Succeed with IoT Report Series

Towards the IoVT

Every Frame Counts

Secure, Reliable Cellular That Turns Video into Value



wireless logic

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Shaping the IoT future

From connected things to connected vision

The Internet of Things has grown into a vast connected ecosystem, spanning assets, vehicles, buildings, infrastructure and environments. An estimated 21.1 billion IoT devices were connected worldwide in 2025, up 14% year on year, and that number is expected to continue rising rapidly. As the connected world expands, so does the opportunity to capture and interpret different types of data — moving beyond traditional sensor readings towards richer sources of information.

One increasingly important source is visual data. Cameras and imaging devices are becoming IoT endpoints in their own right, enabling images and video to be added to the information generated by conventional sensors.

Rather than simply recording events for later review, connected cameras can provide real-time information about what is happening in the physical environment. This evolution is now described as the Internet of Video Things (IoVT), reflecting the growing integration of visual data into connected systems and applications.

This adds a different dimension to connected intelligence. While conventional sensors can indicate changes in temperature, location, or movement, cameras provide context around those signals, helping systems identify people, objects, behaviours, and events. Combined with other IoT data, visual information supports a more complete picture and faster, more informed decisions.

It also creates opportunities to extract greater value from camera infrastructure already deployed, extending its role beyond security and monitoring into a wider range of operational applications. IoVT is therefore not a separate category of IoT, but a natural evolution of it — another layer of sensing that expands what connected systems can see and understand.

Yet video is just one sensing modality in a broader shift now taking place: machines that perceive their surroundings and act on what they perceive. Many now call this Physical AI. Cameras, robots, vehicles, and drones all sit inside it, and connectivity is what turns perception into action for every one of them.

The Technological Shifts Driving IoVT at Scale



Intelligent cameras

Cameras are evolving from passive recording devices into intelligent sensors capable of identifying objects, behaviours, events, and anomalies in real time.



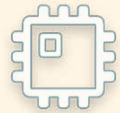
Edge processing

Increasingly capable processing at or near the point of capture allows visual data to be analysed locally, reducing latency, bandwidth requirements, and the need to transmit continuous video.



More capable connectivity

4G, 5G, and satellite connectivity are extending the reach of connected cameras and supporting applications that depend on reliable access to visual data across distributed or remote environments.



AI-driven insight

Advances in AI and computer vision are making it possible to extract useful information from visual data at scale, turning video from something organisations primarily store into something they can actively use.

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IoVT in Action

The following use cases illustrate how IoVT is being applied in the real world, showcasing the breadth of ways in which video and image data can enhance connected applications.

They also highlight the diverse connectivity requirements that arise as visual data moves from the point of capture to the systems and platforms where it can generate value.

Telematics & Dashcams

Overview: Telematics and dashcams combine vehicle, driver and video data to provide real-time visibility into fleet operations. They can support route optimisation, driver performance monitoring, incident investigation, vehicle maintenance, and more efficient fleet management. Video footage can also provide valuable evidence for insurers and fleet operators when assessing incidents, supporting claims, and helping to establish liability.

The Connectivity Challenge: These applications generate a continuous stream of location, diagnostic, and increasingly high-bandwidth video data, often from vehicles operating across wide geographic areas. Connectivity therefore needs to be reliable and geographically resilient, with sufficient capacity to support real-time data transmission without driving up data costs or creating gaps in visibility.



Drones

Overview: Drones equipped with cameras and sensors provide a fast, flexible way to inspect assets and infrastructure. This is especially valuable for sites that are otherwise difficult, hazardous, or costly to access, such as pipelines, towers, rooftops, and remote industrial locations. As part of the broader shift towards Physical AI, drones can support routine condition monitoring, identify early signs of wear or damage, and reduce the need for manual inspections in high-risk environments.

The Connectivity Challenge: Drones need reliable connectivity even in remote or low-coverage environments, where fixed network infrastructure is often limited or unavailable. This must support the real-time transmission of high-resolution video and sensor data during flight, while remaining robust enough to maintain command-and-control links and avoid gaps in coverage across large or dispersed sites.



