APPLICATION NOTES

SAFE ALERT SYSTEM (SAS) WITH H09 SMARTWATCH

TECHNICAL AND FUNCTIONAL DESCRIPTION, USE CASES, APPLICATION LIMITS, SAFEGUARD CLAUSES AND LIMITATION OF LIABILITY

Introduction

The SAS system with H09 smartwatch is a technology platform supporting the operational safety of personnel, intended for contexts in which workers may find themselves in conditions of risk, isolation or exposure to specific hazards, or where remote monitoring is needed, compliance with safety procedures is mandatory, or emergency workflows must be activated rapidly.

The H09 device is not an ordinary consumer wearable. It is a specialised operational terminal, designed to carry out in the background the monitoring, collection of signals, classification of events, verification of procedural compliance, location of the operator, local interaction on critical events and inclusion of the individual in a structured flow of alerting, escalation, communication and audit.

The system is not limited to the wearable terminal alone, but also comprises the local processing software modules, the centralised configuration logic, the communication channels, the backend services, the recording and traceability systems and, where provided, the Control Room or other organisational structure responsible for supervising and managing events.

The system is a technological aid to operational safety. It does not constitute a medical device, it does not constitute a healthcare aid, it does not perform diagnosis, it does not replace human supervision and it does not replace company emergency, surveillance, prevention and rescue procedures.

Safe s.r.l. Unipersonale
Via Pastore n. 14 · 25046 Cazzago S. Martino (BS) · +39 030 7751504
Capitale Sociale Euro 1.000.000,00 i.v. · C.F. 01604520989 · Partita IVA 03223860176 · Iscrizione REA e CCIAA di Brescia 329091
info@safesafety.com · www.safesafety.com

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Via Pastore n. 14 · 25046 Cazzago S. Martino (BS) · +39 030 7751504
Capitale Sociale Euro 1.000.000,00 i.v. · C.F. 01604520989 · Partita IVA 03223860176 · Iscrizione REA e CCIAA di Brescia 329091
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Nature of the system and intended use

The system is intended to support operational safety in all cases where it is useful to:

- detect, with greater probability, traumatic events or dynamics consistent with a fall;
- enable the voluntary activation of requests for help;
- monitor vital signs for preventive but not diagnostic purposes;
- maintain a continuous, or near-continuous, estimate of the operator's position;
- verify compliance with the personal protective equipment required by the operational context;
- combine events, position, device status and area rules into a single supervision picture;
- activate communication, notification, escalation and traceability flows towards remote systems or control structures.

The intended use of the system therefore concerns risk mitigation, increasing the probability of identifying anomalous conditions, supporting the organisational timeliness of the response and improving the traceability of events.

The system is not intended to replace the employer's prevention duties or to constitute the sole safety measure for the worker.

General functional architecture

The wearable terminal performs sensor data acquisition, local processing, preliminary event classification, interaction with the operator, management of predefined workflows and collection of the operational context. The backend hosts configurations, profiles, threshold parameters, communication logic, area rules, PPE lists, location policies, notification criteria, data history systems and integration channels towards the Control Room. At organisational level, the supervision structure receives the events, assesses them and activates the applicable procedures.

The Control Room is not merely the organisational level at which events generated by the wearable devices are received, assessed and managed; it is an active and structural part of the SAS architecture, acting as the central node orchestrating the safety states of the site. In this model, the Control Room is also designed as a native source of alarms, operational notifications and coordination commands, which can be addressed selectively to individual operators, teams, homogeneous groups or the entire site, depending on the scenario in progress, the profile of the recipients, their logical or geographical position and the availability of individual connectivity.

This approach allows the platform to distribute, in near real time, instructions, alert states and behavioural guidance arising from the overall situation of the site. This includes, for example, issuing evacuation orders, summoning personnel to assembly areas, activating containment

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Capitale Sociale Euro 1.000.000,00 i.v. · C.F. 01604520989 · Partita IVA 03223860176 · Iscrizione REA e CCIAA di Brescia 329091
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or withdrawal procedures, and broadcasting alarms relating to site events. In this same operating model, the smartwatch can also act as a terminal for the direct delivery of orders, instructions and operational messages sent by the backend (which can also be read aloud by the device), so that prescriptive or behavioural content is immediately available to the operator without necessarily requiring active reading of the display, increasing the effectiveness of communication in dynamic, noisy or highly critical contexts.
This approach makes the platform suitable for supporting not only the reporting of events suffered by the worker, but also the coordinated distribution of active protective measures, including those aimed at reaching specific collective protective equipment, safe points, assembly areas or withdrawal routes defined in relation to the nature of the detected hazard. The Control Room, as the logical centre of the SAS ecosystem, is therefore not simply the final recipient of the alarm, but a structural component for the dynamic governance of site safety, capable of generating, correlating and propagating operational alerts according to the overall state of the system.

Advanced architectures

The Control Room of the SAS ecosystem can be made available according to different architectural models, so as to adapt to the infrastructural, organisational and connectivity characteristics of the site or customer. In a first configuration, the Control Room can be delivered centrally through the Safe S.r.l. cloud, enabling unified management of devices, events, alarm workflows, configurations and operational interactions, including across multiple sites or distributed tenants.
For contexts in which continuous and/or stable connectivity is not available, the same architecture can be managed on premises, so that the system remains operational even in the presence of network isolation constraints, local autonomy requirements or infrastructure policies requiring critical functions to be kept within the site perimeter. In this configuration, the Safety control room and the backend supporting it operate locally, maintaining the continuity of supervision, alarm management, data history, location and operational coordination functions even without a permanent connection to external remote services.
Where the customer already has an existing operational control room, the Safety control room of the SAS ecosystem can be integrated at application level into the existing structure, avoiding the creation of a separate environment and instead extending the capabilities of the control room already in use. This integration can take place through the APIs exposed by the system, which enable bidirectional management of the alarms, notifications, operational states and interactions described above, thus allowing both the transfer of events generated

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Via Pastore n. 14 · 25046 Cazzago S. Martino (BS) · +39 030 7751504
Capitale Sociale Euro 1.000.000,00 i.v. · C.F. 01604520989 · Partita IVA 03223860176 · Iscrizione REA e CCIAA di Brescia 329091
info@safesafety.com · www.safesafety.com

by the SAS ecosystem to the existing control room and the activation, from that control room, of alarms, workflows and commands intended for the connected devices and subsystems. The SAS platform can operate either as a complete control room or as an integrated component of an existing control room, in both cases maintaining the same logic of bidirectional orchestration of operational safety.

General operating principle

The system operates on the basis of non-invasive monitoring. The main processing takes place in the background; direct interaction with the operator occurs when a situation requiring attention is detected, when an event must be confirmed or cancelled, when a communication must be activated or when the system requires a specific procedural action.

