

ADAPTIVE RECOGNITION PORT SYSTEMS

SUBSYSTEM 02 · FREIGHT PROCESSING

Adaptive Freight Gate Every truck identified, measured and inspected.

One free-flow pass at 30 to 70 km/h. Plates, hazmat placards, cab occupancy and a full condition scan land in one time-stamped freight record, before the unit clears the gantry.

ONE PASS. NO STOP. NO WEIGHBRIDGE.



SCAN TO SEE
IT ONLINE



30-70 KM/H

Free flow, no stop at the gantry

99.7%

Front and rear plate read and nationality

ADR AND IMO

Dangerous-goods placards read and logged

SIDE SCAN

Full-length IR condition panorama of both flanks

01 · OVERVIEW

Measure the real unit, not the booking.

Most terminals still plan freight from booking data that can be incomplete, out of date or entered in another format. The Adaptive Freight Gate reads the truck as it rolls through and writes verified ground truth to your systems before the ramp.

The problem at the pre-gate

- **Booking data is not the unit.** Length, height, weight, axle load and DG class are often wrong or missing until the truck is already in the flow.
- **Manual checks stop traffic.** Clerks key plates, read placards and inspect damage by hand, one truck at a time.
- **Disputes cost days.** Without a time-stamped image, damage and tariff claims turn into paperwork between operator and haulier.

What the gate does

- **Identifies the unit.** Front and rear plates, trailer plate, nationality, make, model and vehicle class.
- **Reads the load.** ADR placards and IMO class signs, plus optional dimensions, weight and container code.
- **Records the condition.** A full-length IR panorama of both flanks, attached to the same event in the Globessey Data Server (GDS).

99.7%PLATE READ AND
NATIONALITY**98%**

VEHICLE CLASSIFICATION

93–95%

CAB OCCUPANCY

30–70 km/hFREE-FLOW DESIGN
RANGE

Figures are the delivery KPIs our deployments are contracted to meet. Actual performance depends on port layout, traffic mix, lane design and the integration on the port's side.

WHO IT IS FOR

01

Ro-Ro ports

Every truck arrives with its hazmat code logged and its condition baseline captured, before the freight ramp opens.

02

Ferry freight decks

Where LiDAR and WIM are fitted, dimensions and weights stream to the manifest. Disputes settle from a single photograph, not days of paperwork.

03

Cross-border routes

Central gate processing for international ferry corridors. Every load classed and its chain of custody captured for customs.

What it changes for operators

- Safer stowage and fewer last-minute rejections
- Better lane-metre utilisation and more reliable turnaround
- No clipboard, no clerk typing, no re-keying

Built on 35+ years of ANPR

Adaptive Recognition has built number plate and vehicle recognition since 1991. The Adaptive Freight Gate is one of six Adaptive Port Systems subsystems that share one data layer, the Globessey Data Server.

02 · CAPABILITIES

What the gate reads in a single pass.

Every sensor on the gantry fires in sequence as the truck rolls through. One time-stamped freight record for every crossing.

01

Front and rear ANPR

Front and rear Vidar cameras read the plate at 99.7%, closing the match as the unit exits the gantry.

02

Extra licence plate

Trailer and chassis plates read separately, linking the load to the registered unit in one record.

03

Nationality

Country of registration from both plates at 99.7%, for cross-border checks and booking match.

04

Make and model

Make and model of the tractor unit identified in the same pass, the visual fingerprint for tariff and fleet rules.

05

Classification

Sorted into vehicle categories at 98%: semi, road train, tanker, box and more.

06

Speed

Lane-accurate speed from 30 to 70 km/h on every event. Throughput proof and the basis for WIM correction.

07

Cab occupancy

Persons in the cab counted through the windscreen at 93–95%. Accompanied or unaccompanied, decided before the ramp.

08

ADR and IMO hazmat

Carmen ADR reads orange placards to UN number, hazard class and packing group, plus IMO class signs.

09 · OPTION

Dimensions by LiDAR

Height, width and length from a third-party LiDAR in the same pass, so the real unit is known before the ramp.

