

Petrol Filling Stations



Challenges

Fuel is a highly competitive market.

- Low margins per litre sold
- Highly volatile oil prices
- Reducing demand year on year due to improved fuel efficiency and the shift to electric vehicles
- Competition from other retailers

There is a key need in the market to reduce new-build costs and improve operating expenses.



Petrol/Diesel cost compared to average resale price (2018)

Challenges - 2020 Coronavirus Pandemic

- Many sites deemed 'essential' – locations which must remain open to allow emergency vehicles to refuel
- Move staff back into stores to manage customer demand
- Reduced staffing due to COVID/shielding of vulnerable groups
- Long-term prospect of reduced travel and home working
- Need to prepare for eventual next waves of pandemic



50% surge in stockpiling
70% drop in fuel sales

Petrol forecourt challenges



Fire

- Collisions between vehicles/ vehicles and pumps
- Leaks, Spills, Overflow
- Sparks
- Smoke/Flames
- Equipment Failure
- Public misuse of pumps



Operational

- Issues with payment
- Lighting failure
- Obstruction on the forecourt
- Tanker Filling
- Staff inattentiveness (especially overnight)



Safety

- Anti-Social Behaviour
- Lone worker systems
- Petrol theft

Smoke detection

- VISuite AI automatically detects smoke on the forecourt and sends an alert to the remote monitoring centre.
- Visual Smoke Detection (VSD) - Works in open areas not normally suitable for conventional detectors.
- The system can give early warning before other detection methods trigger.



Person without vehicle detection

- Any person without a vehicle on the forecourt is detected and reported to the remote monitoring centre.
- Scenario Based Rule Engine trigger: person in area AND no vehicle = Alarm.
- This means there are minimal false alarms from people on the forecourt legitimately, and no missed detections.
- This is a key fire requirement to operate unstaffed.



Vehicle overstay

- Vehicles staying at the pump for too long (duration configurable) are detected and reported to the remote monitoring centre.
- Vehicle overstay could indicate a significant site risk. This is a key requirement from the fire department and is tested regularly in unannounced tests.



Reporting

By using CCTV for monitoring, additional data regarding forecourt operations can be mined.



POS systems are limited to when vehicles pay. Ipsotek reports can include data about the time that vehicles remain at pumps, which types of vehicles visit, usage of parking or other areas, and other data points.

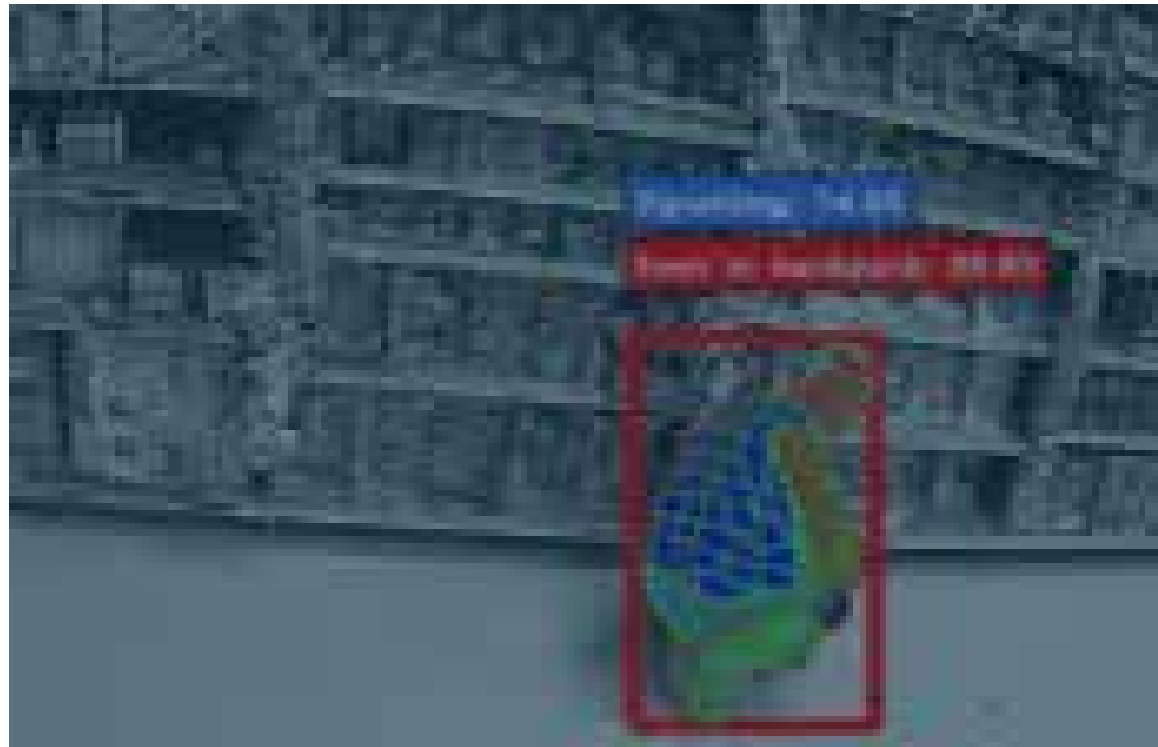
- Vehicle Counting (by Type)
- Average Time at Pump
- Average Time Between Vehicles



