an important tool for reversing this trend.

The alarm can be activated when the driver goes to sleep but it is also factory-prepared for automatic activation as soon as the driver is sufficiently far from the truck. The alarm is automatically disabled as soon as the driver returns. If several trucks are equipped with D-Net® it is possible to join forces and share alarm protection, that is to say if the alarm is triggered in one truck, it is automatically transmitted to all the other trucks whose alarms are activated.

If anyone breaks into a trailer or tries to steal anything from the vehicle, such as diesel fuel, the alarm signal is sent to the cab and then on to predetermined recipients. These recipients, which can be the office back home or a security company, in turn contact the driver to verify the alarm.

## Facts

An estimate conducted via the European Parliament in 2007 indicates that about 75 billion kronor worth of goods are stolen every year from commercial transport operations within the EU. To this is added material damage to vehicles and time losses from unplanned downtime. In Sweden, the number of registered crimes against commercial haulage rose from 2861 to 4666 between 2004 and 2007.



2



On a truck parked while awaiting ongoing transport, the alarm is easily visible in the side-marker lights via a flashing red light that warns potential thieves. In the event of a break-in, D-Net® triggers an alarm and bathes the area in a bright sea of light, which puts the thieves under further pressure.

## Activating alarm on loaded trailer at the terminal

Loaded trailers or trucks can be parked for one or more nights while awaiting onward transport. This is highly attractive to thieves, particularly if the parking-spot is not patrolled and is off the beaten track.

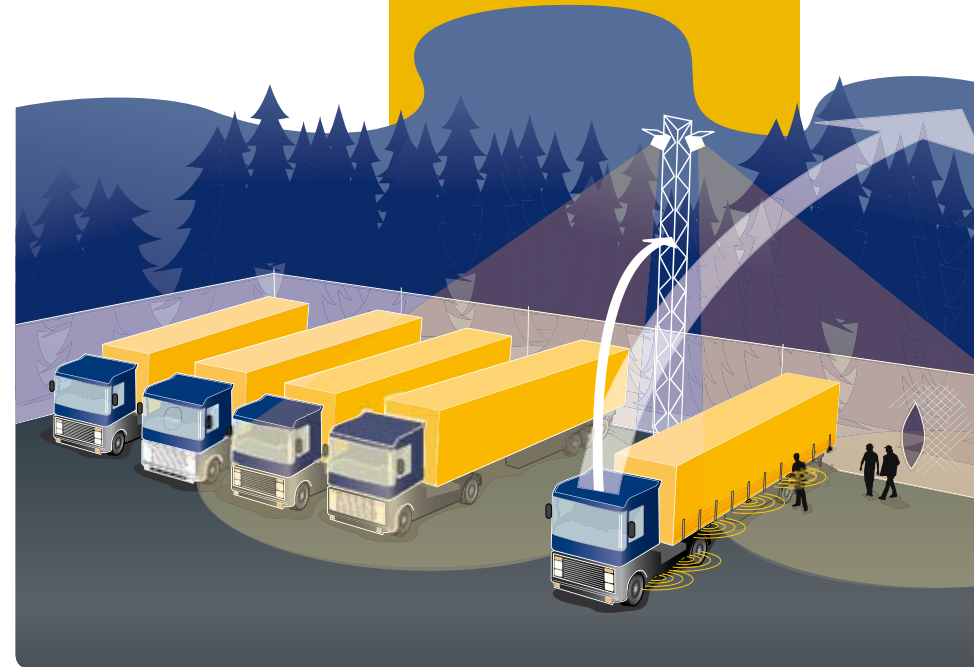
D-Net® combined with bright floodlights and a powerful siren both scares off potential robbers and makes theft more difficult by bathing the area in powerful light and putting the thieves under further time pressure since everyone can see and hear what is going on.

When a trailer – with or without its tractor or truck – is parked awaiting further transport, the alarm is activated and this is highly visible via a flashing red light in the side-marker lamps, warning off potential intruders.

In the event of a break-in, the alarm is triggered and activates both a bright floodlight and a powerful siren, attracting attention to the scene of the crime. At the same time, the alarm signal is transmitted to a predetermined recipient, most likely the haulage firm's central office and its security firm.

## Facts

Inside the terminal the side-marker lamps communicate with the nearest lamp-post. If any unauthorised person approaches the truck, an alarm signal is dispatched wirelessly, alerting staff, switching on even more floodlights or directing an overhead security camera to the scene.



3



The EU is planning special parking-lots for increased security. D-Net® with its built-in alarm function is a cornerstone in the creation of this type of parking-lot. In this case too the driver can choose to share the alarm with others for enhanced security.

## Secure parking-lots

One way of preventing break-ins is to establish special parking-lots for trucks, planned from the outset for enhanced safety, which can be recommended for over-night stops.

The EU is planning special parking-lots of this type and in Sweden there is a proposal for which guidelines should apply.

