

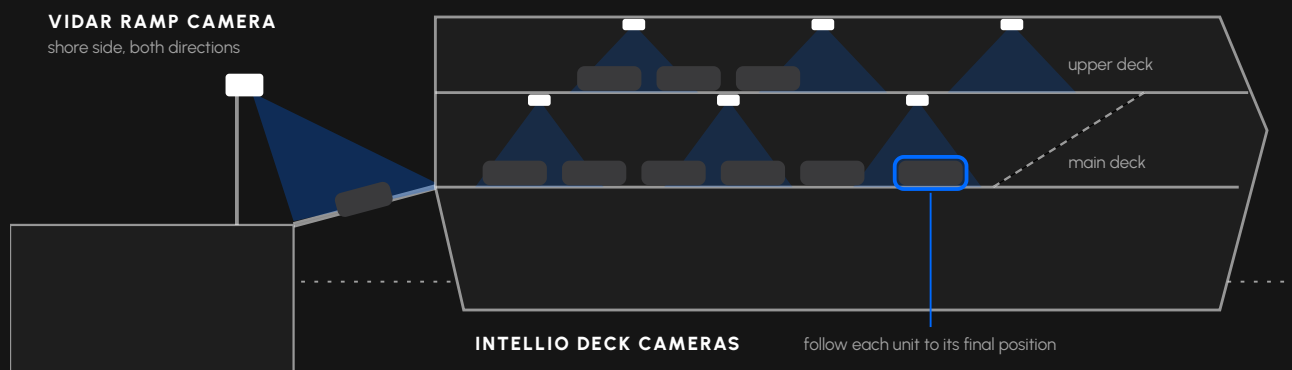
SUBSYSTEM 05 · RO-RO LOADING OVERSIGHT

Adaptive Deck Loading Monitor

What drove aboard, and where it parked.

Two stages, one record. Vidar smart cameras at the ramp read every unit that drives aboard and off again. Intellio cameras on the decks follow each unit to its final position.

FROM THE RAMP TO THE FINAL DECK POSITION.



TWO STAGES

Ramp capture ashore, deck tracking on board

BOTH DIRECTIONS

Read on boarding and again on disembark

24/7 AT SEA

Decks recorded throughout the crossing

SYNCS WHEN DOCKED

No crossing lost to a dead link

01 · OVERVIEW

Real-time visibility for every Ro-Ro loading cycle.

The Adaptive Deck Loading Monitor works in two places. Shore side, Vidar smart cameras read every vehicle at the ramp. On board, Intellio cameras confirm each unit reaches its deck position. Together they protect turnaround and remove misload risk.

The problem on the deck

- **The manifest is not the ship.** What was booked and what actually drove aboard drift apart during a busy loading cycle.
- **Misloads surface late.** A unit on the wrong deck or in a hazmat-restricted zone is found after more vehicles have followed it.
- **Claims lack evidence.** Without time-stamped images of the loading sequence, billing and damage disputes rely on paperwork.

What the monitor does

- **Reads the ramp.** Plate, make and model of every unit, boarding and disembarking.
- **Follows each unit on board.** Deck and lane position, paired with the ramp read.
- **Keeps the record.** A time-stamped, image-backed audit trail of every loading sequence in the Globessey Data Server (GDS).

99.7%PLATE READ AND
NATIONALITY**99.5%**

EVENT COUNTING

24/7

DECK RECORDING AT SEA

4-6LANES PER DECK, DUAL
DIRECTION

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

WHO IT IS FOR

01

Ro-Ro ferries

Track every vehicle from ramp to deck position, update the load plan in real time and cut turnaround at the berth.

02

Car carriers

Confirm the deck assignment of every vehicle, so the next berth call can be sequenced without manual reconciliation.

03

Mixed passenger and freight decks

Coordinate decks where cars and freight trailers share the same loading space, from one data layer.

What it changes for operators

- Manifest and reality in step during loading
- Fewer bottlenecks at the ramp
- Image-backed evidence for billing and claims

Built on 35+ years of ANPR

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

02 · CAPABILITIES

Four jobs on every sailing, done under camera.

The ramp read and the deck confirmation become one live view of the load. Crews and operations see the same picture.

01

Real-time loading verification

Cameras confirm every vehicle is on the correct deck the moment it parks. No gap between manifest and reality.

02

Vessel turnaround optimisation

Live load-progress dashboards let crews and operations sequence loading without bottlenecks at the ramp.

03

Per-vehicle deck position tracking

Each ANPR read is paired with a deck and lane reference, building a digital twin of the load plan.