Additional Capabilities

The following “Use Cases” are supported by ATOS and are applicable to PFS deployments.

Theft detection



Gun and weapon detection



Violence detection



Retail analytics



Loitering detection



Abandoned objects detection



Additional use cases

The following “Use Cases” are supported by Atos Computer Vision Platform and are applicable to petrol filling station deployments.

Face mask detection



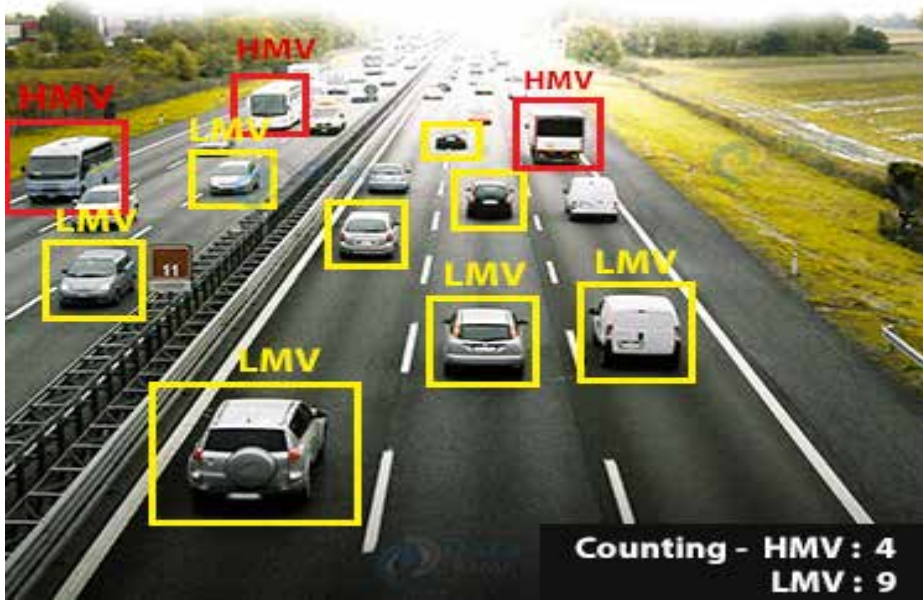