D-Net® with its built-in alarm function is a cornerstone in the creation of this type of parking-lot. In the event of a break-in, an alarm signal is transmitted to the driver, the service facility and the security firm. The alarm can also switch on a bright floodlight located high up on a lighting mast, attracting attention to what is going on.

Several drivers can also choose to share the alarm with others for enhanced security, that is to say if the alarm is triggered in one truck, all the others that have chosen to join forces will also be activated.

## Facts

In order to enhance safety in parking-lots, a proposal for guidelines has been produced on behalf of the Swedish Road Authority. These guidelines relate to infrastructure in the form of planning of entrances and exits, the design of illumination, the need for fences and alarms, service facilities and so on. The proposal also covers what is expected of the drivers, such as how the trucks are to be parked and limitations on access.



4



D-Net® offers support during reversing, loading and unloading, thus reducing the risk of damage and injury. Owing to a virtual link to the loading bay gate, there is also lower risk of the truck driving off before loading/unloading is completed.

## Reversing sensor/downlights and link to the gate

Loading and unloading are often highly stressful operations with each rig having a narrow time slot for operating at the terminal. Docking normally goes well but it does sometimes happen that the truck driver reverses into and damages both the loading bay gate and the truck or trailer. For the terminal owner this represents a recurring cost for repairs. At the same time, the haulage firm has to pay for repairs to the truck and perhaps also compensation to the terminal owner.

Through D-Net® reversing sensors can easily be retro-fitted at the rear of the truck and trailer to offer added support when backing up, thus reducing the risk of damage.

While reversing, the LED lamps also produce a downlight to help the driver position the vehicle and discover any potential obstacles. Through D-Net® it is also possible to create a virtual link to the loading bay gate and thus reduce the risk of the vehicle driving off before loading/unloading is completed.



## Facts

When a truck docks against a loading bay the driver receives an indication of the distance between the rear of the rig and the loading platform – even when a trailer is being used. By equipping the loading bay with a radio transmitter, an electric hook-up can be installed to inform the driver that loading/unloading is under way. The lamp units are also equipped with powerful LED downlights that come on as soon as reverse gear is selected, thus helping the driver to see exactly where the truck is positioned, even when it is dark.

5

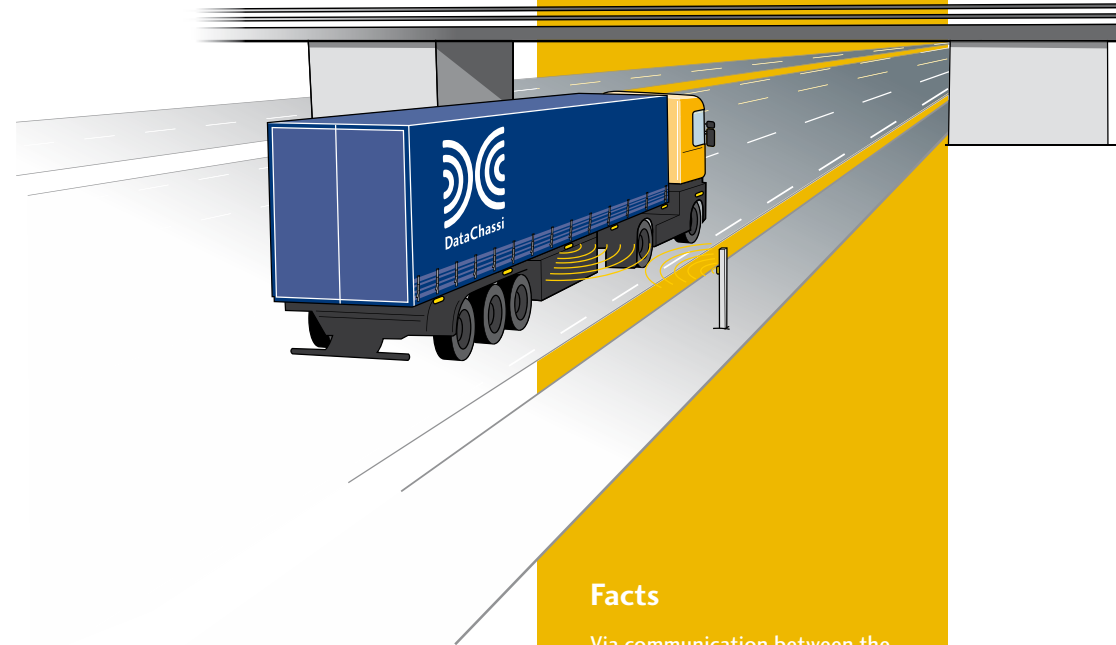


D-Net® can monitor both the status of the cargo and the vehicle's dimensions, thus preventing potential accidents and helping the emergency services in the event of an accident.

## Transport of dangerous goods

Our roads are used to transport goods that can cause considerable destruction in the event of an accident. Especially in the case of vulnerable infrastructure such as bridges, tunnels and high-population urban areas, it is vital to quickly obtain a clear picture of the situation in the event of an accident.

