HDS
HIGH DEFINITION SYSTEMS

Dynamic and Static Mobility Solutions



Integrated traffic monitoring, incident management and parking operations

Two operating environments, one data foundation

Dynamic traffic manages movement. Static traffic manages capacity and access.

DYNAMIC TRAFFIC

Roads, corridors and intersections

Measure flow, speed, vehicle class, lane occupancy and queues. Detect incidents and support coordinated response.

STATIC TRAFFIC

Parking and controlled access

Measure occupancy, guide drivers, identify vehicles, manage entry and exit, and support payment or enforcement workflows.

Shared services

- Edge analytics
- Secure network
- Central platform
- Open APIs
- Operator workflows

A layered architecture connects field data with operational decisions

FIELD SENSING	Video analytics	Radar	Parking sensors	Access devices
EDGE PROCESSING	Detection	Classification	Local recording	Event filtering
CONNECTIVITY	Fiber / Ethernet	4G / 5G	Secure VPN	Redundant links
CENTRAL PLATFORM	Maps and dashboards	Event management	Reports	Data integration
OPERATION	Traffic control	Parking guidance	Incident response	Public information

The same architecture supports permanent sites, temporary surveys and phased deployment.

Traffic measurement and operational baseline

FLOW

Vehicles by time and lane

Counts, direction and lane distribution reveal demand and unusual changes.

SPEED

Profiles and violations

Average speed and individual events support safety analysis.

CLASSIFICATION

Vehicle composition

Passenger cars, buses, trucks, motorcycles and configured classes.

OCCUPANCY

Queues and saturation

Lane occupancy and queue length indicate developing congestion.



Corridor and intersection analytics explain how traffic moves

1 **Observe**

Capture lane-level flow, turning movements and queue formation.

2 **Compare**

Analyse time periods, directions, vehicle groups and recurring patterns.

3 **Act**

Adjust signal plans, issue warnings or schedule a detailed review.

Operational outputs

- Turning movement matrix
- Queue and delay trends
- Congestion alerts
- Before-and-after evaluation

Data can feed traffic control systems while retaining a complete record for planning teams.

Automated incident detection and response



DETECTION

Defined road events

Stopped vehicles, wrong-way movement, congestion and configured violations.

VERIFICATION

Video and metadata

Operators receive event type, location, time and supporting imagery.

RESPONSE

Connected workflows

Forward verified events to dispatch or traffic-control teams.

REVIEW

Searchable history

Event logs support reporting and improvement of detection rules.

Central traffic monitoring

LIVE SITUATION

Current operational view

Map status, live video, active alerts and device health.

OPERATOR ACTION

Event handling

Acknowledge, verify, classify and escalate events.

PLANNING VIEW

Historical context

Compare periods, corridors and recurring bottlenecks.



Priority and passenger information connect road operations with public transport

VEHICLE POSITION

Schedule and route context

Use vehicle location and road conditions to estimate arrival times and identify delay patterns.

SIGNAL PRIORITY

Conditional priority requests

Support priority at selected intersections when service conditions justify intervention.

PASSENGER INFORMATION

Consistent messages

Publish arrival, disruption and diversion information on displays and digital channels.

Typical integration path

Vehicle data → Traffic platform → Priority logic → Information system

Parking occupancy and access data

OCCUPANCY

Available and occupied spaces

Measure occupancy by space, zone, floor or facility.

DURATION

Turnover and dwell time

Identify long stays, peak periods and underused capacity.

ACCESS

Known entry and exit events

Link plates, tickets, credentials or reservations to access.

GUIDANCE

Clear direction

Update entrance signs and zone displays from current availability.



Parking operations: occupancy, enforcement and access

On-street parking

1. **Detect occupancy**

   Camera analytics or sensors measure occupancy by street and period.

2. **Apply rules**

   Observed stays are compared with permits, payments and configured limits.

3. **Prioritise checks**

   Location and evidence are sent to enforcement teams for verification.

Planning and driver value

Occupancy evidence supports pricing and restriction decisions. Reliable availability information also reduces unnecessary circulation.

Off-street parking

1. **Approach**

   Show facility availability before entry.

2. **Enter**

   Identify the vehicle or issue a ticket.

3. **Park**

   Guide the driver to an available zone or space.

4. **Exit**

   Validate payment or permission and open the lane.

Resilient operation

Local controllers and cached permissions maintain entry and exit functions during a temporary connection outage.