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Retail

Overview: Video analytics can provide retailers with real-time insight into customer behaviour, store traffic, and how shoppers interact with physical spaces. Applications include analysing footfall and dwell times, understanding customer journeys and queueing, optimising layouts and merchandising, and identifying opportunities to improve the in-store experience. Video data can also support security by detecting suspicious activity, while providing insights into staff deployment and the use of store space.

The Connectivity Challenge: These applications increasingly depend on connected cameras transmitting large volumes of video data to edge or cloud platforms for analysis. Connectivity therefore needs to provide sufficient bandwidth and low latency across distributed store estates, while remaining reliable enough to support real-time analytics and resilient enough to avoid gaps in visibility.



Robotics

Overview: Robots rely on connected cameras and sensors to perceive, navigate, and act within physical environments. In industrial and field environments, they support real-time object detection, obstacle avoidance, and task execution, while in home and care settings they support monitoring and safety functions such as fall detection and wellness checks. Across all environments, the data captured also helps refine and retrain the underlying AI models, allowing robots to operate with greater autonomy and adapt to changing conditions.

The Connectivity Challenge: Warehouse, manufacturing, and agricultural robots typically operate on dedicated site infrastructure and require low-latency, high-reliability connectivity to support real-time decision-making as they move within a defined space. While companion robots depend on variable home broadband and Wi-Fi, they still require dependable connectivity to ensure safety-related alerts and monitoring functions are not delayed or interrupted.



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Body Cameras & Worker Safety

Overview: Body cameras provide workers with a connected means of capturing and transmitting video and audio during incidents, interactions, or hazardous situations. They can support worker safety by enabling rapid response, documenting incidents, and providing evidence for investigations, while also helping organisations demonstrate compliance with workplace safety requirements. For insurers and employers, recorded footage can provide an objective record of incidents and support claims or liability assessments.

The Connectivity Challenge: Body cameras need reliable connectivity to transmit footage, location, and incident data, particularly when workers operate across large, remote or changing environments. Connectivity must balance coverage and reliability with the bandwidth and data demands of video, while ensuring sensitive footage is securely transmitted and available when required.



Smart Motorways

Overview: Smart motorways use connected cameras, sensors, and roadside infrastructure to monitor traffic conditions, detect incidents, and provide real-time visibility across the road network. Video analytics can support congestion management, incident detection, variable speed limits, lane management, and rapid response to hazards, helping improve traffic flow and road safety. Cameras can also monitor the condition of road surfaces, signage and roadside infrastructure, helping identify deterioration and enabling predictive maintenance.

The Connectivity Challenge: These applications depend on continuous, low-latency connectivity between widely distributed roadside infrastructure and central or edge-based systems. Connectivity must remain highly reliable and resilient, as interruptions can reduce visibility of incidents or delay the transmission of critical information needed for real-time traffic management.



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Every Frame Counts

A single frame can contain a wealth of information about what is happening in the physical environment. It can show not only that something has changed, but what changed, where, and what else was happening at the time. When captured and analysed in context, visual data can reveal patterns, behaviours, and events that conventional sensor data alone may not capture.

In a 2025 Verizon survey of 500+ companies:

82%

reported that combining AI with camera and video data provides valuable insights for timely decision-making[1].

This points to a broader shift in enterprise attitudes towards visual data, with organisations increasingly recognising its value and incorporating camera and video technologies into their operations.

From Frame to Value

The value of visual intelligence can take different forms, from improving operational efficiency to generating measurable financial returns. A survey by Omdia found loss prevention to be the video analytics application delivering the most significant savings, with 46% of end users reporting double-digit returns in this area. Reducing the resources and time spent on frontline security tasks followed closely, reported by 44% of end users[2].