04

Misload prevention

Automatic alerts fire if a vehicle parks on the wrong deck or in a hazmat-restricted zone, before the next car drives on.

BUILT FOR LIFE AT SEA

4–6 lanes

per deck, in dual-direction mixed traffic

~50 cameras

and 4 onboard video servers on a 100 m vessel

24/7

continuous recording of the vehicle decks while sailing

Auto-upload

to GDS as soon as the vessel is alongside

Connectivity at sea is never assumed. The onboard servers store everything locally and hand it to the port's GDS as soon as the vessel is alongside and the shore link is available. No crossing is lost to a dead link.

Recognition at the edge

Vidar cameras at the ramps and Intellio cameras on the decks both run recognition on the device. Reads land in GDS live from the quay, and by automatic upload from the vessel after every crossing.

One camera, two lanes

A single Vidar ramp camera typically covers two lanes, in both the incoming and outgoing direction, with ANPR, make and model recognition and lane detection on board.

03 · HOW IT WORKS

From ramp to final deck position, every unit under camera.

Four moments in every loading cycle. The data lands in GDS, where it is enriched and shown on the loading dashboard.

01**Ramp capture**

Vidar cameras around the ramp read plate, make and model as the unit drives aboard, and again on the way off.

02**Deck routing**

Wide-angle cameras inside the vessel track the vehicle through deck-level transitions and tail-back.

03**Park confirmation**

A camera at each deck row confirms the final park position. The load plan updates in real time.

04**Audit and analytics**

GDS keeps a time-stamped, image-backed trail of every loading sequence, exportable for billing and claims.

SYSTEM ANATOMY · SIDE VIEW

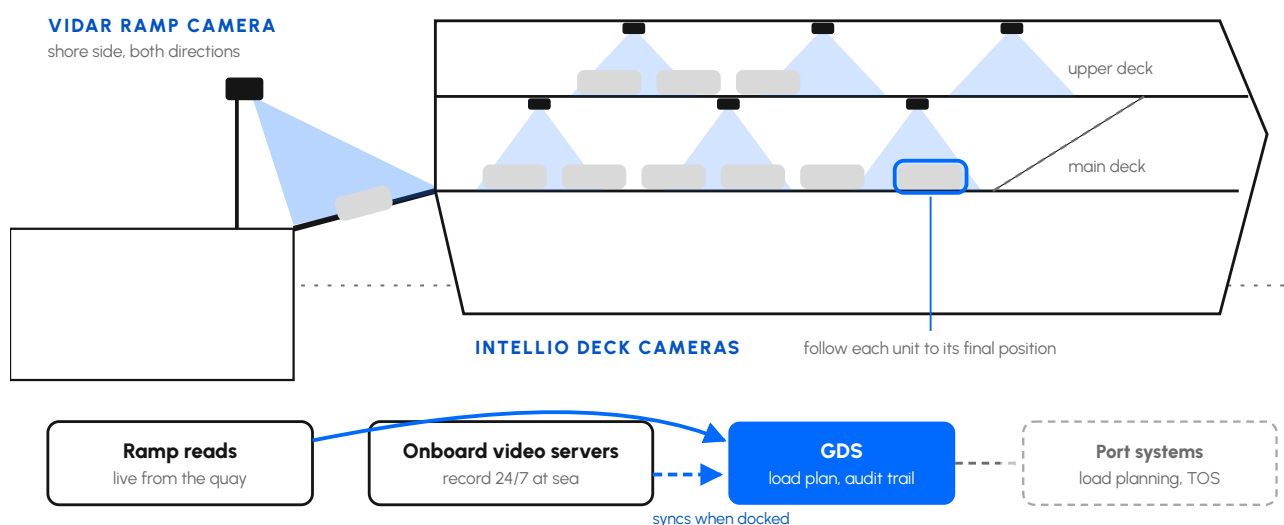


FIGURE 1 Vidar ramp cameras report live from the quay. Intellio deck cameras record to onboard video servers, which sync to GDS when the vessel docks. Blue: Adaptive Recognition supply and sensing. Dashed grey: provided by the port or its integrator.

Matching stays in your systems. GDS exposes REST and MQTT feeds. Your load-planning system or TOS compares the reads with the assigned deck and drives the decisions on the ramp.

04 · THE RECORD

What one boarding writes. Two halves of the same record.

The ramp read and the deck confirmation belong together: what drove aboard, and where it ended up.