Operational heartbeat and status telemetry

The system provides for the periodic generation of operational heartbeats by the device, understood as “status messages” transmitted to the backend or to the Control Room for the purposes of supervision, reachability checks and updating the worker's operational picture. The heartbeat is not merely a signal of network presence, but a configurable information container which, depending on the application profile, may include the device's charge level, the main connectivity parameters, the wearing status and further metadata useful for supervision.
From an application standpoint, the heartbeat allows the platform to maintain an up-to-date view of the terminal's status and operability, even in the absence of explicit alarms. In this way, the Control Room can distinguish more effectively between absence of events and absence of reachability, between normal continuity of operation and potential degradation of the terminal, and between conditions of full operability and conditions in which certain functions are temporarily limited or unavailable (for example, no Wi-Fi connection).
The frequency, content and level of detail of the heartbeat can be configured according to the use case, the risk context, the connectivity constraints and the energy policies of the system. In ordinary scenarios, transmission can be kept at more conservative levels; in highly critical scenarios or when events occur, the content or frequency of status messages can be adapted so as to increase remote supervision capability.

Safeguard clauses relating to the operational heartbeat

The presence of regular heartbeats does not constitute an absolute guarantee of full operability of all device functions, just as the temporary absence of heartbeats does not

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Via Pastore n. 14 · 25046 Cazzago S. Martino (BS) · +39 030 7751504
Capitale Sociale Euro 1.000.000,00 i.v. · C.F. 01604520989 · Partita IVA 03223860176 · Iscrizione REA e CCIAA di Brescia 329091
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automatically equate to a certain fault or to a state of danger for the operator. The availability of these messages depends on connectivity, energy status, configuration, device integrity and the correct functioning of the transmission chain.
The heartbeat is a tool supporting operational supervision and does not replace verification procedures, organisational control or human management of situations involving possible anomalies.

Immobility detection

The system provides an operator immobility detection function. The device performs it continuously and in the background, consistent with the non-invasive monitoring logic that characterises the entire architecture. The function is based on analysing the movement of the wearable terminal alone, further ensuring the anonymisation of the worker. When the device remains completely motionless for a predefined time interval, configurable on request and set to 40 seconds in the factory configuration, the system interprets this condition as potentially anomalous and triggers an alarm.
Event management is structured on two successive levels. In the first phase, the alarm is handled locally on the device, which gives the operator the option to cancel it within the first 10 seconds of its activation. This interval allows the worker to actively signal that their condition is normal and thus limits the propagation of irrelevant alerts to the Control Room. If the alarm is not cancelled within this time window, the event is transmitted to the Control Room. The Control Room takes charge of it, verifies it and, where necessary, activates the applicable procedures.
From an application standpoint, immobility detection allows the platform to intercept situations in which the operator may be unable to activate a request for help independently. The function is fully configurable. The immobility check can be enabled or disabled during initial configuration without affecting the general operability of the device. The time parameters that determine the activation of the alarm and the cancellation window can be defined according to the use case, the task performed and the operational context. This makes it possible to adapt the sensitivity of the function to actual working practices, preventing activities that naturally involve long periods of stillness from generating inappropriate alarms.

Safeguard clauses relating to immobility detection

Immobility detection is based on the absence of movement of the worn device and not on a direct assessment of the operator's physical condition. Consequently, the activation of an

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info@safesafety.com · www.safesafety.com

immobility alarm does not automatically equate to a state of danger or illness of the operator. Likewise, the absence of an alarm does not constitute a guarantee of the operator's safety.
The effectiveness of the function depends on its actual activation in the configuration, the time parameters set, the correct wearing of the device, its energy status and the availability of the connectivity required to transmit the event to the Control Room.
Immobility detection does not replace verification procedures, organisational control or human management of possible emergency situations.

Operator interface

The operator interface of the H09 device is designed as an essential, robust interface geared towards rapid use in an operational context, with particular attention to reducing cognitive load, minimising accidental activations and enabling use even when the worker is under stress, in urgent situations or has limited attention available. The overall design of the interface favours functional clarity, immediate legibility of the device status and rapid access to critical functions, avoiding navigation structures that are complex or inconsistent with a wearable safety terminal.
The device has a touch screen, a front camera, a microphone and a speaker, enabling not only direct visual interaction but also audio communication functions and, in the contexts where this is provided, video support. These components are complemented by two physical buttons. The first is used to switch the terminal on and off. The second, identified as the silver button, is associated with the SOS function (silent and audible) and with activating the scan of personal protective equipment (PPE).
Alongside the physical buttons, the touch interface implements additional virtual buttons, which make it possible to extend the available functions without introducing additional mechanical complexity to the device. The set of physical and virtual buttons is configured to reduce the risk of unintentional activation by means of long-press logic. The start of the press is accompanied by a short vibration signalling the start of the activation sequence, while a second short vibration confirms that the press is valid and that the command has actually been accepted. This design choice pursues a twofold objective: on the one hand, limiting unintentional actions due to knocks, brushing or accidental contact; on the other, providing the operator with immediate haptic feedback, which is also useful when visual attention on the display is reduced or absent.
The system is designed for those who wear the watch under work clothing and must be able to use it without looking at it. It is active by default. Outside an alarm situation, the screen is

black and shows only a green circle in the upper left corner, which serves to confirm that the watch is operating correctly.

On the left-hand side, icons will appear whenever a situation requiring attention arises:


No Wi-Fi connection, mobile network only. This icon appears on screen only if the device has been configured and connected to a Wi-Fi network; otherwise, this icon will never be shown.


No connection (neither Wi-Fi nor mobile network).


Weak GPS reception. Estimated location error of around 50 metres.


No GPS reception.


Low battery, below 30%.


Low battery, below 10%.


H09 not worn correctly.

During an alarm, two large buttons will appear on screen. At the top, the green thumbs-up is displayed, indicating “All OK”, while at the bottom is the microphone icon. If pressed within 10 seconds of the SOS being sent, the “All OK” button can cancel the call, while if pressed once the alarm has been triggered it allows the operator to inform the Control Room that the situation is under control. The microphone, on the other hand, starts an ambient recording and can only be used once the alarm has been triggered. This recording remains active until the Control Room connects to the device. Once the Control Room has connected, the recording is stopped automatically and sent simultaneously to the Control Room, which displays it on screen.

When a Teams call is activated, the interface adapts automatically by opening, in the lower part of the screen, a render view dedicated to audiovisual communication. This area is automatically scrolled into view, giving the operator the possibility of seeing the Control Room contact person or, in any case, the video component associated with the communication session. When the Teams call ends, the render view disappears and the interface returns to the standard configuration. Overall, the operator interface is therefore designed to combine immediacy of use, robustness against unintentional activation, rapid access to critical functions and dynamic adaptation to the workflows in progress, while maintaining a simple structure consistent with the use of the device as a wearable safety terminal.

Safeguard clauses relating to the operator interface

The device interface is designed to reduce the risk of accidental activation and to facilitate rapid use of critical functions, but **it cannot entirely eliminate the possibility of unintentional activations, failed valid presses, interaction errors or incorrect use under particularly demanding operating conditions.** The effectiveness of interaction also depends on external factors such as the use of gloves, arm posture, environmental conditions, knocks, vibrations, the operator's state of attention, the integrity of the touch screen, the functionality of the physical buttons and the general condition of the device.
The icons and status indicators shown on screen are a summary representation of the operating conditions detected by the system and must not be interpreted as an absolute guarantee of the continuous availability of the corresponding function.
The availability of the front camera, microphone, speaker or call render view does not in itself guarantee the quality, continuity or actual usefulness of audio-video communication in every circumstance. These functions depend on connectivity, device status, environmental conditions, signal quality, system configuration and the availability of the remote services involved.
Although designed for rapid use in a safety context, the operator interface does not replace education, training, operating procedures and emergency protocols. Correct use of the SOS, abort, confirmation, communication and PPE registration functions requires personnel to have been instructed in advance in a manner consistent with the adopted use case.