In other cases, recorded footage can create value after an event. For instance, the UK Home Office reported that, in cases where body-worn camera footage was available, the time from recording a police incident to the first submission to the Crown Prosecution Service was 1.8 times faster than in comparable cases without body camera evidence[3].

Not Every Frame Needs to Travel

Counting every frame does not mean transmitting every frame. In a continuous stream of footage, many, perhaps most frames will contain nothing requiring attention at that time, but that's a judgement that can only be made after some real-time assessment. The ability to identify and isolate important information allows systems to focus on what matters, rather than treating every frame as equal. Some footage only reveals its value later: a frame that looked unremarkable in the moment can become essential once an incident is investigated or a claim is made, which is why real-time triage and longer-term retention are different decisions, not the same one.

Processing visual data closer to the point of capture makes this possible, with cameras and edge systems analysing footage locally to identify relevant events, objects, or changes. Rather than sending continuous video, a system might transmit an alert when an incident occurs, metadata describing what has been detected, or select footage for further investigation.

This approach can make IoVT more practical at scale, particularly where large numbers of cameras generate substantial volumes of data or where connectivity is constrained. Processing closer to the source can reduce the amount of data that needs to cross the network, while still supporting applications that depend on timely information. The role of connectivity therefore becomes less about moving every frame and more about reliably moving the right information to the right place, at the right time.

1 Verizon, 2025, IoT Market Insights Report: IoT Trends & Solutions

2 Omdia, 2024, The ROI of video analytics: How video analytics solutions can quantifiably save time, money, and effort

3 UK Home Office, 2025, Progression of Cases Submitted by the Police to the CPS for Charging Decisions

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Why Video Challenges Traditional IoT Connectivity

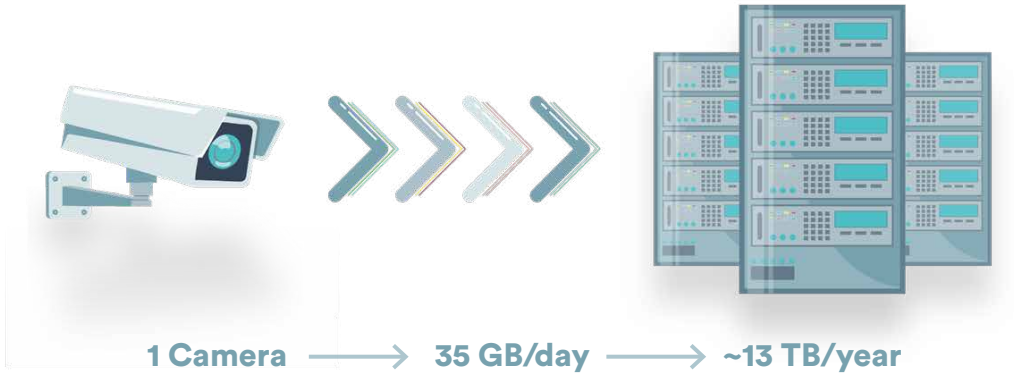
Unlike conventional IoT deployments, which often exchange relatively small amounts of sensor data, cameras can generate large and continuous data flows. This creates challenges not only around network capacity but also around how that data is processed, prioritised, and transmitted.

Yet data traffic alone does not define the connectivity challenge: consistent coverage is also difficult, especially when the deployment extends beyond established network infrastructure. In a recent survey, 85% of businesses reported struggling to develop IoT solutions because of connectivity issues in their intended deployment areas, and 30% cited unreliable connectivity as their biggest post-deployment challenge[5]. For IoVT, where loss of connectivity could mean losing visibility of a critical event, resilience needs to be built into the connectivity architecture.

Beyond coverage and capacity, video applications can place greater demands on network latency and responsiveness. They may also need to combine different forms of visual and spatial data, such as LiDAR, radar, infrared sensing, or satellite imagery, creating more complex data flows across the network. This is particularly true for Physical AI systems, which are uplink-heavy and latency-sensitive.

Visual data can also carry far more sensitive information than a conventional sensor reading, making security important as footage and derived insights move between cameras, edge environments, networks, and central platforms.

