



# CONCEPT NOTE – CONNECTED WORKERS



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## 1. Introduction

In an enterprise, employee safety is of utmost importance. By investing in the right employee health and safety solutions, organizations can defer huge costs in terms of liabilities and productivity loss. Arresto is pioneering a digital revolution in employee health and safety by combining wearables with the Internet of Things (IoT), analytics, and artificial intelligence (AI) to create technology solutions for saving lives. Industry 4.0 recommends workers to be equipped with the latest digital tools and technologies, enabling them to work smarter, more efficiently and with greater accuracy. These digitally connected workers have the potential to increase productivity, improve quality and enhance safety.

## 2. Situational Analysis

Employees in industries work in a hazardous environment and are at risk of injury. In case of injury or an emergency, an ineffective emergency response may lead to serious implications for employee and company. Arresto by understanding this problem statement has created a solution which enables site leadership teams to track employee on real time basis, monitor At-Risk behaviours at work, restrict unauthorised access to hazardous zones (thereby linking employees specific skillsets with access control), address all alone working concerns, detect fall from height and provide proactive panic management solutions, through panic button and informing nearby peer for instant response. Using onboard sensors arresto makes an attempt to detect incidents like fall from height, unconsciousness, working in low light conditions, identifying hi decibel sound areas etc.

## 3. Solution Management

Arresto Connected employee solution is designed for field employees to accelerate field force digitization, enhance real-time operational visibility, enable in-field data-driven decision making by providing real time contextual information and enabling real time information interaction.

Arresto Connected Employee Solution aims to bring digital transformation by addressing the requirements of the industrial employee and offering a comprehensive and scalable ecosystem to deliver end-to-end solutions for real-world use cases in the areas like:

- Health & Safety
- Operational Efficiency
- Productivity Improvement - The use of digital tools to automate routine tasks and access real-time data enables employees to work smarter, not harder. Increased productivity can lead to high output levels and improved profitability for the organization.
- Effective and Transparent Contractor Workforce Management