Advanced operational pages

Depending on the configuration applied, the device interface can be extended by means of operational pages dedicated to specific safety, supervision or action-support needs. These pages are not simply generic information screens, but functional components of the application architecture, which can be activated according to the operator's profile, the risk context, the system status or the workflow in progress.
Possible configurations include, by way of example, pages dedicated to a summary view of vital signs, pages supporting assisted navigation towards assembly areas or safe points in evacuation scenarios, and pages aimed at locating or reaching specific collective protective equipment or other emergency management support elements present on site, such as first aid kits, defibrillators, fire-fighting equipment or similar operational points of interest.
In such cases, the device does not act solely as a generator or receiver of alarms, but also as a terminal providing contextual support for action, capable of making available to the operator concise operational guidance consistent with the situation in progress.

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Via Pastore n. 14 · 25046 Cazzago S. Martino (BS) · +39 030 7751504
Capitale Sociale Euro 1.000.000,00 i.v. · C.F. 01604520989 · Partita IVA 03223860176 · Iscrizione REA e CCIAA di Brescia 329091
info@safesafety.com · www.safesafety.com

Safeguard clauses relating to advanced operational pages

The “advanced operational pages” are contextual support tools and do not replace training, knowledge of the site, safety signage, emergency procedures or human coordination. The actual usefulness of the information displayed depends on the correctness of the configuration, the quality of the contextual data, the availability of location data and the updating of backend information.

Fall detection

The fall detection subsystem is based on real-time accelerometric and inertial analysis, using a multi-phase logic that does not reduce the decision to the presence of a single acceleration peak. Instead, the system analyses an overall dynamic sequence consistent with a possible real fall of the individual, distinguishing it from sudden gestures, occasional knocks to the wrist, mechanical vibrations, vigorous work activities, non-traumatic impacts, a fall of the device alone or simple immobility of the terminal.
The initial phase of the assessment looks for a plausible condition of gravitational unloading, i.e. a significant reduction in apparent acceleration consistent with a loss of support. This phase is not treated as a sufficient condition, but as a sentinel element that triggers a more in-depth analysis. To be considered relevant, it must be temporally consistent and must not be better explained as noise, random oscillation or movement of no traumatic significance.
The system then looks for a consistent impact phase, i.e. an accelerometric variation consistent with the conclusion of a fall dynamic. The impact is not treated as a self-sufficient criterion either, since not all impacts correspond to real falls and not all falls produce a clear impact. The role of the impact is to strengthen the credibility of the sequence when its amplitude and timing are consistent with the preceding phase.
This analysis is combined with a subsequent observation phase, aimed at assessing a reduction in motor activity or a condition of relative immobility. Immobility is not considered an autonomous and sufficient criterion, since a stationary device might simply have been put down, removed or not be worn. Reduced subsequent activity does, however, become significant when it occurs after a dynamic already deemed significant, and strengthens the hypothesis that the observed event has had real effects on the individual.
The system also assesses the final posture and the change in orientation of the terminal, considering them as additional consistency factors. These elements can help distinguish a real fall from a simple sudden gesture, an isolated knock or a vibration not consistent with a traumatic event.

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Capitale Sociale Euro 1.000.000,00 i.v. · C.F. 01604520989 · Partita IVA 03223860176 · Iscrizione REA e CCIAA di Brescia 329091
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The classification logic also involves hysteresis mechanisms, multi-sample validation, observation time windows, penalties for patterns incompatible with a real event and robustness criteria aimed at reducing inappropriate activations. In particular, verifying that the device is actually being worn mitigates the risk of a fall of the terminal alone being interpreted as a fall of the person, without however eliminating it entirely.
From an application standpoint, the typical use case is that of a worker who suffers a sudden loss of balance or a collapse with dynamics marked enough to produce a sequence of unloading, impact and subsequent reduction in movement. In this scenario, the system can generate a local warning, record the event, forward it to the central systems and, if it is not cancelled, activate the applicable escalation procedure.
A second use case concerns the ambiguous or borderline event, in which the detected dynamic presents some elements consistent with a fall but not complete consistency. In such circumstances, the system can adopt a cautious classification, request interaction from the operator or activate less aggressive workflows, depending on the configuration applied.
A third use case concerns the typical wrist-related false positive, in which vigorous physical activities, repeated knocks or rapid movements generate patterns partially similar to a fall. In these cases, the multi-phase architecture, post-event verification and the ability to abort the warning are the main tools for containing decision noise.
Despite the level of sophistication of the multi-phase analysis, the presence of progressive validation mechanisms, the penalisation of inconsistent patterns and the modulation of the final risk, the detection subsystem cannot entirely eliminate the possibility of false positives or false negatives. The complexity of real biomechanical phenomena, the placement of the sensor on the wrist, the individual variability of movements, the not perfectly deterministic nature of real falls and the need to operate on a low-power embedded device make a residual margin of decision error inherent. Multi-phase analysis increases the robustness of the model and reduces dependence on single peaks or overly simplistic criteria, but does not turn the system into an infallible classifier of traumatic events. In application terms, the model is therefore designed to increase the probability of correctly intercepting falls consistent with the observable signals, not to guarantee the certain and universal recognition of every possible event.
The fall detection subsystem adopts a logic explicitly optimised for low-power embedded wearable devices, in which the balance between detection accuracy, decision timeliness, energy consumption, memory usage and computational sustainability is a structural design choice and not an accidental limitation of the implementation. In this context, the accelerometer sampling rate is not pushed towards the theoretically possible maximum values, but is kept at a level compatible with continuous monitoring on a wearable device, so

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Via Pastore n. 14 · 25046 Cazzago S. Martino (BS) · +39 030 7751504
Capitale Sociale Euro 1.000.000,00 i.v. · C.F. 01604520989 · Partita IVA 03223860176 · Iscrizione REA e CCIAA di Brescia 329091
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as to preserve operating autonomy, system stability and the sustainability of the processing load over the long term.
Adopting a moderate sampling rate offers significant advantages: it reduces sensor and CPU consumption, limits the pressure on sensor callbacks, contains internal data traffic, reduces the risk of processing backlogs and makes continuous monitoring over the entire shift more sustainable. This choice also favours greater compatibility with an embedded architecture in which the device must simultaneously perform other functions, such as communication, location, alarm workflow management, user interaction and control of the general operating status.
Against these advantages, a sampling rate that is not high also entails specific technical trade-offs. In particular, it reduces the temporal resolution with which the fastest transients are observed, may make the fine reconstruction of very short impulsive events less detailed and may reduce sensitivity to extremely fast or short-lived micro-patterns. To compensate for this limitation, the system does not base its decision on a single sample, but adopts a logic based on time windows and multi-sample validation, in which the event is interpreted as an overall dynamic structure and not as a succession of elementary spikes.
In summary, the fall detection subsystem is designed according to a logic of controlled compromise: the accelerometer rate is chosen so as to make continuous monitoring on a wearable sustainable, while batching and window-based analysis are adopted to recover semantic robustness, reduce noise and contain computational cost. The result is not a model geared towards maximum raw reactivity, but a model geared towards the best operational reliability compatible with the real constraints of an embedded wrist-worn device.