10

Side-scan condition

Four flank cameras stitch a full-length IR panorama of both sides: the damage baseline for the crossing.

11 · OPTION

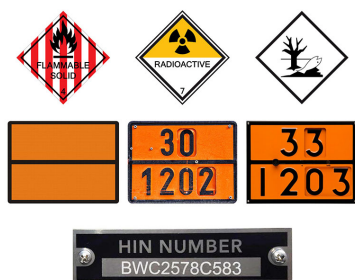
Weigh-in-motion

Gross weight, per-axle weight and axle spacing at lane speed. Third-party equipment, supplied by the port.

12 · OPTION

Trailer and container code

ACCR reads ISO 6346 and intermodal codes, confidence-scored and attached to the freight event.



Dangerous goods, before the yard. Carmen ADR decodes the orange plate to UN number, hazard class and packing group in the same pass. Every dangerous load is logged and flagged before it reaches the yard. No stop and no manual placard check.

FIGURE 1 Placards and labels read by Carmen ADR.

03 · HOW IT WORKS

Inspection, classification and weighing in one corridor.

Trucks roll through at a near-constant 30 to 70 km/h. The complete freight event is assembled and posted to GDS before the unit clears the gantry.

01**Approach**

The truck enters the free-flow corridor. Front ANPR and the ADR reader capture the plate and any dangerous-goods placard in one frame.

02**Scan**

Four side-scanners image both flanks. Where fitted, an overhead LiDAR measures height, width and length.

03**Weigh**

Where fitted, weigh-in-motion strips clock gross and per-axle weight at lane speed. Many gates run without them.

04**Record**

Plate, hazard, occupancy and images, plus dimensions and weight where fitted, assemble into one time-stamped event in GDS.

LANE ANATOMY · TOP VIEW

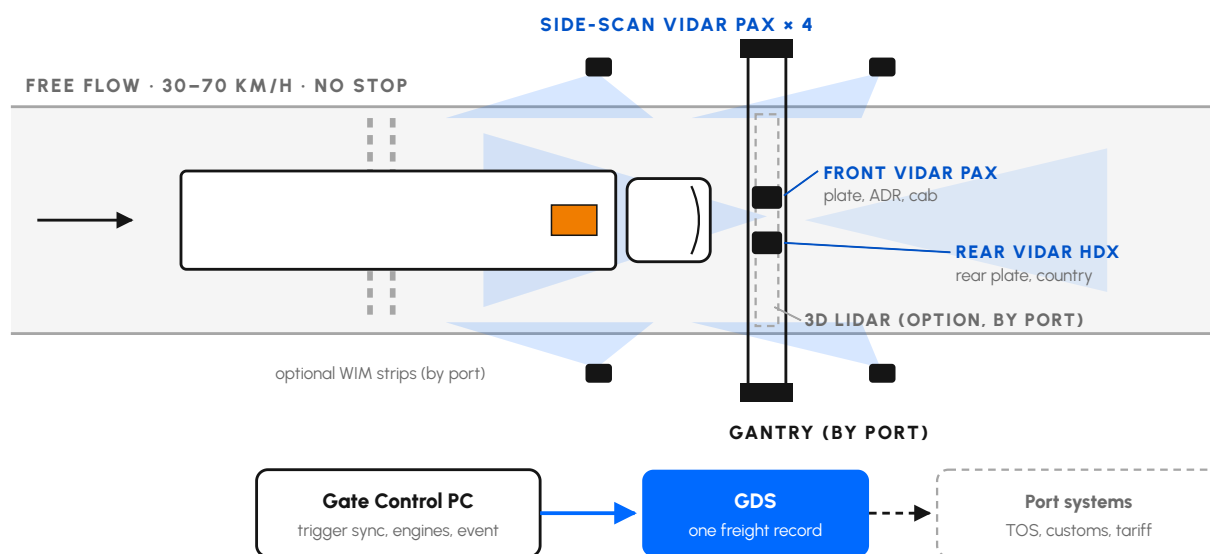


FIGURE 2 Standard lane: front Vidar PAX, four side-scan Vidar PAX and rear Vidar HDX on one gantry, run by a Gate Control PC. 3D LiDAR is an option. Blue: Adaptive Recognition supply. Dashed grey: provided by the port or its integrator.