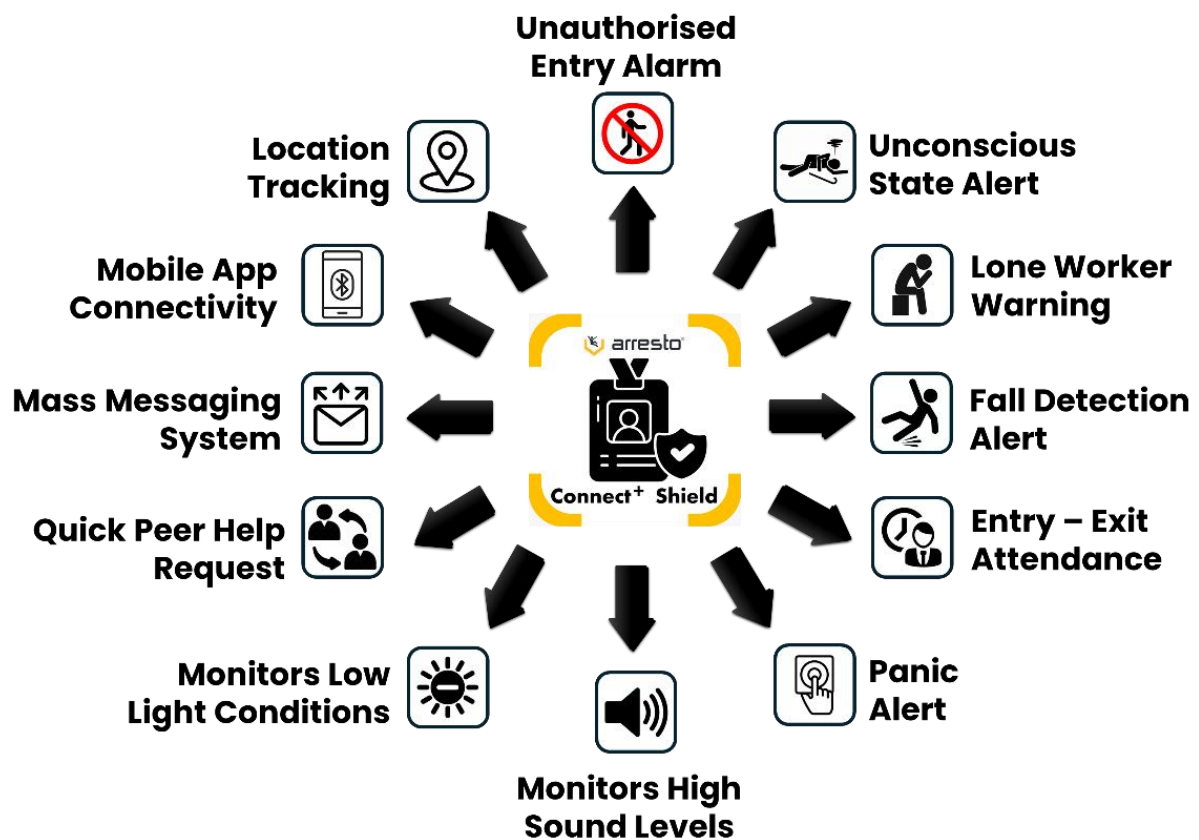


## 4. Benefits and Potential Impact

Arresto Connected Employees provide following benefits:

- Enhanced Employee safety
- Quicker emergency response
- Minimize critical injuries and liability.
- Improved contractor workforce management.
- Enhanced visibility of employee movement.
- Increased productivity
- Improved communication and collaboration
- Faster troubleshooting
- Improved visibility into frontline work
- Central knowledge bases accessible when needed.
- End-to-end process data
- Simplified asset management
- More attractive to a younger workforce

## 5. Arresto Connect+ Shield Platform Dimensions.



### 1. Unauthorized Entry Alarm:



Assure Connect+ Shield sends an Unauthorized Entry Alarm in case employee enters an unauthorized area.

Unauthorized entry alarms typically consist of sensors placed at entry points such as doors or windows. When someone tries to enter without proper authorization, such as by forcing open a door or breaking a window, the sensors detect the intrusion and trigger the alarm system. This could involve sounding a loud siren or sending a notification to the security center.

Unauthorized entry alarms are an essential component of any security system, helping to unauthorized access attempts.

### 2. Unconscious State Alert:



An Unconscious State Alert is a safety feature to detect when an individual is in an unconscious state and alerts nearby employees and employee's supervisor for assistance.

The technology behind Unconscious State Alerts often involves sensors that detect abnormalities or patterns indicative of unconsciousness, they trigger an alert mechanism.

### 3. Lone Worker Warning:



A Lone Worker Warning system is a safety measure designed to protect employees who work alone in potentially hazardous environments. It provides a means for lone workers to quickly summon assistance or alert others in the event of an emergency or threat to their safety.

Lone workers may be working in remote locations, during off-hours, or in situations where they are isolated from direct supervision or support.

The Lone Worker Warning system is equipped with panic buttons. If a lone worker encounters a dangerous situation, falls ill, or requires assistance, they can activate the system to send an alert to a security center, designated contacts, or emergency service.

Upon receiving an alert, the security center or designated responders can assess the situation and dispatch assistance as needed.

#### 4. Fall Detection Alert:



A Fall Detection Alert is a feature to detect when a person experiences a sudden fall or collapse and automatically alerts designated contacts or emergency services.

The technology behind Fall Detection Alerts typically involves sensors such as accelerometers and gyroscopes, which are capable of detecting rapid changes in motion and orientation. When a fall is detected, the device analyzes the movement patterns and impact forces to determine whether it is likely that the device holder has fallen.

If a fall is detected, the device will typically initiate a series of actions, which may include:

- Sending an alert notification to configured emergency contacts, such as emergency response and security teams.
- Activating an audible alarm or vibration to attract attention and help nearby individuals assist the fallen person.
- Providing the option for the device holder to confirm that they are okay or cancel the alert if it was triggered accidentally.
- If no response is received, contacting emergency services, and providing them with the victim's location using GPS location-tracking technology.