Face identification



Person(s) Loitering on the forecourt



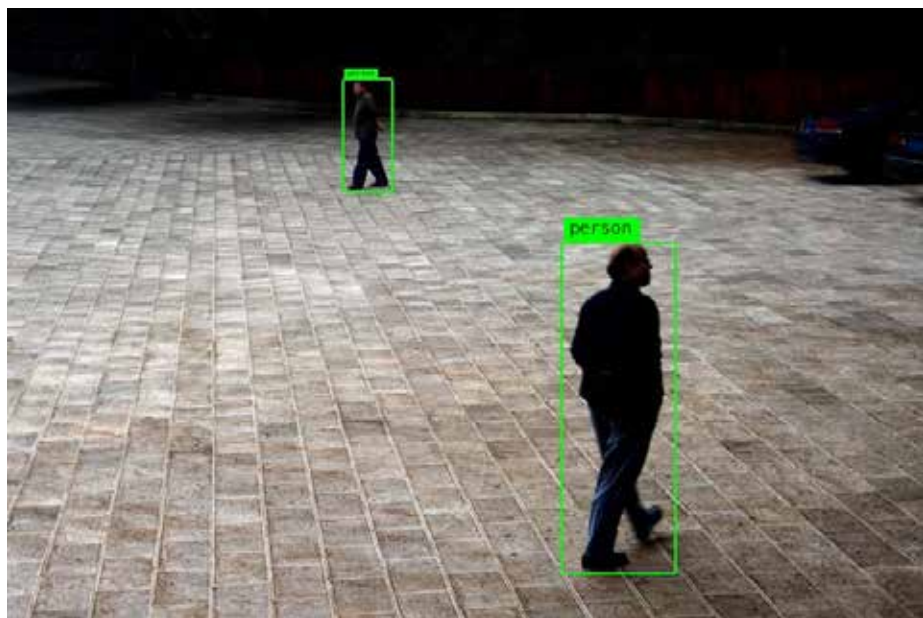
Auto-vehicle classification



Vehicle Tracking



Contact Tracing



Solution proposed

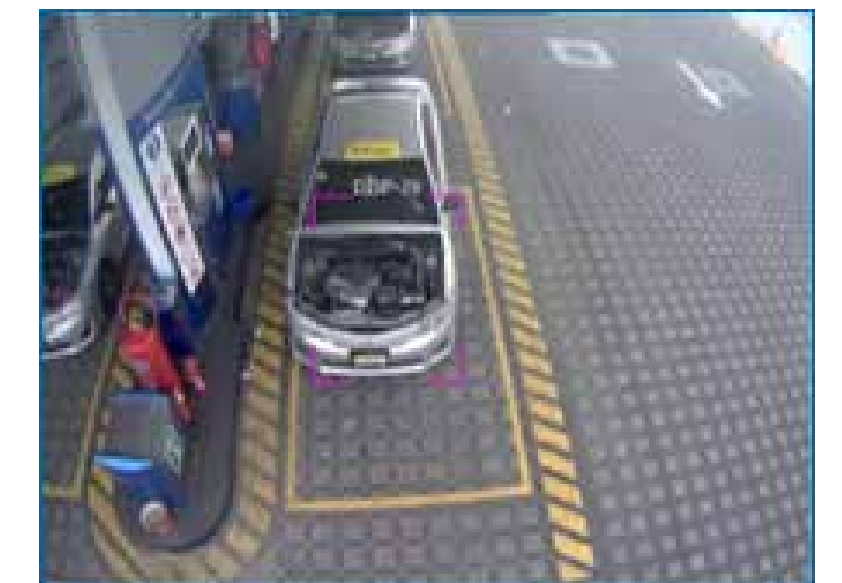
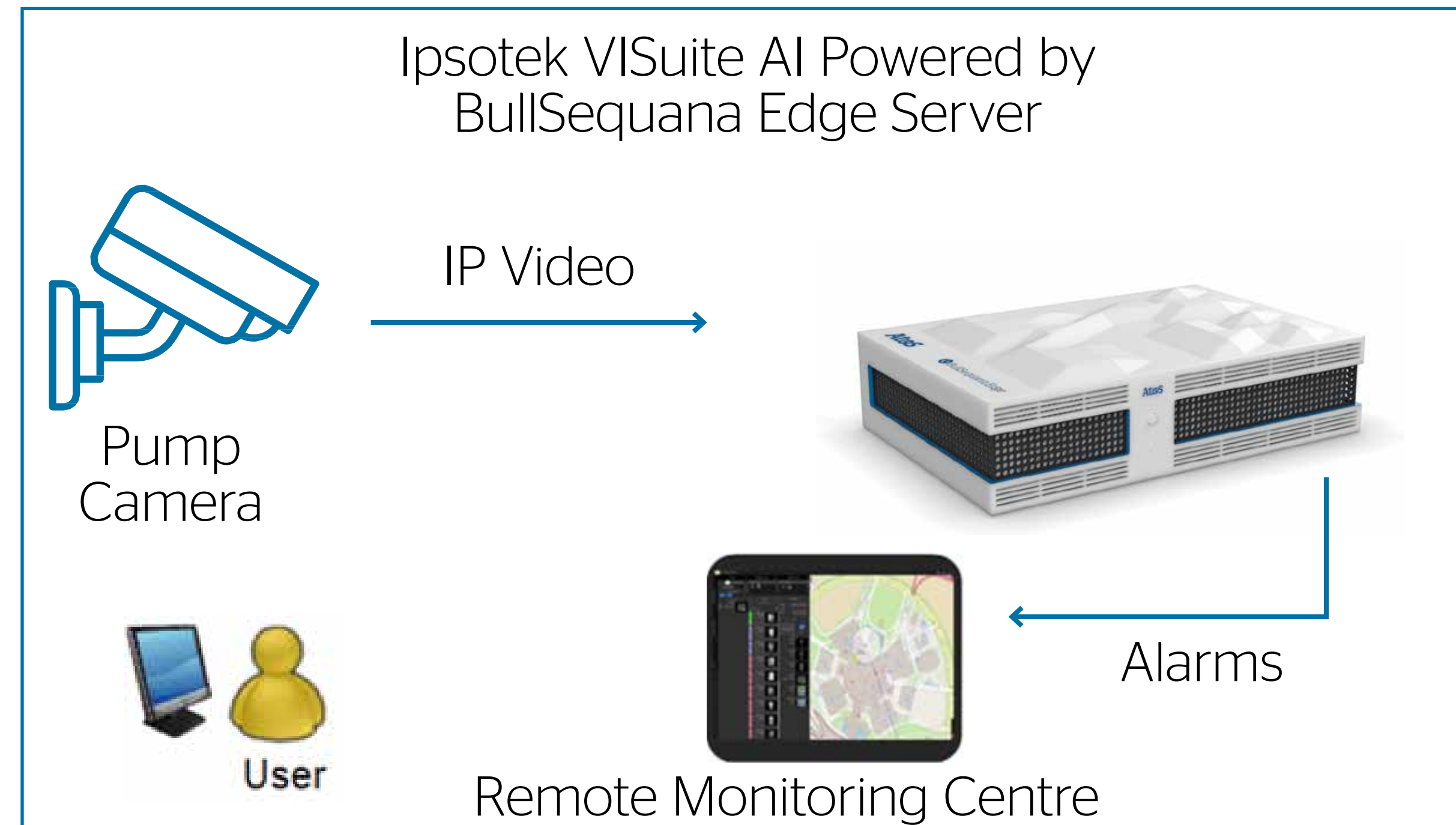
Ipsotek processes video from on-site CCTV cameras in the Atos BullSequana Edge server. This architecture allows data to be processed on-site, minimising infrastructure and data cost.