DEPLOYMENT LAYOUTS

Compact

Every sensor on a single gantry. The smallest civil-works footprint for space-constrained gates.

Ro-Ro mode

Cameras lowered to trailer height with lower-chassis scanning, tuned for the units that roll onto a deck.

Lo-Lo mode

No chassis scan. Superstructure and cargo only, for lift-on/lift-off flows where the box is the story.

04 · THE RECORD

One pass, one freight record, field by field.

This is the record a customs officer, a tariff engine and a deck planner all read from. No re-keying.

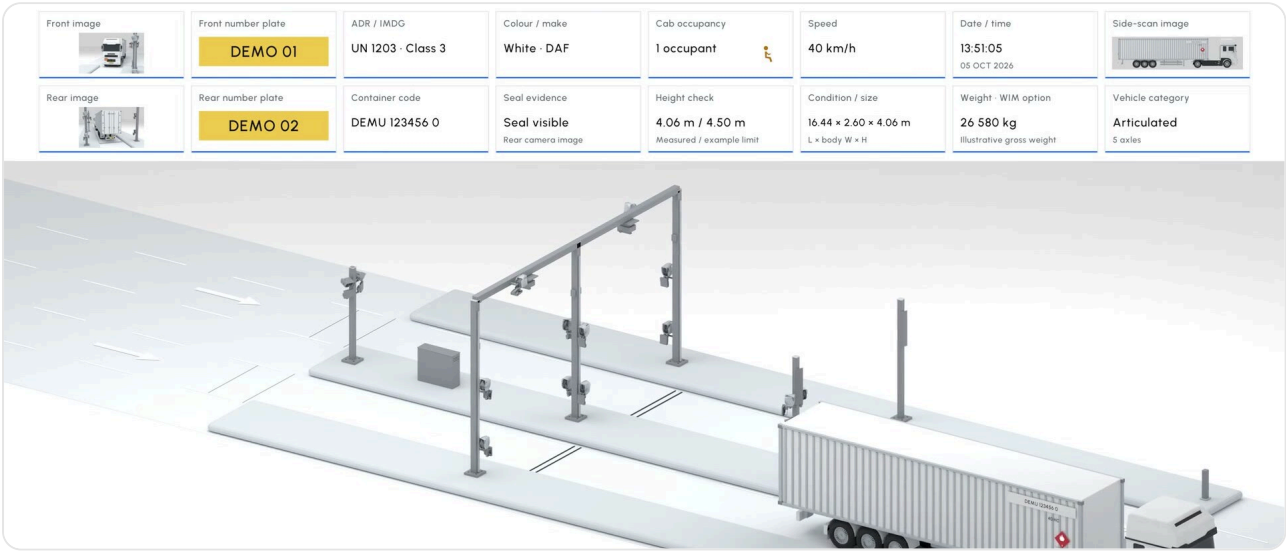


FIGURE 3 The freight record fills as a truck passes a two-lane gantry at 40 km/h. Illustrative values. Gantry, optional LiDAR and optional weigh-in-motion by the integrator.

DATA	WHAT IS RECORDED	DELIVERY KPI
Event metadata	Site, lane, event ID, timestamp.	99.5% counting
Number plate	Front and rear plate with country of registration.	99.7% read · 99.7% nationality
Make and model	Manufacturer and model of the tractor unit.	per event
Vehicle class	Classified into vehicle categories.	98%
Dimensions	Option: height, width and length from a third-party LiDAR in the same pass.	where fitted
Hazmat data	ADR placard and IMO class read and attached to the unit.	logged per event
Cab occupancy	Persons in the cab, counted through the windscreen.	93–95%
Container / trailer code	Option: ACCR intermodal codes, plus an optional top-down scanner view.	confidence-scored
Axle weights	Option: gross weight, per-axle weight, axle spacing from weigh-in-motion.	where fitted
Image attachments	Front and rear overview, IR cab photo, and an IR side-scan panorama as the condition image.	every event

KPIs are the acceptance thresholds our deployments are contracted to meet. Vehicles outside the measurement envelope (0.6–2.6 m wide, 1.5–4.5 m high, 2.2–21.5 m long, axle loads 400 kg–20 t) are still recorded. The contracted accuracy figures no longer apply to them.