#### 5. Entry-Exit Attendance:



Attendance marking with connected employee devices is equipped with sensors and connectivity features. Here's how attendance marking can work with connected worker devices:

**Identification and Authentication:** Each employee is provided with an Assure Connect+ Shield card. This allows the system to identify individual employees and authenticate their presence.

**Real-time Tracking:** The connected employee device continuously tracks the location and movement of an employee in real-time using GPS technology. This data is transmitted to a centralized system where attendance records are maintained.

**Check-in and Check-out:** Employees can use their connected devices to check in when they arrive at the worksite or specific locations within the facility. Assure Connect+ Shield automatically registers their presence when they enter designated areas.

**Automated Attendance Recording:** As employees move throughout the worksite or perform their tasks, their attendance is automatically recorded based on the data received from the connected devices. This eliminates the need for manual attendance tracking and reduces the risk of errors or discrepancies.

**Integration with Time and Attendance Systems:** Attendance data collected from connected worker devices can be seamlessly integrated with time and attendance management systems. This allows for accurate payroll processing, monitoring of work hours, and compliance with labor regulations.



## 6. Panic Alert:



A panic alert button in a connected worker's card is a feature that allows the victim to quickly ask for help or assistance in case of an emergency or when they feel unsafe.

The panic alert button works as follows:

**Button Activation:** The connected worker's card includes a physical panic alert button. When the victim feels in danger or needs immediate assistance, they can press this button.

**Alert Notification:** Upon pressing the panic alert button, the device immediately sends an alert to a centralized monitoring system, security personnel, or designated contacts. This alert can include information about the victim's identity and location.

## 7. Monitors High Sound Level:



Assure Connect+ Shield helps to identify and monitor high sound levels. Organizations can proactively manage noise exposure, protect workers' health and safety, and maintain regulatory compliance

## 8. Monitors Low Light Conditions:



Assure Connect+ Shield helps to identify and monitor low light conditions. Organizations can proactively manage and protect workers' health and safety.

## 9. Quick Peer Help Request:



"Quick Peer Help Request" is a feature that enables employees to seek assistance or guidance from their colleagues in real-time. This feature enables quick communication and collaboration among employees, helping them to solve problems, address challenges, or obtain support when needed

## 10. Mass Messaging System:



A Mass Messaging System allows organizations to send messages simultaneously to multiple employees or groups of employees. It serves as a centralized communication channel for sharing important information, updates, alerts, and announcements to all connected employees efficiently and effectively

## 11. Mobile App Connectivity:



Mobile app connectivity enables integration of mobile applications with various systems and technologies to enable seamless communication, collaboration, and access to information for employees in the field or on the go. It involves leveraging mobile devices such as smartphones or tablets to empower employees with real-time data, tools, and resources to perform their tasks efficiently and effectively.

## 12. Location Tracking:



Provides real-time location data for employees, improving resource allocation and emergency response.

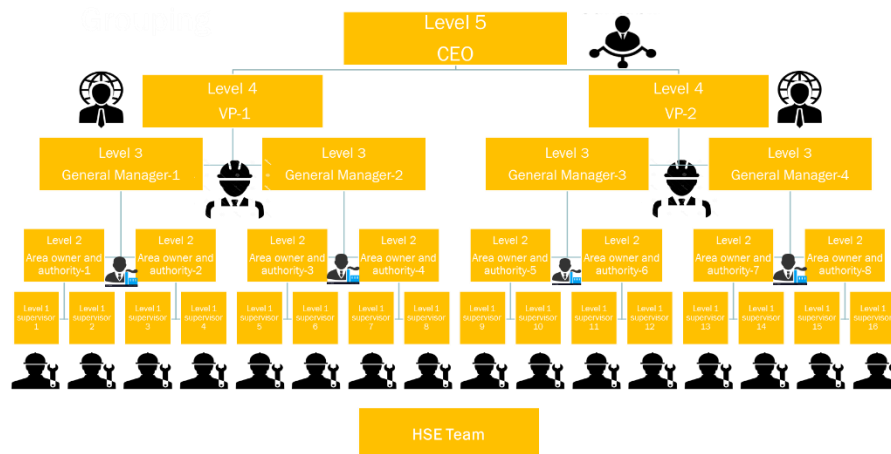
## 6. Features and Functionalities

**Arresto Connect+ Shield Platform:** It is a software solution that helps human workers become more efficient and productive through the use of digital technology. This enables them to make informed decisions, collaborate easily, and take action faster.