Alerts are automatically triggered for:

- Smoke
- Person without vehicle
- Vehicle overstay

Other deployments at petrol filling stations have included:

- Reports (vehicle type, time between vehicles, and other data not easily accessible through POS systems)
- ANPR (using the same hardware)
- Face Recognition (using the same hardware)



Summary

This PFS solution allows fuel retailers to automate their sites.

- Reallocate staff to higher priority tasks
- Reduce new build costs
- Offload monitoring costs to a third party
- Reduce operational costs
- Maintain fire safety standards
- Expand to include additional “Use Cases”

Ipsotek's solution is unique in the market and leverages their SBRE & AI engine to provide:

- Low false alarm rates, reducing remote monitoring costs
- ROI determined by the size of the PFS site
- Uses existing CCTV infrastructure

BullSequana Edge offers high performance inference capabilities ideal for mission critical environments. Fully autonomous from data centres and networks, it delivers real time video analytics. It allows petrol filling stations to operate 24/7/365 whilst complying with security and health & safety regulations.



Computer Vision Platform

The highly scalable end-to-end computer vision platform

Pre-trained
& customizable
AI models



One hardware & software
platform providing pre-trained &
customizable AI models enriched
by Atos computer vision experts
through a worldwide labs.

VISuite



VISuite empowers automation in CCTV applications through premium high end video analytics for live response and forensic investigations. It has been successfully deployed in mission critical solutions globally, across multiple verticals. VISuite is at the forefront of the Artificial Intelligence revolution backed by strong global patents.

