

The Rapidise Bodycam system functions as a robust end-to-end solution, utilizing powerful on-device processing and edge intelligence to ensure critical event capture, followed by secure transmission and cloud management via a comprehensive Video Management System (VMS) infrastructure.

Here is the end-to-end functional breakdown:

## 1. On-Device Capture and Low-Power Readiness

The capture process begins with the physical Bodycam device, which ensures high-quality recording and constant readiness.

Component/ Function	Detail	Source(s)
High-Quality Recording	The Rapidise Bodycam delivers <b>sharp, high-definition video and clear audio recording</b> . The LTE Bodycam features a <b>2MP Main Camera</b> .	
Video Encoding	On-device, video encoding uses <b>H.265 +</b> (compatible H.265/H.264) High Profile.	
Operating System	The device supports <b>Android application</b> and runs on the <b>Android</b> operating system.	
Low-Power Mode	The system is designed to integrate a <b>Low-Power (Sleep) Mode</b> where the device records in <b>time-lapse mode</b> to preserve the battery. This ensures readiness without being fully active at all times.	
Location Services	The LTE Bodycam is <b>GPS Enabled</b> for accurate positioning, and functionalities include the recording and streaming of <b>Location Services</b> .	

## 2. Edge AI Processing and Automatic Activation

The more advanced LTE Bodycam (based on the Qualcomm QCS5430/RISE C1 platform) utilizes on-device AI for proactive recording, transforming the camera into an intelligent edge computing device.

Process	Detail	Source(s)
AI Processing Hardware	Edge AI is powered by the <b>Qualcomm QCS5430</b> platform, which includes the <b>Qualcomm® Hexagon 770 Processor</b> and a Fused AI Accelerator Architecture. The Body Camera has a dedicated <b>Hexagon DSP</b> and <b>1.1 TOPS NPU</b> .	
Continuous AI Monitoring	<b>Onboard AI algorithms run continuously</b> while the device is in Low-Power (Sleep) Mode.	
Trigger Detection	The algorithms detect high-risk events, such as <b>Gun/Gunshot Detection</b> (visual cues and acoustic signatures), <b>Knife Detection</b> , <b>Violence Detection</b> , and <b>Help/Distress Detection</b> .	
Automatic Activation	When a trigger is detected, the bodycam automatically switches from sleep/time-lapse mode to <b>full-resolution recording</b> , ensuring <b>proactive and intelligent recording without officer intervention</b> .	
Contextual Buffering	To preserve the context of the event, a <b>pre-buffered duration (e.g., last 30–60 seconds)</b> is saved alongside the full-resolution footage.	
Hardware Activation (Optional)	An alternative or complementary solution is a <b>Hardware Based Activation</b> using a <b>Reed Switch</b> integrated into the gun holster strap. When the firearm is drawn, the switch signals the camera to instantly start full-resolution recording.	

### 3. Data Upload and Transmission

Data transmission occurs wirelessly, enabling remote connection and streaming.

Method	Detail	Source(s)
Wireless Streaming	The Bodycam supports <b>Recording and Streaming via Wi-Fi</b> . The LTE Bodycam specifically uses <b>LTE CAT 6</b> for communication and <b>BLE 5.0</b> .	
Real-Time Streaming	The device performs <b>wireless streaming of High-Quality Audio, Video and Location Services</b> . Rapidise has expertise in using <b>WebRTC (Web Real-Time Communication)</b> for live streaming, which helps in <b>Minimizing the Cloud Cost</b> .	
Protocol Support	The devices support common network protocols such as <b>TCP/IP, HTTP, DNS, and HTTPs</b> .	

### 4. Cloud Storage and Video Management System (VMS)

Rapidise manages the backend using its expertise in **Cloud Engineering** and VMS development.

Function	Detail	Source(s)
Cloud Infrastructure	Cloud infrastructure relies on platforms such as <b>Amazon Web Services (AWS)</b> . Specific AWS services mentioned in VMS capabilities include <b>S3</b> (storage), <b>Kinesis/LiveKit</b> (streaming), and <b>Lambda</b> .	
Data Storage & Sync	Recorded streams are managed by syncing files between a local device (using a Local Gateway app) and the <b>Amazon S3</b> cloud storage. The VMS utilizes databases like <b>PostgreSQL and MongoDB</b> .	
VMS Portal	Rapidise provides a <b>Multi-Tenant Custom Cloud Video Management Portal</b> built using technologies like <b>NodeJS</b> (backend) and <b>ReactJS</b> (frontend).	

### 5. Analytics and Dashboard Development

Once the data is securely stored and managed in the cloud, analytics are performed to extract intelligence.

Analytic Function	Detail	Source(s)
General Analytics	The VMS portal offers <b>robust features for video playback, customization, and analytics.</b>	
Cloud Event Detection	Rapidise's Event Detection Architecture on Cloud can utilize services like <b>Amazon Rekognition Video</b> to automatically identify objects, scenes, and activities (like <b>Motion Detection</b> ).	
Metadata Generation	Detected labels from cloud processing are assigned a confidence score, creating <b>rich metadata</b> that makes the video content <b>searchable</b> within and across files.	
Dashboard Development	Rapidise provides <b>Video Based Surveillance Dashboard Development</b> as an Information Technology service, facilitating data visualization.	

The overall system structure is like an assembly line: the **Bodycam is the intelligent capture station** (performing H.265 encoding and AI detection), which then feeds its data through a **high-speed conveyor belt (LTE/Wi-Fi)** to the **central warehouse (AWS Cloud and S3)**, where the **VMS acts as the inventory manager and analytics team** (using Rekognition and custom dashboards) to organize and generate searchable intelligence.