A single 1080p camera using H.264 can generate around 35 GB of video data per day[4].



From Connectivity to Data Orchestration

As IoVT deployments scale, connectivity becomes part of a broader data-management challenge. Not all visual data needs to follow the same path: some information may be processed at the edge, while other data may need to reach a central platform or be combined with other IoT data before it becomes useful.

The challenge is determining what data needs to move, where it needs to go, and how quickly it needs to get there — while ensuring that data remains secure.

This requires organisations to distinguish between different types of visual data and prioritise them according to their operational value. Visibility and control across the connected estate are essential to this process, with AI increasingly able to identify threats, anomalies, and other critical events across multiple feeds simultaneously. This supports a scale of monitoring that would be extremely difficult to maintain through human observation alone.

The result is a shift from connectivity as a point-to-point requirement towards orchestration across the entire data flow. Where these functions are provided through separate technologies or providers, coordinating them can add further integration and management complexity.

4 Nexsan, 2023, The 5 Challenges of Digital Surveillance Storage Systems and How to Overcome Them

5 Viasat, 2024, The State of Industrial IoT in 2024

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Wireless Logic: Enabling IoVT from connectivity to application

Wireless Logic is an enterprise IoT connectivity and managed infrastructure partner for organisations where connected operations are mission critical. Recognised as a Leader by Gartner, Transforma Insights, and Omdia, and named the most visionary provider in the Gartner Magic Quadrant for Managed IoT Connectivity for the second consecutive year, Wireless Logic is well-known and trusted for its IoT connectivity solutions.

Wireless Logic's global IoT network, Conexa, is built on 50+ operator agreements, giving enterprises broad coverage without needing separate connectivity arrangements in every market. A single SIM can support deployments across borders, while real-time visibility and remote management let teams monitor connections, diagnose issues, and make changes without visiting the device. For video applications, automated failover to an alternative operator profile helps keep cameras online if a primary connection degrades or fails.

Beyond connectivity, Wireless Logic helps protect the data travelling over it. Private networking secures business-critical and evidential video, while AI-based analytics detect anomalies and cyber threats, including attempts to exfiltrate data through device backdoors. eSIMs embedded at manufacture let devices connect to the right local network wherever they are deployed, and remote optimisation reduces costly site visits as requirements change. The result is a managed layer that scales from a single-site pilot to multi-thousand-device estates.

The company supports enterprise IoT solutions from its 25 offices across Europe, the Americas, and Asia-Pacific, combining local expertise with global scale.

> ***"Machines that perceive and act in the real world change what connectivity has to do. This is what many call Physical AI, and it is only as safe and reliable as the link beneath it. That is the layer Wireless Logic exists to provide."***

Matt Thomas
Managing Director – Services
Wireless Logic Group

24m
'things' connected across 165 countries

25k
customers from governments and global enterprise to start-ups

2m
eSIM profiles deploy over-the-air

1k+
IoT specialists delivering local support in 25 locations across the globe

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Connect, manage and secure

Wireless Logic's connectivity layer is complemented by unified management capabilities that provide visibility and control across connected devices and networks:

- Global connectivity provides access to cellular networks through eSIM, routers, and 5G, alongside LEO satellite connectivity for applications requiring broader coverage or an alternative to terrestrial networks.
- Where data is processed is a trade-off: on the device for speed, at the edge for a balance of latency and cost, or in the cloud for scale and compute. Wherever it happens, the harder problem is often not the processing itself but presenting the resulting data in a form people and systems can actually use.
- Security and control span the connectivity and device environment, enabling alerts, throttling, blocking, or quarantining when behaviour falls outside defined parameters. Private IP addressing, private APN, VPN, and anomaly and threat detection provide additional layers of protection.

