

ADAPTIVE **RECOGNITION** PORT SYSTEMS

INDUSTRY · RO-RO PORTS

Ro-Ro Ports

From the approach road to the vessel deck.

Automate freight and passenger processing across a working Ro-Ro port.
Fewer manual checks, cleaner manifests, and throughput that holds around
the clock.

THE FREIGHT CLOCK NEVER STOPS.



SCAN TO SEE
IT ONLINE



UP TO 450

Trailers processed per hour,
per portal

UP TO 82%

Fewer manifest reconciliation
exceptions

100%

ADR placard detection within
the design envelope

24/7

Day, night and every weather

01 · THE BASICS

Speed is the point. Accuracy is the risk.

At a Ro-Ro port, trucks, trailers and cars drive straight on and off the ship over a ramp. They are not lifted aboard by crane. A port lives or dies on how fast, and how accurately, it clears what comes through the gate.

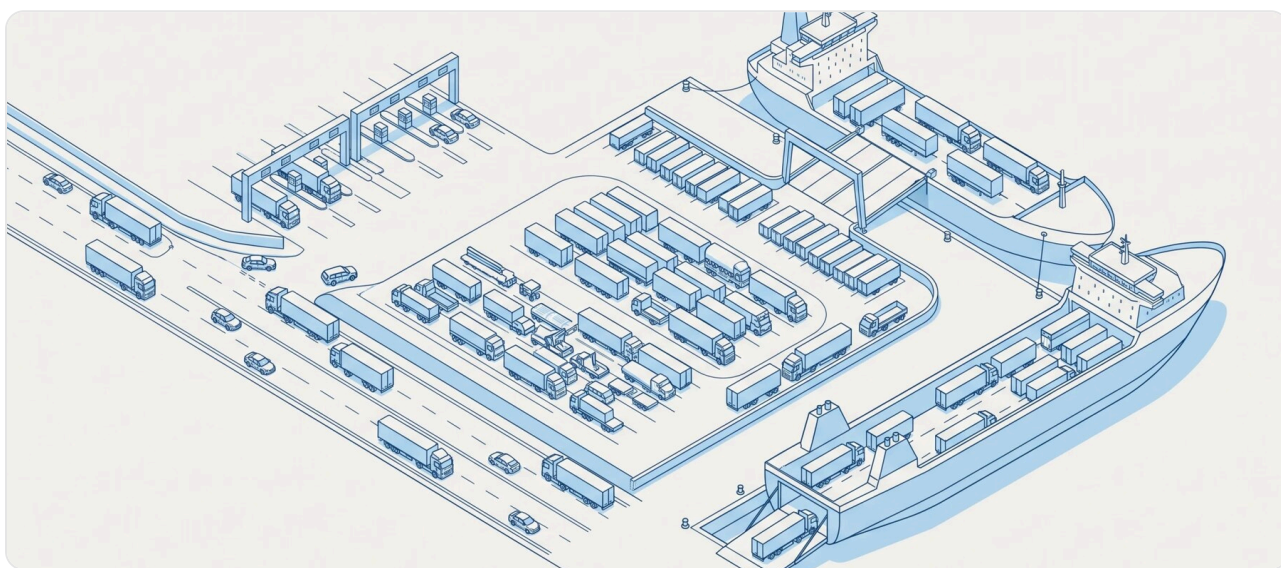


FIGURE 1 The zones every vehicle passes through: approach road, freight and check-in gates, marshalling yard, stern ramp and the vessel deck.

Freight and passengers share the same gates around the clock. Every trailer has to match a booking and a manifest. Dangerous goods need the right paperwork and placarding before they roll aboard. One mismatched plate or missed ADR placard stops the lane and holds the sailing.

INDUSTRY CHALLENGES

01

Cargo manifest accuracy

Mismatched plates, swapped trailers, paper manifests. Every error costs hours of reconciliation downstream.

02

Hazmat compliance

ADR placard detection, segregation requirements and audit trails. Non-negotiable, and often manual.

03

Mixed freight and passenger flow

Trucks and tourists share the same gates. Routing rules change by sailing, and signage rarely keeps up.

04

24/7 operations

Night shifts, all weather, every day. Manual booth coverage at 03:00 is expensive and inconsistent.

02 · THE OPERATIONAL REALITY

The freight clock never stops.

A Ro-Ro port does not get a quiet season. Freight moves overnight, at weekends and in every weather, on tight vessel windows that do not wait.

Manual booths at 03:00 are expensive to staff and easy to get wrong. Every exception, a swapped trailer, an expired booking, an undeclared load, ripples down the quay into the next sailing.