Safeguard clauses relating to fall detection

The fall detection subsystem is a tool supporting personal safety and does not guarantee the certain recognition of every traumatic event. Slow falls, progressive collapses, slips with partial support, events with atypical dynamics, events with significant residual movement of the wrist or events occurring while the device is not worn correctly may not be detected.
The system guarantees neither the absence of false positives nor the absence of false negatives. Detection depends on the dynamics of the event, the position of the device, the wearing status, the operating conditions and the configuration applied.
Failure to detect a fall or the generation of an inappropriate alarm does not, in itself, constitute automatic proof of a certain malfunction, nor does it give rise to strict liability on the part of the manufacturer or supplier.

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Via Pastore n. 14 · 25046 Cazzago S. Martino (BS) · +39 030 7751504
Capitale Sociale Euro 1.000.000,00 i.v. · C.F. 01604520989 · Partita IVA 03223860176 · Iscrizione REA e CCIAA di Brescia 329091
info@safesafety.com · www.safesafety.com

The fall detection subsystem does not replace human supervision, company emergency procedures, risk assessment, staff training, preventive measures, specialist PPE or other safety measures required by the operational context.

Vital signs monitoring

The system incorporates a vital signs monitoring subsystem, aimed at detecting potentially anomalous physiological conditions during work activity. Monitoring is designed as a **preventive, non-diagnostic function** and is based on the collection of vital signs that can be acquired by the worn device, transformed into application indicators of attention or risk.
The processing of vital signs is not limited to assessing the instantaneous value of an individual measurement. Instead, each parameter is considered over time as a time series, on which the system can build averages, progressive statistics, variability indicators, deviations from habitual behaviour, persistence conditions and signal stability criteria. This approach makes it possible to distinguish more effectively between transient fluctuations of little significance and repeated or persistent anomalies.
The system can therefore identify various application situations.

- The worker presents a parameter that exceeds an attention condition consistently or in a significantly anomalous manner compared with their own historical profile. The system can generate a "warning", to be handled according to the configured workflow.
- The anomaly derives not so much from the absolute value as from the significant deviation from the individual average. In this scenario, the monitoring function is particularly useful in devices permanently assigned to the same operator, since the personal history improves sensitivity to changes that are not necessarily extreme in absolute terms but are significant compared with the individual's ordinary physiological behaviour.
- Several concurrent parameters show moderate but consistent deviations. The system can then aggregate the contributions of the various modules into an overall risk assessment, treating the picture in a more systemic way and less dependent on a single isolated measurement.

Vital signs monitoring also interacts with the on-wrist presence check. The acquisition of these values is technically meaningful only if the device is plausibly being worn and contact with the body is sufficiently reliable. In the absence of these conditions, the information value of the data may be significantly reduced.

Safeguard clauses relating to vital signs monitoring

Vital signs monitoring is intended to support operational safety and has no diagnostic, therapeutic or clinical purpose. The system is not a medical device, does not produce

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Via Pastore n. 14 · 25046 Cazzago S. Martino (BS) · +39 030 7751504
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medical reports, does not replace medical assessments and cannot be used as the sole tool for confirming, ruling out or treating a pathological condition.

Wrist measurements may be affected by numerous factors, including non-optimal contact with the skin, movement of the limb, improper tightening of the device, peripheral perfusion, sweating, ambient temperature, light or signal conditions, sensor status, removal of the device or incorrect use.

The presence of an alarm does not equate to confirmation of illness or pathology; the absence of an alarm does not equate to the exclusion of relevant clinical conditions. Responsibility for clinical assessment remains with the competent healthcare professionals.

On-wrist presence check

The on-wrist presence check is a cross-cutting function of the SAS architecture, as it affects the interpretative quality of several subsystems, including vital signs, fall detection and the management of certain alarm workflows. Its purpose is to distinguish the conditions in which the device is plausibly being worn from those in which it may have been put down, removed or used in a manner inconsistent with its intended use.

From an application standpoint, this function is particularly important in three scenarios.

1. It prevents vital signs collected when the device is not actually being worn from being interpreted as informative.
2. It reduces the risk of a fall of the terminal alone being mistaken for a fall of the worker.
3. It helps to qualify certain status or inactivity events with greater reliability.

The check does not amount to an absolute physical detection that the device is actually on the wrist. It is the result of a software classification based on the available signals and therefore improves the overall robustness of the system without being able to provide full certainty.

Safeguard clauses relating to the on-wrist presence check

The classification of the device as worn or not worn is an application-level estimate and not absolute proof of the physical state of the terminal. Classifications that do not perfectly reflect the real situation may therefore occur.

The purpose of this function is to **reduce** interpretation errors and inappropriate activations, **not to eliminate them entirely.**

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Via Pastore n. 14 · 25046 Cazzago S. Martino (BS) · +39 030 7751504
Capitale Sociale Euro 1.000.000,00 i.v. · C.F. 01604520989 · Partita IVA 03223860176 · Iscrizione REA e CCIAA di Brescia 329091
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Warning, alarm, latency, escalation and abort workflow

The SAS system adopts a structured, progressive event management workflow that can be differentiated by event class. The pipeline does not end with a notification being triggered, but comprises event acquisition, classification, admissibility check, any latency, local signalling, recording, remote notification, possible cancellation by the operator and any escalation to the monitoring structure.

When a system function produces a relevant event, the device can first generate a local warning by means of an on-screen notification, an acoustic or voice signal or vibration, in order to inform the operator directly and allow an initial reaction. At the same time, the event may already be recorded and transmitted to the remote systems for audit, logging and traceability purposes.

Depending on the configuration, the event may be subject to an application latency. Latency serves a specific technical and organisational function: it leaves a useful interval for the possible cancellation of a false positive, allows an initial local check and reduces the indiscriminate forwarding of events that have not yet been confirmed.

Latency does not mean that the event is lost, but that it is temporarily held in a qualified manner within the workflow.

If the event is not cancelled within the specified time (10 seconds), the system may proceed with escalation to the configured remote targets. Escalation can follow differentiated policies based on the type of alarm, the priority level, the operator's profile, the area context or other application criteria.

The system also incorporates deduplication and cooldown mechanisms, which prevent excessive repetition of homogeneous events within close time windows. This function is essential in cases where the same anomaly generates multiple consecutive triggers, as it prevents information overload of the backend, the operator and the Control Room.

A typical use case is that of a fall alarm with a local warning and a cancellation window. If the operator is conscious and the event is false, they can interrupt the workflow. If they do not intervene, the system proceeds with escalation. A second use case concerns events which, although they do not have traumatic dynamics, require notification and possible remote verification. A third use case concerns procedural or compliance alarms, which may follow different flows, less oriented towards immediate emergency and more oriented towards organisational handling.