Sensors that warn of leakage, inadequate load anchorage, abnormal temperature and so on can be hooked up via D-Net®. This makes it easier to prevent accidents and, if they nonetheless occur, speeds up the process of providing the emergency rescue services with an accurate status report.



### Facts

Via communication between the lamps and a device on a roadside lamp-post, the truck ascertains how tall a bridge is or can declare its cargo before entering a tunnel. The on-board computer also checks that the vehicle's dimensions are not outside the permitted limits. In the event of a problem, the driver can choose a detour to avoid an unsuitable bridge or viaduct.

6



D-Net® inkluderar includes sensors in the side-marker lamps that can extend the monitored area along the side of the rig as the truck turns a corner. As a result, the driver is alerted if there is any risk of bumping into anything alongside the truck and/or trailer.

## Blind spot indicator

Within the EU, about 400 people die every year when trucks and buses turn corners. An EU directive from 2003 imposes demands on equipping new trucks above 3.5 tonnes with specially developed rear-view mirrors or other aids to cover the offset rear “blind spot” when turning.

At the same time it has been established that if the EU’s current truck fleet were to be upgraded and retro-fitted with this type of supplementary aid, another 1300 human lives would be able to be saved over the coming 12 years.

D-Net® sensors in the side-marker lamps that extend the monitored area along the side of the rig as the truck turns a corner, alerting the driver if there is an obstacle – such as a cyclist – beside the vehicle.



### Facts

When the driver activates his turn signal indicators, the side-marker lamps temporarily extend the sensor function on the side where the driver intends to turn. As a result, any object in the danger zone is discovered and the driver is alerted to look once more in his rear-view mirror before executing the turn. This function can also help the driver avoid impacts in the offset rear “blind spot” when changing lanes on the motorway.

7



The logistics sector is experiencing considerable expansion at the same time as there is immense competition between the many players. Among the important factors affecting competition are low cost and high delivery precision. Consequently, the ability to monitor the cargo throughout every phase of the delivery process becomes vital. This is now possible thanks to RFID readers connected to D-Net®.

## More efficient transportation and cargo handling

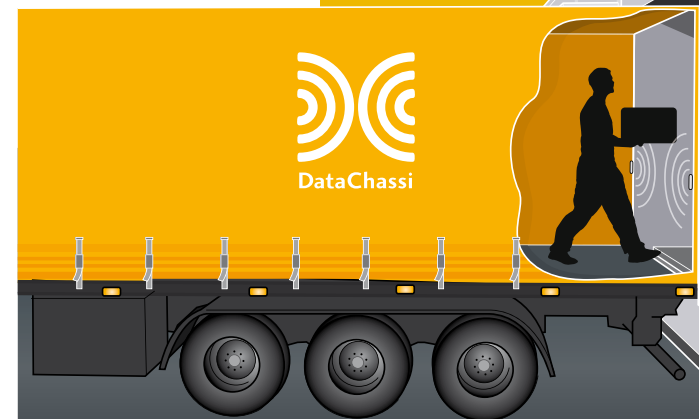
Location tracing through Radio Frequency IDentification, RFID, is coming into increasing prominence, beginning with pallets but now also being found on packing materials and individual packages. RFID readers are fitted to the trailer and connected via D-Net® to the cab or to the operations centre for updating of the “track and trace” function.

The hauler can thus determine during loading and unloading if the correct cargo is being handled. If everything is correct, a direct check can be done electronically against the order and the invoicing system. If the wrong cargo is unloaded by accident, the driver will be automatically alerted and will be able to rectify the error on the spot.

A continuously updated status report for the cargo also makes it increasingly possible to raise vehicle utilisation rates and thus further improve efficiency. Another area of potential is for sensors linked to D-Net® to monitor how the cargo is being handled, for instance if it is being kept within the right temperature range or whether it has been handled unsuitably in some other way.

### Facts

RFID – Radio Frequency IDentification – is a new technology that permits automatic scanning of marked products. The major difference between RFID and barcodes is that with RFID it is possible to read many articles simultaneously without requiring direct eye contact with the RFID tag. RFID is regarded as one of the world’s major growth areas.





*DataChassi AB is a company jointly owned by CombiPort and Volvo via VTT. The operation is based on a global patent application for increased safety and more efficient transportation. Scania too participates in the development process and cooperation will also be sought with other major truck makers.*

Lars Birging, Marknadschef  
Mob: +46 703 62 06 21  
Phone: +46 36 332 06 21  
Fax: +46 36 332 08 29  
lars.birging@datachassi.com

Werner Hilliges, VD  
Mob: +46 708 37 13 89  
Phone: +46 36 332 06 20  
Fax: +46 36 332 08 29  
werner.hilliges@datachassi.com

**DataChassi AB** Science Park, Gjuterigatan 9, 553 18 Jönköping, Sweden, [info@datachassi.com](mailto:info@datachassi.com), [www.datachassi.com](http://www.datachassi.com)