Automating the gate turns that pressure into throughput. Plates, trailers and ADR placards are read as vehicles roll through and written to one shared record.

Your booking and manifest systems match that record against what was booked. The yard, the deck and the paperwork agree, day or night.



FIGURE 2 Freight rolls aboard under its own power. The ramp is the last checkpoint before the sailing.

BY THE NUMBERS

Outcomes Ro-Ro operators see

Up to **450**

TRAILERS PER HOUR, PER
PORTAL

Up to **82%**

FEWER MANIFEST
RECONCILIATION
EXCEPTIONS

100%

ADR PLACARD DETECTION
WITHIN THE DESIGN
ENVELOPE

99.7%

ANPR ACCURACY

Best results measured at reference deployments. Actual performance depends on port layout, traffic mix, lane design and the integration on the port's side.

03 · THE TERMINAL JOURNEY

One unit, five checkpoints, one continuous record.

Each modular subsystem automates one stage of the flow. Deploy them one at a time, or as a single end-to-end checkpoint. All of them report to the Globessey Data Server (GDS).

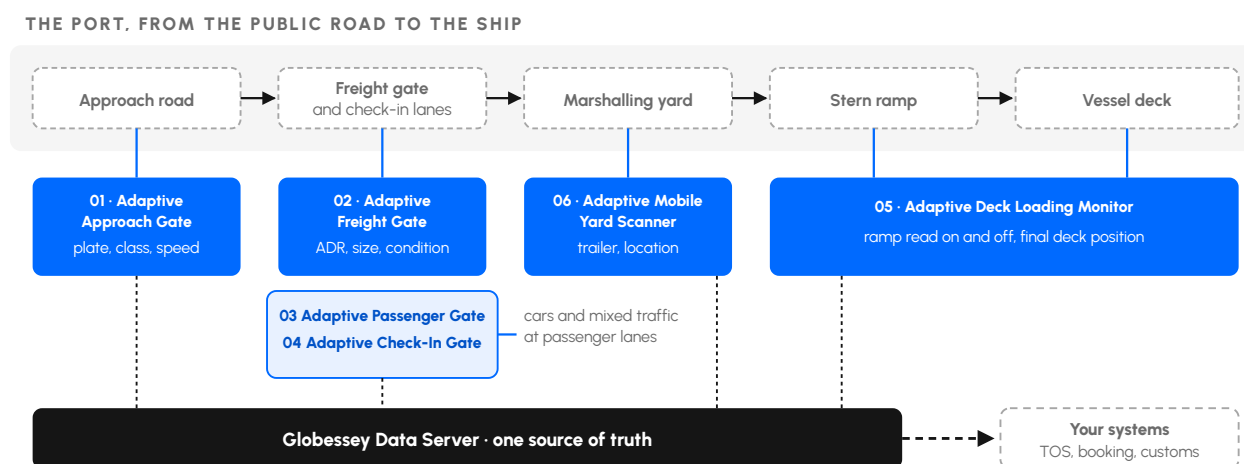


FIGURE 3 Where each subsystem sits in a Ro-Ro port. Schematic, not a site plan. Blue: Adaptive Recognition. Dashed grey: the port and its systems.

STAGE	SUBSYSTEM	WHAT IT RECORDS
Approach road	Adaptive Approach Gate	Every plate across all lanes, vehicle class and speed, plus dimensions where LiDAR is fitted, before the gate.
Freight gate	Adaptive Freight Gate	Front and rear plates, trailer plate, ADR placard, cab occupancy and a condition panorama, plus optional LiDAR dimensions.
Check-in lanes	Adaptive Passenger Gate Adaptive Check-In Gate	Occupant count through tinted glass. Plate and travel document bound into one identity record.
Marshalling yard	Adaptive Mobile Yard Scanner	Trailer identity, location context and image evidence, captured as tugs work or by survey.
Ramp and deck	Adaptive Deck Loading Monitor	What drove aboard and off again at the ramp, then each unit's final deck position.

04 · THE SUBSYSTEMS

Six modular subsystems.

Take one, take three, take all six.

The four core subsystems follow freight from the boundary to the deck. The two passenger subsystems cover the cars and mixed traffic that share a Ro-Ro gate. Scan a code to open each subsystem online.

CORE FOR RO-RO FREIGHT

01

Adaptive Approach Gate

First-line multi-lane ANPR screening at the port boundary. Every vehicle identified before it reaches the gate.



02

Adaptive Freight Gate

Freight processing in one free-flow pass: ANPR, container OCR, ADR/IMO hazmat detection, weigh-in-motion, dimensioning and damage scan.