Cancellation by the operator stops subsequent escalation, but does not necessarily delete the historical record of the event already recorded. Traceability of the cancelled event is in fact an integral part of the system's audit function.

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Via Pastore n. 14 · 25046 Cazzago S. Martino (BS) · +39 030 7751504
Capitale Sociale Euro 1.000.000,00 i.v. · C.F. 01604520989 · Partita IVA 03223860176 · Iscrizione REA e CCIAA di Brescia 329091
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Safeguard clauses relating to the alarm workflow

The generation of warnings or alarms is an application-level classification and not an absolute certification of the event. The existence of an escalation workflow does not equate to a guarantee that the intervention will always be activated, received or completed within the desired time.
Latency, abort capability, deduplication and cooldowns are tools for balancing timeliness, manageability of false positives and sustainability of the operational flow. These choices **eliminate neither the risk of inappropriate alarms nor the risk of failed activations.**
The effectiveness of the workflow depends on the correct functioning of the device, the availability of connectivity, the correctness of the configuration, the availability of the remote services and the organisational capacity of the monitoring structure.

Voluntary SOS function

The SAS system incorporates a voluntary SOS function designed to allow the operator to request assistance explicitly, even in the absence of an automatic detection of a fall, an anomaly in vital signs or another event generated by the monitoring subsystems. The SOS function therefore represents a channel for direct alarm activation by the worker and is an essential component of the safety architecture, as it makes it possible to manage situations in which the danger is subjectively perceived by the operator even before it can be technically detected by the sensors.
The function can be configured according to different operating modes, so as to adapt to the risk context, the nature of the activity performed and the type of organisational response required.

Voice SOS

The voice SOS mode is designed for all cases in which the operator can openly activate a request for help and it is appropriate for the device to produce local evidence that activation has taken place. In this scenario, the terminal can provide explicit feedback, such as voice, acoustic, haptic or visual confirmations, so as to inform the worker that the request has been received and that the related workflow has been started.
The typical use case is that of an operator in difficulty due to illness, injury, disorientation, isolation, the need for urgent support or another critical situation in which an open alarm does not increase the risk. In such circumstances, local confirmation of activation is operationally useful, as it gives the individual an immediate perception that the assistance process has started.

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Silent SOS

The silent SOS mode is designed for scenarios in which the activation of the alarm must not be made apparent externally or must not produce signals perceptible to third parties. This configuration is particularly relevant in situations of assault, threat, coercion, violence, attempted theft, a hostile environment or, more generally, in all cases where an explicit alarm could increase the danger to the operator.
In this mode, the system can accept the request for help without generating recognisable local feedback, or by limiting such feedback to forms that cannot be perceived by the surrounding environment. The event is then forwarded according to the configured workflow, preserving the discretion of the activation as far as possible and allowing the Control Room or the monitoring structure to receive the alert without the perpetrator or the hostile environment becoming immediately aware of it.
From an application standpoint, the silent SOS is a distinct function in terms of personal safety, as it is designed for contexts in which the non-visibility of the alarm is an essential protection requirement.

SOS abort latency

The SOS function can be configured with or without a cancellation latency. In the first mode, the system can provide a short abort window, allowing the operator to interrupt the activation in the event of unintentional activation or operating error. This configuration is particularly useful in contexts where the risk of accidental activation must be contained without giving up the availability of the function.
In the second mode, the SOS can instead be configured without abort latency, so as to forward the event immediately to the backend or to the Control Room. This setting is particularly appropriate when the timeliness of activation has absolute priority or when the risk context makes any delay introduced by a confirmation or cancellation window inadvisable.
The choice between SOS with abort capability and immediate SOS therefore depends on the use case, the risk profile, the task and the organisational policies adopted.

Activation of audio and video recording

Depending on the project configuration, the SOS function can also be associated with the silent activation of audio and video recording mechanisms. This option makes it possible to associate with the emergency event not only an alarm signal, but also the contextual collection of information useful for understanding the scenario, reconstructing the event,

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qualifying the ongoing risk and supporting the operational decisions of the monitoring structure.
From an application standpoint, audio recording can be useful for capturing ambient noise, dialogue, signs of assault, calls for help or other contextual elements that cannot be immediately inferred from the device status data alone. Video recording can add a further level of visual context, which is particularly relevant in cases of assault, intrusion, threat or complex operational events.

Safeguard clauses relating to the SOS function

The SOS function is a tool for the voluntary activation of the alarm and does not, in itself, guarantee certain receipt, immediate handling or the actual management of the event in every circumstance. The effectiveness of the function depends on the availability of the device, connectivity, the configuration of the workflow, the reachability of the remote systems and the presence of an organisational structure capable of receiving and handling the event.
Any activation of audio or video recordings does not guarantee the complete capture of the event, nor the absolute usability of the material collected. The quality and actual usefulness of the recordings depend on the environmental context, the positioning of the device, the availability of the audio-video channel, lighting conditions, ambient noise and the operational continuity of the system.
The SOS function, even in its most advanced modes, does not replace emergency procedures, personal protection measures, safety equipment, the organisation of rescue services or company protocols for the management of assaults and emergencies.

Multi-channel communication

The system supports multi-channel communication functions, which may include calls, asynchronous notifications, status messages and, where provided, fallback messages. Communication is not treated as an ancillary function, but as a fundamental component of the safety operating model, as it makes it possible to turn local detection into an event that can be managed by remote parties.
In the case of voluntary SOS, the operator can directly activate a request for help. The typical use case is that of a worker who, even in the absence of automatic detection of a fall or a deviation in vital signs, perceives a danger, a difficulty or a critical situation and requests assistance. In this scenario, the system acts as a terminal for the conscious activation of the emergency. In other use cases, communication is the continuation of an automatic alarm already classified by the system. The device can then become part of a contact and

notification strategy towards the Control Room or other configured parties, using the main channel available and, if necessary, support or fallback channels.
Communication between the device, the backend and the Control Room is not necessarily uniform, but can be managed according to adaptive policies that differentiate the channels and protocols used according to the nature of the data, the required update frequency, the priority level of the event, the need for continuity of the connection and the expected energy impact on the terminal. In this approach, the system can adopt different strategies for the transmission of heartbeats, telemetry, alarms, position updates, contact requests, asynchronous messages or interactive communication sessions, so as to optimise the trade-off between timeliness, reliability, operational continuity and energy sustainability.
This architecture avoids the indiscriminate use of a single transmission scheme for all classes of information, favouring instead a context-based management of application traffic consistent with the safety function of the system and with the inherent limitations of a battery-powered wearable device.

Communication security

Communications between the H09 device and the platform are protected by TLS encryption and mutual authentication (mTLS). Each device has its own X.509 digital certificate, issued by a dedicated PKI and subject to automatic renewal. The communication channels used by the device, both MQTT and HTTPS, are encrypted. Access to the web platform by Control Room users is protected by an HTTPS connection and two-factor authentication (TOTP).

Safeguard clauses relating to adaptive communication

The adoption of adaptive communication logic improves the overall efficiency of the system, but does not absolutely guarantee continuity, absence of delay or certain delivery of every message under all operating or infrastructure conditions.