05 · ROAD LAW MEETS FERRY OPERATIONS

Legal on the motorway does not mean it fits the deck.

The same unit can clear one national corridor, meet restrictions on the next, and still not fit a given ferry deck once weight distribution, axle loads, deck clearance, ramp angle, accompaniment and dangerous goods come into play.

EU rules cap international traffic at 16.5 m semi-trailers and 18.75 m road trains, 2.6 m wide, 4 m high and 40 tonnes (44 in combined transport). Member states derogate for national traffic: a 25.25 m EMS unit of up to 60 tonnes is legal in Finland and Sweden. The UK and Ireland set their own rules. Every vessel keeps its own limits.

The weak point is the pre-gate, not the vessel. Length, height, width, gross weight, axle load, occupancy, DG class and driver status all need to be known before the unit reaches the ramp.

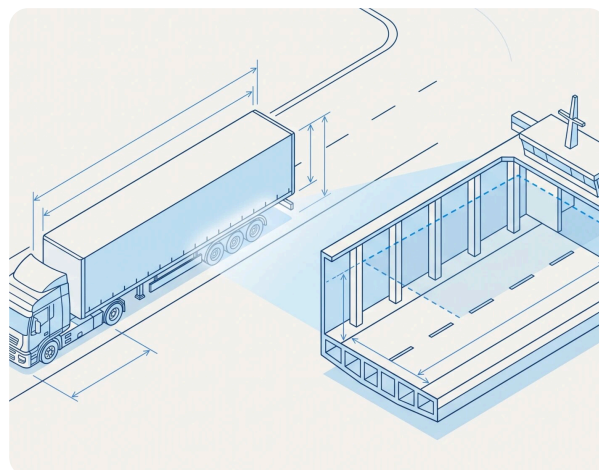


FIGURE 4 The road envelope and the deck envelope are two different checks.

What the freight record lets you check before the ramp

National road-corridor limits

Ferry route restrictions

Vessel deck clearance

Ramp and lane geometry

Accompanied vs unaccompanied

Dangerous-goods segregation

Weight and axle-load limits

Out-of-gauge handling

The rule checks run in your own systems or your integrator's. The gate supplies the measured data they need.

BEYOND THE GATE

Weighed, cleared and matched, on your systems

Weight compliance

Where WIM is fitted, every truck is weighed per axle and gross at lane speed. Overweight loads are flagged before the deck, with time-stamped evidence for audit.

Customs-ready records

Plate, trailer or container ID, hazmat class, weight and images in one structured record, shared through documented APIs on open standards.

Pre-arrival matching

Your integrator connects GDS to your ticketing, TOS or SAP. A cleared truck flows through. A mismatch is caught before the booth.

For operators

Safer stowage, fewer last-minute rejections, better lane-metre utilisation, lower emissions and more reliable turnaround.

For hauliers and shippers

Fewer surprises and clearer route eligibility across borders.

06 · HARDWARE

What is in the lane.

Cameras and one gate PC.

Per lane: one front Vidar PAX for plate and cab, four side-scanners for the condition panorama, a rear Vidar HDX closing the match, and one Gate Control PC.



5 PER LANE

Vidar PAX

The workhorse of the lane. One front unit reads plate, nationality and cab occupancy. Four side-scanners stitch the full-length panorama. Dual global-shutter sensors, colour and IR, self-adjusting optics and a built-in eye-safe laser trigger.

Role	Front ANPR, side-scan
Protection	IP67 · IK10
Temperature	-45 to +70 °C
Origin	Made in EU · NDAA



1-2 PER LANE

Vidar HDX

Rear-facing ANPR. Reads the back plate and country of registration as the unit leaves the gantry, so no plate is missed and the record stands up to dispute.