Ramp read

NUMBER PLATE	NL AL-EX-71
DIRECTION	Boarding, read again on disembark
DATE AND TIME	2026-08-18 13:48:27
EVIDENCE	Ramp image

Deck confirmation

DECK AND LANE	Deck 2, lane 4
PARK POSITION	Confirmed final position on deck
LOAD PLAN	Updated in real time

Values show one illustrative event.

THE EVENT PACKAGE

What the vessel writes to GDS

DATA	WHAT IS RECORDED	DELIVERY KPI
Event metadata	Vessel, deck, lane, event ID, timestamp.	99.5% counting
Ramp crossing	Every unit read at the ramp as it drives aboard, and read again as it drives off.	both directions
Number plate	Front and rear plate with country of registration, tied to the deck position.	99.7% read · 99.7% nationality
Deck position	Which deck and lane each unit finally parks in. The live load plan.	per vehicle
CCTV record	Continuous footage of the vehicle decks, around the clock at sea.	24/7

KPIs are the acceptance thresholds our deployments are contracted to meet. The ramp cameras report live from the quay. On board, cameras record continuously at sea and sync to GDS when the ferry docks and the port link comes up.

Billing

Export the loading sequence as evidence of what sailed.

Claims

Settle disputes from time-stamped images of each unit.

Turnaround

Use the loading history to improve the next sequence.

05 · HARDWARE

What is in the kit.

Built for the quay and the sea.

Hardware engineered for quayside and marine environments. Software built on 35+ years of ANPR.



SHORE SIDE · AROUND THE RAMPS

Vidar ramp cameras

Standalone smart cameras reading every vehicle in both the incoming and outgoing direction. ANPR, make and model recognition and lane detection run on the camera.

Coverage	Typically two lanes per unit
Direction	Boarding and disembarking
Versions	Full HD and 5 MP



ON BOARD · VEHICLE DECKS

Intellio cameras

ANPR and CCTV cameras from Intellio, Adaptive Recognition's video-analytics daughter company. They record the vehicle decks 24/7 throughout the crossing.

Recording	24/7 at sea
Housing	Salt spray, direct ramp lighting
Recognition	ANPR at the edge



ON BOARD · OVERHEAD

Wide-angle coverage cameras

Overhead 180° fisheye sensors track vehicle movement across entire deck rows. Stitched feeds drive the loading visualisation in GDS.

Field of view	180°
Role	Deck routing, row coverage



ON BOARD · PLUS GDS ASHORE

Onboard servers and GDS

Onboard video servers store every event locally and sync to the Globessey Data Server when the vessel docks. GDS exposes REST and MQTT feeds and powers the load-plan dashboards.

Sync	Automatic, when docked
Interfaces	REST · MQTT
Hosting	On-premise by default

06 · SCOPE OF SUPPLY

What we deliver, and what stays yours.

We supply the recognition layer: the cameras, the engines that turn a moving vehicle into a record, and the data platform underneath. Mounting, power and the network are procured and installed by you or your integrator.

Delivered by Adaptive Recognition

- Vidar smart cameras at the ramps, shore side
- Intellio cameras covering the vehicle decks
- Onboard video servers
- 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

- Camera mounting, power and cabling on the vessel and at the ramp
- The ship-to-shore network link
- Electrical cabinet and power supply
- Integration into your load-planning system or TOS

Work on the vessel. Installation on board is carried out in the yard or alongside, to the ship's own standards and under its class rules.

COMMON QUESTIONS

What if there is no connection at sea?

Nothing is lost. The onboard servers store every event locally and sync to GDS as soon as the vessel is alongside and the shore link is available.

Where does the recognition run?

On the cameras. Vidar at the ramp and Intellio on the decks both run recognition at the edge, and send the results to GDS.

How many ramp cameras do we need?

A single Vidar ramp camera typically covers two lanes, in both directions. The final count depends on your ramp layout.

How do the reads reach our systems?

GDS exposes REST and MQTT feeds for terminal operating systems. Your integrator connects them to your load-planning system or TOS.

GET IN TOUCH

See the Adaptive Deck Loading Monitor on your next sailing.

Speak to our team and we will scope deck-loading visibility against your ramps and your vessel.

WHAT TO HAVE READY

Traffic volumes

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

Site layout

Ramps, decks and lanes per deck, network access ashore and on board.

Existing systems

Booking, load-planning, TOS 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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This subsystem online

Capabilities, components and full details.
adaptiveportsystems.com/systems/deck-loading-monitor



Book a consultation

We respond within one business day.
adaptiveportsystems.com/book-consultation

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