Adaptive communication between the Control Room and the operator

Where provided for by the configuration, the system can support the opening of the communication channel by the Control Room without requiring prior manual acceptance by the operator on the device. This mode is particularly relevant in contexts where the worker is unable to interact promptly with the terminal or where the speed of establishing contact is a priority operational requirement.

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In this context, the different types of communication can follow differentiated logic. Communication sessions based on Teams or equivalent channels can be governed by the Control Room as an integral part of the assistance and supervision workflow, while other conventional voice communications may follow different management modes depending on the configuration applied, the use case and the availability of the associated services.

Safeguard clauses

The possibility of remotely opening the communication channel does not, in itself, guarantee the full intelligibility of the conversation, the continuous availability of audio or video or the operator's actual ability to interact in every circumstance. The quality of the session depends on connectivity, device status, environmental conditions, noise, configuration and the availability of the remote services involved.
The adoption of multiple channels serves the purpose of application resilience. The aim is to reduce the probability that a single point of failure makes it impossible to handle the event. The presence of multiple communication channels does not guarantee absolute delivery, continuous availability or the certain establishment of contact in every circumstance. Communication depends on radio coverage, network status, third-party services, configuration, backend integrity, device status and the availability of the recipients.
The activation of the SOS or other emergency channels does not replace the organisational structure of the rescue services and does not constitute a guarantee that the request has been received, understood or handled within the expected time.

Exclusive multi-user alarm management and handling organisation

The system adopts an exclusive multi-user alarm management logic, designed to ensure that each event is handled at any given time by a single Control Room operator, avoiding overlaps, concurrent interventions, duplication of activities or ambiguity in operational responsibility. In this model, when an alarm is moved from the new alert status to an operational handling status, it is no longer available in the active list of the other operators and is therefore exclusively associated with the person who started managing it.
This architecture makes it possible to maintain clear traceability of operational responsibility for the event during the intervention phase, reducing the risk of several operators acting simultaneously on the same alarm with misaligned, redundant or mutually interfering actions.

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If the operator who has taken charge of the alarm interrupts its management without taking it through to the planned closure of the workflow, the event can be released and returned to an available status, thus becoming visible again to the other Control Room operators and assignable once more. In this approach, the system combines exclusive handling with the possibility of release and reassignment, so as to preserve both operational order and organisational resilience in the event of abandonment, unavailability, transfer of responsibility or the need to reallocate the workload.
The system may also provide that an alarm remaining in the "NEW" status without being taken charge of within a predefined maximum time, configured so as to ensure the necessary timeliness for the use case, automatically triggers an internal escalation within the Control Room to the competent managers or supervisors. In this configuration, failure to take up the event within the expected time window does not remain confined to the first-line operational level, but activates a further level of organisational attention, aimed at reducing the risk of delays incompatible with the service protocols or with the criticality of the event.
The Control Room is organised with operational coverage sized to support the maximum timeliness that can reasonably be achieved in taking charge of alarms and managing the related procedures. The structure of the monitoring service, the number of operators, the escalation levels and the distribution of responsibilities can be defined according to the number of sites served, the level of risk, the number of devices and the customer's operating protocols.
The intervention workflow associated with an alarm is not necessarily uniform across the entire platform, but can be differentiated by individual tenant, by individual site or by other organisational units provided for by the application architecture. This differentiation makes it possible to tailor, in line with the customer's protocols, the evacuation procedures, escalation rules, priority criteria, notification recipients, methods of releasing or reassigning the event and, more generally, the operational behaviour of the Control Room according to the specific features of the context served.
In this context, the system does not impose a single abstract intervention model, but allows the life cycle of the alarm to be adapted to the company procedures, emergency plans, site logic and organisational rules that actually govern the handling and management of the event.

Safeguard clauses relating to exclusive multi-user alarm management

Exclusive multi-user alarm management improves operational order, traceability of responsibility and the reduction of interference between operators, but does not in itself guarantee the absolute absence of delays, improper release, non-optimal reallocations or

discontinuity in the management of the event. The effectiveness of the mechanism depends on the correct configuration of the workflow, the availability of monitoring staff, the continuity of the backend systems and the quality of the operational organisation of the Control Room. Internal escalation of an alarm not taken charge of within the configured maximum time is an organisational safeguard measure aimed at reducing the risk of untimely response, but does not in itself guarantee that every event will be taken up or managed without delay in every circumstance. Its effectiveness depends on the correct sizing of the monitoring service, the availability of the managers involved, the configuration of the time thresholds and the continuity of the platform.
Differentiating the workflow by tenant, by site or by customer protocol improves the alignment of the platform with actual emergency and coordination procedures, but requires an adequate phase of design, configuration, validation and maintenance of the rules. Incomplete, inconsistent or outdated configurations may affect the correct execution of the alarm life cycle and the consistency between the system's behaviour and the customer's procedures.
The system provides structured support for the operational management of alarms, but does not replace human monitoring, the training of Control Room operators, the correct sizing of the service, the customer's intervention protocols or the organisational responsibilities relating to emergency management.

Management of non-Bluetooth PPE via QR code or selection

The system also supports the registration of non-Bluetooth PPE by scanning a QR code or, where provided, by selection from a list on the device interface. This function makes it possible to extend procedural control to equipment which, by organisational choice, must be registered manually at the start of the shift or before a given activity.
In the simplest use case, the worker registers the required PPE by scanning the related QR code. In an alternative use case, the worker selects the relevant PPE or procedural kit from the list on the device. In both cases, the system stores the acquisition as an element of application-level compliance.
An important feature of this function is that the check for the absence of non-Bluetooth PPE does not necessarily coincide with the very first moment of the shift. The system can in fact provide an initial window dedicated to correct registration, so as to prevent the lack of immediate acquisition from generating premature alarms while the entry procedure is still in progress.

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Via Pastore n. 14 · 25046 Cazzago S. Martino (BS) · +39 030 7751504
Capitale Sociale Euro 1.000.000,00 i.v. · C.F. 01604520989 · Partita IVA 03223860176 · Iscrizione REA e CCIAA di Brescia 329091
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The typical use case is that of a worker who must declare or register the equipment before starting the activity. If, within the configured conditions and times, the system does not detect the acquisition of the required PPE, it can generate a non-compliance alarm, single or repeated, according to the centrally defined logic.
This function is therefore essentially procedural in nature: it aims to reinforce compliance with the rules for starting an activity or entering an area and to provide the platform with application-level evidence that the required step has been completed.
The mandatory non-Bluetooth PPE requirement is configurable at several levels and can be defined according to the tenant, the individual operating site, the assigned task, the profile of the individual operator and, more generally, the organisational rules applicable to the specific use case. In an advanced design approach, this configuration can also be integrated at backend level with legacy systems or existing applications for managing work permits, operational authorisations, procedures for access to areas or activities and other organisational constraints, so as to make PPE control consistent with the overall authorisation framework of the site.
The selection or scanning of PPE QR codes is not necessarily provided for as a mandatory step in all application configurations of the system. Depending on the organisational model adopted, the level of project integration and the rules defined for the site, the procedure can be made mandatory, optional or not required at all.

Safeguard clauses relating to non-Bluetooth PPE with QR code or selection

Registration via QR code or selection constitutes application-level evidence of acquisition in the system and **not absolute proof of the actual physical possession, correct wearing, technical suitability or continuous use of the PPE throughout the entire shift**.