Role	Rear plate, nationality
Plate read	99.7%
Nationality	99.7%



1 PER 2 LANES

Gate Control PC

Rugged, fanless gate computer. Syncs every trigger, runs the Carmen ANPR, ADR and classification engines, assembles the freight event and sends it to GDS. Buffers locally if the link drops.

Role	Trigger sync, event assembly
Engines	Carmen FreeFlow, ADR
Output	GDS event package
Resilience	Local buffering

Also on the lane

- Front and side LED illuminator kits
- Options: ACCR container and trailer code reading, OBU reader

Third-party, procured by the port

- 3D LiDAR for vehicle dimensions
- Weigh-in-motion, for example high-speed Kistler
- Smart LED panel for flow control
- Gantry, barriers and driver signage

GLOBESSEY DATA SERVER

GDS is the data layer under all six Adaptive Port Systems subsystems. It stores every freight event with its images and exposes it through documented APIs and SDKs to your TOS, customs and tariff systems.

- On-premise by default, on your own hardware
- Security posture aligned with NIS2, GDPR and ISO
- One source of truth if you add more subsystems later

07 · SCOPE OF SUPPLY

What we deliver, and what stays yours.

We supply the recognition layer: the cameras, the readers, the engines that turn a moving vehicle into a record, and the data platform underneath. The lane itself is procured and installed by you or your integrator.

Delivered by Adaptive Recognition

- Front and rear ANPR cameras and the side-scan camera set
- LED illuminators
- Carmen FreeFlow and Carmen ADR recognition engines
- The industrial gate control PC that runs the corridor
- Globessey Data Server, on your own hardware (optional)
- Commissioning, fine-tuning and lifecycle support under one SLA through ARGS

Provided by the port or its integrator

- Gantry, road works and lane markings
- LiDAR and weigh-in-motion systems, procured and installed separately
- Electrical cabinet, power supply, cabling and network
- Barrier, traffic lamp and driver signage, where the lane needs them
- Integration into your TOS, customs and tariff systems

Weigh-in-motion is an option, not a fixture. Plenty of gates run without it. Where it is fitted it is third-party equipment, and its accuracy holds only while it is calibrated regularly against a certified weighbridge. Without WIM, every other measurement still runs.

COMMON QUESTIONS

Does the truck have to stop?

No. It is a free-flow gate. Trucks pass at a near-constant 30 to 70 km/h without stopping or tailgating. Identity, hazard, occupancy and images, plus dimensions and weight where LiDAR and WIM are fitted, assemble before the unit clears the gantry.

Is weigh-in-motion included?

It is an option. When fitted, high-speed weigh-in-motion clocks gross weight, per-axle weight and axle spacing at lane speed, with no weighbridge and no stop.

What about a vehicle outside the measurement range?

It is still recorded. Contracted accuracy applies within 0.6–2.6 m wide, 1.5–4.5 m high, 2.2–21.5 m long and axle loads of 400 kg–20 t. Outside those limits the unit is logged without the contracted accuracy.

Who matches the record to the booking?

Your integrator connects GDS to your ticketing, TOS or SAP. GDS supplies the verified data. The decision to clear or flag the unit stays in your systems.

GET IN TOUCH

See the Adaptive Freight Gate on your freight mix.

Show us your gate layout and freight mix. We will scope the right hazmat, weighing and side-imaging configuration with you.

WHAT TO HAVE READY

Traffic volumes

Peak and off-peak vehicle counts, freight and passenger mix, peak hours.

Site layout

Number of lanes, gate locations, distances between checkpoints, network access.

Existing systems

Booking, ticketing, customs and traffic-management platforms in use.

Your goals

Speed, accuracy, compliance, cost, or all of them.

WHO YOU WILL TALK TO



Péter Tomolák

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Your first point of contact. Péter works with ferry terminals, Ro-Ro ports and integrators across Europe to find where automation pays back fastest.

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This subsystem online

Capabilities, the freight film and full specifications.

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