Turn data into intelligence

Above the connectivity and device-management layers, Wireless Logic's data intelligence solutions provide the data and application capabilities that turn connected-device data into actionable intelligence:

- IoT Data Hub provides a central layer for collecting, normalising, and contextualising data from connected devices and systems. By bringing different data sources together, it can provide a unified view of assets, environments, and events rather than treating visual data in isolation.
- An AI/ML runtime layer sits alongside connectivity, ready to apply models to connected data, whether a customer's own, a partner's, or one reached through a cloud AI service. For IoVT, this is the layer where visual data can be turned into insight, in whatever way best suits how an organisation already works.

For IoVT applications, this creates the bridge between visual data and the wider IoT environment, helping organisations move from simply capturing images and video to turning visual information into contextualised IoT data and actionable insights.

As Physical AI extends this shift from cameras to robots, vehicles, and beyond, the organisations that treat connectivity as part of the design from day one will be the ones who scale it fastest.

> ***"When video becomes evidence, the connectivity beneath it has to be trusted. Private networking keeps that footage off the public internet; anomaly and threat detection watches for data being exfiltrated through back doors."***
>
> **Paul Bullock**
> Chief Product Officer
> Wireless Logic Group

From capture to action

The next page maps how visual data moves from capture to action, showing how Wireless Logic's connectivity and technology services support each stage of the journey. It starts with video and image capture from a range of sources, with connectivity carrying data onwards for processing and use. Edge analytics can filter information close to the source, so only what matters needs to cross the network.

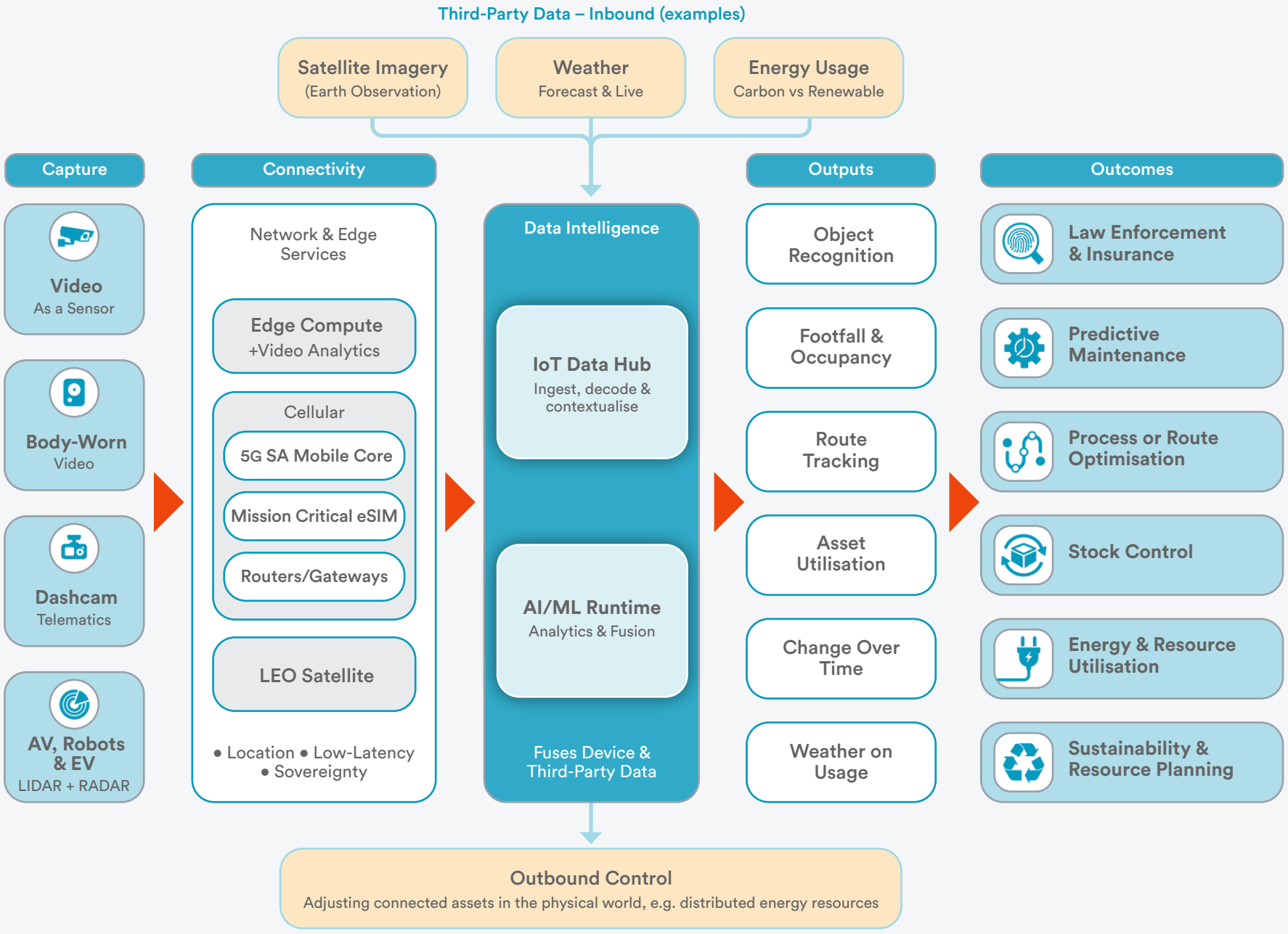
At the centre of the process is the Data Intelligence Layer. The IoT Data Hub ingests, decodes and contextualises incoming data, while an AI/ML runtime applies analytics and fusion. Third-party data, such as satellite imagery, weather, and energy usage, can also enter here, allowing visual information to be considered within the wider enterprise context rather than interpreted in isolation.