Operator positioning and location

The positioning function is not based on a single source, but on a multi-sensor policy designed to maintain as robust an estimate as possible of the operator's position, activated exclusively in the event of an alarm, in heterogeneous environments, with particular attention to the trade-off between accuracy, data continuity and the energy sustainability of the wearable device.
Location integrates information from several available technologies, including GNSS (Global Navigation Satellite System), assisted location services, fused location providers, IMU (Inertial Measurement Unit), inertial dead-reckoning, WiFi fingerprinting, Bluetooth fingerprinting and,

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Via Pastore n. 14 · 25046 Cazzago S. Martino (BS) · +39 030 7751504
Capitale Sociale Euro 1.000.000,00 i.v. · C.F. 01604520989 · Partita IVA 03223860176 · Iscrizione REA e CCIAA di Brescia 329091
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where available, RTLS (Real-Time Location System) or other contextual sources. The final estimate derives from the combination of these contributions in a single fusion framework, so as to limit dependence on a single source and improve the resilience of the data.
A fundamental principle of the subsystem is the adoption of opportunistic acquisition strategies. The system does not force maximum activation of the position receiver at all times, but first assesses whether a recent and sufficiently reliable fix is already available in the cache. When, on the other hand, the cache is no longer considered adequate, the system proceeds with a new active acquisition.
Active acquisition is not uniform under all conditions. The strategy can adapt to the context, favouring different modes depending on the operating status of the device, the quality of the available signal, any alarm status, the likely indoor or outdoor nature of the scenario and the level of accuracy required. In this way, the system seeks the best balance between precision and energy sustainability.
Another essential element is the consistency validation of fixes. A candidate position is not accepted automatically simply because it is available, but can be compared with the previous position, the declared accuracy, the age of the measurement and the plausibility of the movement implied by the transition from one fix to the next. This makes it possible to mitigate position jumps incompatible with the individual's actual movement and to reduce the effects of sporadic provider errors or degraded radio conditions.
This architecture enables various use cases. In open outdoor environments, the system can rely more reliably on satellite sources or fused location providers, obtaining a relatively direct estimate. In indoor environments or shielded areas, location may depend more on inertial information, radio fingerprints or area rules. In alarm status, the system can increase the update rate to make the operational track more useful to the monitoring structure. Under ordinary conditions of use, it can instead adopt more conservative policies to preserve battery life and the general continuity of the device.
Positioning is normally addressed on a project basis, configured according to the characteristics of the operating site and the infrastructure actually available. In this approach, the location subsystem can be integrated, where present and suitably configured, with WiFi networks, radio fingerprinting maps, area logic, site topological references and further contextual sources capable of improving the robustness of the position estimate, particularly in indoor or mixed environments.
The location policy is therefore not necessarily uniform, but is defined in relation to the use case, the level of accuracy required, the energy constraints of the device, the availability of local infrastructure and the degree of tracking continuity deemed necessary in the application context.

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In the basic configuration, the system uses exclusively the fused location services provided by Google Play Services, with adaptive management of location requests. In this configuration, the required level of accuracy, the update frequency and the intensity of the search are modulated dynamically according to the operating status of the device and the detected context, for example distinguishing ordinary conditions from alarm situations, indoor scenarios from outdoor scenarios, and normal monitoring phases from phases in which greater information responsiveness towards the remote systems is required.
Even in this basic configuration, location is therefore managed according to criteria balancing accuracy, data continuity and energy sustainability, avoiding rigidly uniform approaches and favouring instead an adaptive strategy consistent with the safety function of the system and with the operating limits of a wearable terminal.

Safeguard clauses relating to positioning

The positioning provided by the system is a technical estimate obtained through multi-sensor fusion and software validation criteria. It does not constitute an absolute, continuous and infallible measurement of the operator's actual position at every moment.
The quality of the estimate depends on the indoor or outdoor context, satellite coverage, interference caused by artefacts or multipath, the quality of the radio signal, the availability of auxiliary sources, the dynamics of the movement, the energy status of the device, the configuration and the environmental conditions.
The system does not guarantee continuous location, uniform precision in all environments, absence of delay, absence of drift or the permanent availability of all position sources.
Position data must be interpreted as an operational aid and not as absolute certainty.

Assisted location for rescue teams and support in reaching the target

In advanced project configurations, the location subsystem can be used to help the persons responsible for intervention, verification or rescue reach an operational target.
This function is particularly important in complex, extensive, indoor or limited-visibility contexts, in which the mere availability of an abstract position is not sufficient and it is instead necessary to support the operational coordination of reaching the target.

Safeguard clauses relating to assisted target location

Even in advanced assisted location configurations, the system provides operational support and not an absolute guarantee that the person or point to be reached will be reached

quickly, precisely or without error. Effectiveness depends on the quality of the site infrastructure, the availability of location sources, the consistency of the mapping and the actual environmental conditions.

System configurability and dependence on the use case

The SAS system is highly configurable. Threshold parameters, alarm logic, latency times, communication policies, location criteria, area rules, PPE lists, update frequencies and interface behaviours can be adapted to the use case and customised by tenant, site, group, task and team, down to the individual level.
This configurability is one of the main strengths of the platform, as it allows it to be applied in different contexts without reducing all operational situations to a single standard model. At the same time, it makes the system highly dependent on the correctness of the configuration applied. A well-designed function whose parameters are set inconsistently with the site, the risk and the organisation may produce unsatisfactory application results.

Remote updates and reconfiguration of the platform

The configurability of the platform also extends to the possibility of remotely updating parameters, rules, application profiles, operational pages, required equipment, location policies, warning logic and other functional elements of the system, so as to adapt the behaviour of the device and the backend to changes in the site, the procedures or the organisational model adopted. This capability makes it possible to keep the system aligned with the operational context without necessarily requiring local manual intervention on each terminal, except where the specific deployment architecture or the customer's policies provide for different arrangements.

Safeguard clauses relating to updates and reconfiguration

Update and reconfiguration activities improve the adaptability of the system, but require adequate governance of the application life cycle, validation of changes and control of consistency between the distributed configuration and the actual use case. Changes that are not correctly validated or are inconsistent with the context may alter the operational behaviour of the system.

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Via Pastore n. 14 · 25046 Cazzago S. Martino (BS) · +39 030 7751504
Capitale Sociale Euro 1.000.000,00 i.v. · C.F. 01604520989 · Partita IVA 03223860176 · Iscrizione REA e CCIAA di Brescia 329091
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Automatic and silent OTA application updates

The system can support application update procedures in OTA (Over-The-Air) mode, designed to enable the remote distribution of new software versions without requiring local manual intervention on the individual device. In this configuration, the APK update can be managed automatically and silently, in accordance with the security policies, system privileges and deployment methods provided for by the adopted architecture.

This capability plays a twofold role in application terms. On the one hand, it is a tool for evolutionary maintenance, as it makes it possible to distribute functional improvements, fixes, optimisations, compatibility adjustments, algorithm refinements, interface updates and improvements to the communication, location or alarm management logic. On the other hand, it is also an important element supporting project-specific customisations, as it allows software components specific to the individual customer, site, task or particular implemented use case to be introduced, updated or adapted in a controlled manner.