05

Adaptive Deck Loading Monitor

Vidar smart cameras at the ramps record what drove aboard. Intellio cameras on the decks follow each unit to its final position.



06

Adaptive Mobile Yard Scanner

Capture trailer movements from working tugs, or verify parked trailers with a van or car survey. Data to GDS, SFTP or an agreed interface.



FOR CARS AND MIXED TRAFFIC

03

Adaptive Passenger Gate

IR-based passenger counting that works through tinted glass, without stopping the flow. Supports SOLAS headcount obligations.



04

Adaptive Check-In Gate

Einar cameras and the Osmond Advanced Passport Reader hand a complete identity record to the port's own check-in system.



Weigh-in-motion is an option, not a fixture. Where a site has it, the Adaptive Freight Gate adds its readings to the freight record. The WIM equipment itself is third-party, procured by the port, and accurate only while it is calibrated regularly against a certified weighbridge.

05 · BEFORE THE RAMP

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

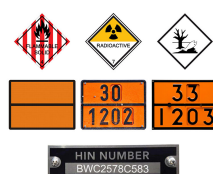
A unit can clear one national corridor and still not fit a given ferry deck. The weak point is the pre-gate, not the vessel.

Measure the real unit

Most terminals still plan from booking data that can be incomplete, out of date, or entered in another format. Length, height, width, gross weight, axle load, occupancy, DG class and driver status all need to be known before the unit reaches the ramp.

In one moving pass, the Adaptive Freight Gate reads the plate, decodes the ADR or IMO placard and, where fitted, measures the unit by LiDAR and takes the WIM weight. Your rule checks run on that measured data.

Hazmat, 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.

Accompanied or unaccompanied

Persons in the cab are counted through the windscreen at 93–95%. Accompanied or unaccompanied handling is known before the ramp.

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.

IN SERVICE TODAY

Ireland**Rosslare Europort**

Operated by Iarnród Éireann (Irish Rail).

- Adaptive Freight Gates and Adaptive Check-In Gates in service
- Adaptive Mobile Yard Scanner working the trailer yard
- SLA support through ARGS

United Kingdom**Port of Dover**

The busiest ferry port in Europe.

- Vidar cameras reading plate, make and model, and ADR placards
- Three recognition jobs on one camera family
- Coverage still expanding as the port digitises

06 · PLATFORM AND PARTNERSHIP

One data layer, one partner for the lifecycle.

Globessey Data Server

Every subsystem writes to GDS. Gate, yard and deck share one time-stamped record per unit, with image evidence, served to your TOS, booking and customs systems through documented APIs.

- On-premise by default. Cloud and hybrid on request
- SDKs in Java, Python, C#, C++ and PHP
- Redundant storage and offline caching at gate PCs
- ISO 27001 aligned, NIS2-ready, AES-256 at rest, TLS in transit
- Open APIs: swap a camera or add a vendor without re-platforming

Lifecycle services through ARGS

Every deployment is backed by Adaptive Recognition Global Services (ARGS) in Copenhagen. One partner, one SLA, full lifecycle.

- 24/7 monitoring
- Hardware replacement
- Software updates
- Incident response

SLA tiers are scoped per customer.

HOW WE ROLL OUT

Lane by lane

Roll out one lane at a time, keep manual fallback during the switch, and bring gate staff onto the new flow in phases. No rip-and-replace.

3 to 6 months

Typical full-stack deployment from contract to go-live, depending on lane count and site readiness. Phased rollouts are supported.

End to end or by stage

We deliver every layer from hardware to lifecycle, or plug into your integrator's team where our expertise adds value.

Delivered by Adaptive Recognition

- Cameras: Vidar, Einar, Lynet, and Intellio on board
- Osmond Advanced Passport Reader
- Carmen recognition engines
- Triggering sensors, gate control PCs
- Globessey Data Server, on your own hardware
- Lifecycle services through ARGS

Provided by the port or its integrator

- Kiosks, barriers, traffic lamps, LED signage
- LiDAR and weigh-in-motion systems
- Cabinets, power, cabling and network
- Gantries, foundations and civil works
- Integration into TOS, ticketing and customs

GET IN TOUCH

Automate your Ro-Ro checkpoint.

Tell us about your routes, freight mix and compliance requirements. We will scope the right configuration and walk you through deployment.

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

Port Systems · Business Development · Budapest

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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Owens the Port Systems line end to end, from the first scoping call through deployment and 24/7 lifecycle support under one SLA.

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Ro-Ro ports online

The terminal journey and every subsystem in detail.

adaptiveportsystems.com/industries/ro-ro-ports



Book a consultation

We respond within one business day.

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