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Full range of edge computing servers from edge datacenter/cloud to far edge

Atos Computer Vision Platform is based on compute intensive servers allowing cloud to edge computer vision models to process data in real time anywhere, whatever business constraints

BullSequana Edge nano



Plug & play analytics in a compact & ruggedized server

[Learn more](#)

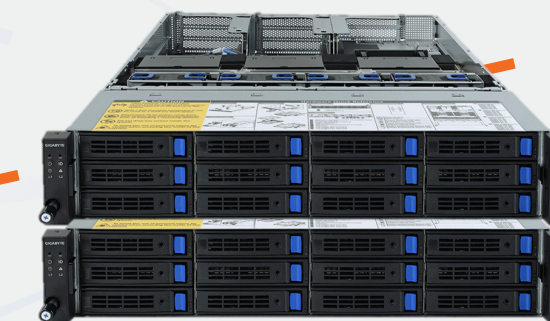
BullSequana Edge



AI inference and training outside the datacenter

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BullSequana SA20G



AI inference & training inside the datacenter

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BullSequana X451



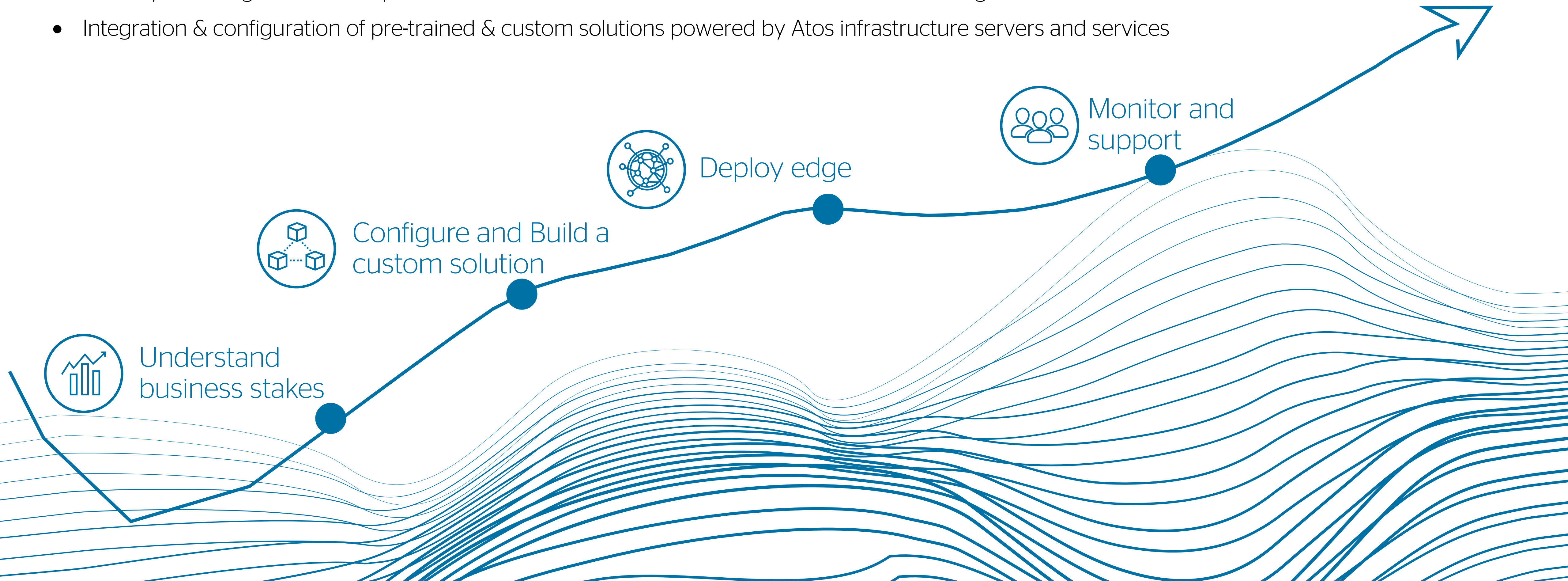
High performance computer vision computing for training

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- Delivering custom service with our worldwide expert labs
- Delivery & managed service to provide the best model to the customer APEX/OPEX Consulting
- Integration & configuration of pre-trained & custom solutions powered by Atos infrastructure servers and services



Further information

[Atos Computer Vision web page](#)

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