Park and ride links parking capacity with public transport demand

ARRIVAL

Reliable parking information

Show current capacity before the driver enters the site and guide vehicles to the correct area.

TRANSFER

Connected passenger journey

Coordinate parking status with route, departure and disruption information.

OPERATIONS

Combined performance view

Compare parking occupancy with passenger demand, traffic conditions and special events.

A shared platform gives operators one view of the facility while each subsystem keeps its specialist functions.

Roadside information and parking guidance

ROAD MESSAGES

Warnings and diversions

Publish verified incident, congestion and route information.

PARKING AVAILABILITY

Capacity by facility or zone

Display spaces, direction and closure status at decision points.

PUBLIC TRANSPORT

Arrival and disruption information

Provide consistent information at stops and transfer points.

LOCAL CONTROL

Continued essential messaging

Edge control can retain predefined messages during an outage.



Open interfaces keep mobility data useful across departments and systems

INPUTS	Video events	Radar data	Parking status	Access records
PLATFORM	Common map	Event workflow	Historical store	Reporting
INTEGRATIONS	Traffic control	VMS and displays	Parking systems	City data platform

DATA GOVERNANCE

Defined ownership and retention

Roles, access rights, audit history and retention rules should be agreed before operational rollout.

CYBERSECURITY

Segmented and maintained environment

Secure remote access, device hardening, updates, monitoring and backup support dependable operation.

A phased delivery model reduces technical and operational risk

1 Define

Confirm objectives, locations, integrations and acceptance criteria.

2 Pilot

Install a representative site and tune analytics with real traffic.

3 Scale

Roll out proven configurations with documented standards.

4 Operate

Monitor performance, maintain devices and refine rules.

HDS provides solution design, technology selection, installation, system integration, commissioning and lifecycle support.

AI Road Traffic 5G Pro Bullet Plus Camera

Mobile connectivity and edge analytics for sites where fixed network infrastructure is impractical

- **5G field deployment**

  SIM based connectivity reduces network cabling at remote monitoring points.

- **AI licence plate recognition**

  Plate recognition, vehicle attributes, speed and direction support searchable evidence.

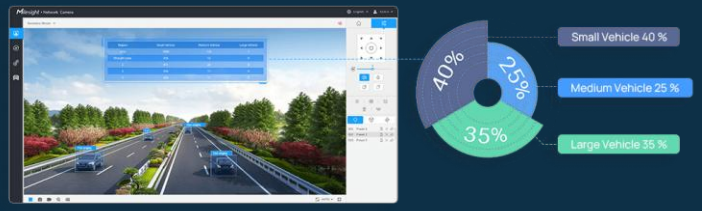
- **Operational image quality**

  4X optical zoom, STARVIS starlight imaging, 60 fps and Smart IR II.

- **Traffic analytics**

  Vehicle classification and traffic flow statistics support corridor planning.







IP66 enclosure and surge protection support permanent roadside operation

4G Solar-powered ANPR Camera

Independent roadside monitoring for locations without grid power or a fixed data connection

- **4G and solar operation**

  Fast deployment without trenching for power or communications.

- **4 MP Edge AI ANPR**

  Vehicle capture and plate recognition run locally at the camera.

- **High capacity power system**

  Up to 962 Wh battery capacity with two 100 W solar panels.

- **Outdoor design**

  IP67 housing, operation from -20 °C to +65 °C and up to 1 TB local storage.



Up to 17 days of continuous recording, depending on configuration

AI Road Traffic Pro Bullet Plus Camera

High-resolution evidence and automated incident detection for multi-lane traffic monitoring





- **Up to 4K resolution**

  4X or 12X autofocus lens options capture detail across different road geometries.

- **Low-light traffic imaging**

  0.005 lux starlight sensitivity, up to 60 fps and WDRX for complex lighting.

- **Violation detection**

  Lane violations, reverse driving, parking events and vehicles without visible plates.

- **Connected evidence**

  AI LPR, traffic statistics and evidence camera linkage support incident review.

Directional bicycle counting

Camera analytics separate travel direction and count cyclists across defined zones

- **Two-way counts**

  Independent totals for each direction of travel.

- **Time-based demand**

  Peak periods and daily trends support capacity planning.

- **Class separation**

  Cyclists can be analysed separately from motor traffic.

- **Planning evidence**

  Consistent measurements help evaluate infrastructure use and safety changes.