The result is a set of outputs that translate into practical outcomes across a range of industries. The process can also close the loop: outbound control allows insights to adjust connected assets in the physical world, turning information into action.

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Wireless Logic's technology layers support the journey from visual data capture to actionable intelligence

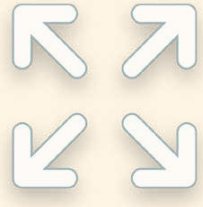
From sensing to action: the shape of Physical AI, applied to video



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What does this architecture enable for organisations adopting IoVT?

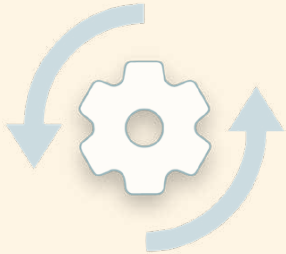
Scale without redesign



IoVT deployments can grow from individual cameras to larger, more distributed estates as business demands evolve. Bringing connectivity, device management, edge capabilities, and intelligent data analysis together provides a foundation that can accommodate different devices, locations, and data requirements without the underlying architecture having to be rebuilt.

This gives organisations greater flexibility to expand IoVT as new applications and use cases emerge.

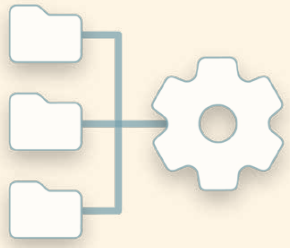
Greater control over data flows



Not every video stream needs to be treated in the same way. The ability to manage connectivity alongside edge processing and data intelligence allows organisations to determine where data is processed, what information needs to move across the network, and how it is prioritised.

This can help manage bandwidth and latency requirements while maintaining visibility across the connected estate.

A clearer path from visual data to action



The value of IoVT ultimately depends on what organisations can do with the information their cameras generate. Connecting visual data with other IoT and enterprise data, and applying analytics or AI where appropriate, can turn individual observations into contextualised information for operational systems and applications.

This creates a more direct path from what a connected device captures to the decisions and actions that follow.

Talk to Wireless Logic about your IoVT connectivity

Whether you are connecting a handful of cameras or a distributed estate, our specialists can help you design connectivity that scales.

wirelesslogic.com/contact-us **+44 (0)330 056 3300** **hello@wirelesslogic.com**

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