From an operational standpoint, silent updating makes it possible to reduce the time needed to propagate changes, standardise the device fleet more quickly, limit the need for manual reconfiguration in the field and maintain greater consistency between the software version, the backend configuration and the overall application architecture. In a distributed ecosystem such as SAS, this function contributes significantly to the manageability of the platform, in centralised contexts as well as in on-premises or hybrid contexts.

OTA updating can also be used to support the incremental evolution of the system over time, accompanying the extension of integrations with the safety ecosystem, the introduction of new functions, the extension of the operational pages, changes to the logic of interaction with the Control Room or adaptation to specific project requirements emerging during the life cycle of the solution.

For reasons of operational continuity and energy sustainability, the OTA update is typically postponed to the first charging phase following the release of the new version, so as to minimise the impact on ongoing activities, avoid interference with the device's operational functions during the shift and limit the effects of the update process on the remaining battery life. In this approach, the time of release and the time of actual installation do not necessarily coincide, since the architecture favours a distribution logic compatible with the actual use of the terminal in the field.

From this perspective, automatic and silent updating should not be understood merely as a technical tool for software distribution, but as a **structural component of the maintainability and controlled evolution of the platform**, capable of supporting both the standard evolution of the product and the management of application profiles and specific customisations.

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Safeguard clauses relating to OTA updates

The availability of automatic and silent update mechanisms does not, in itself, guarantee that every update will be successfully distributed, downloaded, installed or made operational in every circumstance. The effectiveness of the process depends on the availability of connectivity, the status of the device, the compatibility of the distributed version, the correct management of the release cycle, the availability of the necessary storage space, the security policies of the terminal and the correct integration between the backend, the application package and the deployment architecture.
Postponing installation to the next charging phase normally reduces the impact on operations and on the device's battery life, but does not in itself guarantee that the update will be applied immediately after release or within a uniform interval across the entire terminal fleet. The actual timing of installation may depend on actual usage and recharging cycles, the availability of connectivity at the scheduled time, the status of the terminal and the distribution rules adopted.
Although aimed at evolutionary improvement and the controlled management of customisations, software updating requires appropriate validation, verification and release governance procedures. Changes that are not correctly validated or are inconsistent with the operational context may affect the application behaviour of the system, the continuity of certain functions or consistency with site configurations.
The presence of remote update functions **does not eliminate the need for maintenance cycle planning, control of the distributed versions, post-release verification and organisational oversight of the changes introduced**. Even where silent updating is in place, it remains necessary to ensure consistency between software evolution, use case requirements, backend configuration and the customer's operating procedures.

General safeguard clauses relating to configuration

The system must be used only in configurations consistent with the operational context, the task, the company procedures and the purposes for which it has been adopted. Incomplete, inconsistent, unvalidated or outdated configurations may significantly alter the sensitivity, specificity, timeliness and usefulness of the information produced.

Charging status and suspension of operational functions

When the device is placed on charge on a stable basis in the manner provided for at the end of the shift or for operational storage, the system automatically suspends the monitoring and event generation functions, so as to avoid improper interpretations of the terminal under

conditions incompatible with normal wrist use. In this configuration, switching to charging status does not merely mean replenishing energy, but may also constitute an application indicator that the device has left its ordinary context of use.

Safeguard clauses relating to charging status

When the device is on charge, certain operational functions are suspended; therefore, while in this condition, the terminal must not be considered fully equivalent to a device that is worn and active during the normal work shift.

Integration of the smartwatch with the safety ecosystem

The H09 smartwatch is designed not as an isolated terminal, but as a personal node of a wider safety ecosystem, in which operational value derives from the integration of individual devices, distributed sensors, site infrastructure, supervision systems and advanced software modules for interpreting the context. In this architecture, the wearable device can act both as a source of events and data and as an end point receiving warnings, alarms, operational instructions, contextual states and support content from the rest of the ecosystem.

Safeguard clauses relating to ecosystem integration

The integration of the smartwatch with additional hardware and software elements of the safety ecosystem broadens the available information picture and the possibilities for operational coordination, but does not in itself guarantee absolute completeness, uninterrupted continuity or infallible correctness of the representation of risk. Overall effectiveness depends on the quality and availability of the integrated subsystems, the correctness of the interfaces, the design consistency of the architecture, the state of maintenance of the infrastructure, the availability of connectivity and the correct configuration of the correlation rules.

General safeguard clauses on use

The system must be embedded in a structured organisational model, including staff training, emergency procedures, supervision, device maintenance, configuration control, periodic verification of correct use and the availability of a monitoring structure, where provided. **The system is not suitable for constituting the worker's sole safety measure**. It must be integrated with the human, technical, organisational and procedural measures required by the specific context.

Safe s.r.l. Unipersonale
Via Pastore n. 14 · 25046 Cazzago S. Martino (BS) · +39 030 7751504
Capitale Sociale Euro 1.000.000,00 i.v. · C.F. 01604520989 · Partita IVA 03223860176 · Iscrizione REA e CCIAA di Brescia 329091
info@safesafety.com · www.safesafety.com

Improper use, failure to wear the device, deactivation of functions, tampering with the software, non-compliant configurations, use in incompatible environments or lack of maintenance may significantly reduce the application effectiveness of the system.

Non-medical use clauses

The SAS system with H09 smartwatch is not a medical device, is not a clinical monitoring system, is not a diagnostic tool, is not a therapeutic aid and is not a certified life-saving system.
Vital signs, behavioural data, fall estimates and classifications generated by the software must be interpreted as technical indicators supporting operational safety and not as medical reports, clinical evidence or diagnostic certifications.

Limitation of liability clauses

The system does not guarantee the universal detection of every traumatic, vital-sign, procedural or contextual event. It does not guarantee the absence of false positives, the absence of false negatives, absolute continuity of service, certain delivery of every communication, permanent availability of position data or absolute physical verification of the actual presence of PPE. Any failure to detect an event, imperfect classification of a situation, delay of a notification, failure to register PPE, inaccuracy of the position or temporary unavailability of a function does not, in and of itself, constitute automatic proof of a certain malfunction, nor does it give rise to strict liability on the part of the manufacturer or supplier.
The user organisation remains responsible for defining the correct use case, validating the configuration, training personnel, keeping the system in efficient working order, establishing emergency procedures and integrating the system with all the necessary complementary measures.

Concluding statement

The SAS system with H09 smartwatch is a technology platform supporting operational safety. The system is designed to increase the probability of intercepting critical events, reinforce procedural compliance, improve remote supervision capability and support the organisation of the response. It nevertheless operates within the inherent limits of a wrist-worn wearable device, non-clinical sensors, inferential software logic, a communication infrastructure that is not always fully controllable and a variable real-world operational context.

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Via Pastore n. 14 · 25046 Cazzago S. Martino (BS) · +39 030 7751504
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info@safesafety.com · www.safesafety.com

For these reasons, the system does not constitute a medical device, does not replace human supervision, does not replace company emergency procedures and does not absolutely guarantee the detection, classification, transmission or handling of every event in every circumstance.

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