The platform benefit people at all levels of the organization. They empower frontline workers with the tools and information they need to perform at their best.

The Arresto Connect+ Shield platform would be hosted on the cloud that works on android, I phone and web Computers. The Arresto Connect+ application have been already configured with administration hierarchy as suited for application. The Arresto connect + shield platform allows employees to access relevant information on employee location and wellbeing, communicate with all stake holders for necessary actions and provides quick analytics through a smart dashboard.

The Arresto Connect+ Shield Platform allows grouping of all stakeholders through a simple process thus, ensuring instant support when needed from all connected stakeholders.





**Unauthorized Entry Alarm:** The arresto Connect+ shield sounds an alarm if the user enters an unauthorized zone. It ensures that the employee works in the allocated work zone and within shift time so that duplicity of attendance is avoided and fatigue due to over exertion beyond work hours is prevented.

**Location Tracking:** The arresto connect+ Shield returns accurate location of the employee in real time. Thus, it provides accurate head count, connects to nearby employees to prevent alone working and helps immediate support in emergency management. Work efficiency is enhanced by optimizing the efforts by the job supervisor on other critical safety processes (like PTW, HIRA, Toolbox talks, etc.)

**Panic management:** The unique Panic button on the arresto Connect + shield card allows flow of instant panic information to all connected stakeholders. The panic button also automatically triggers in case of a fall situation, alone working or unconscious state of an employee. The panic management functionality activates the Emergency Medical Response (EMR) in real time, thus reducing severity of situation /illness /impairment due to very high response times particularly in remote locations and non-routine activities.

**Customizable Dashboard:** The Arresto Business Intelligence tool is fully customizable and provides insights on worker movement, headcounts, safety violations etc. The powerful filters allow user to focus on precise information in real time.

## 7. Timelines

S No.	Activity	WEEKS																		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
<b>PRODUCT DEVELOPMENT STAGE</b>																				
1	Circuit Design																			
2	Sample PCB creation																			
3	Firm ware of microprocessor																			
4	Sensor Module																			
5	Soldering of Components for trial lot																			
6	Field trial of sample lot																			
7	Sample POC lot PCB (100 nos)																			
8	Design of IP 65 casing																			
9	3D printing of sample case																			
10	Field Trial At Arresto																			
<b>CONTRACT EXECUTION STAGE</b>																				
11	Requirement Gathering Client																			
12	Development of Casing Mold																			
13	Design of Labels, User Manuals and Branding																			
14	Injection Molding of Casing																			
15	Soldering of batch of circuits (POC For Minimum 100 Nos )																			
16	Assembly of sensors																			
17	Testing and Packing																			
18	Dispatch																			

## 8. Investment Plan

### SENSOR CIRCUIT:

The sensor circuit pricing depends upon quantity. The following milestones may be followed to optimize the cost of the circuit:

SLAB	PRICE	JUSTIFICATION
Less Than 3000 Numbers	High	Cost of development amortized to lesser number of articles, components are available in reels of 3000, hence any quantity less than 3000 is considered retail and hence very expensive.
Greater Than 3000 Numbers and Less Than 20000	Medium	Amortization better, full reel of component is cheaper.
Greater Than 20000	Low	Amortization of both physical and software components is extremely low. Dollar fluctuations in buying different lots of components is taken care of by buying components in one go rather than multiple procurements.

### MODELS:

The cost may be further optimized by creating different models to address specific requirements of different sites.

FEATURES	BASIC	PRO	ENTERPRISE
 Unauthorized Entry Alarm	✓	✓	✓
 Unconscious State Alert	✓	✓	✓
 Lone Worker Warning	✓	✓	✓
 Fall Detection Alert	✓	✓	✓
 Entry-Exit Attendance	✓	✓	✓
 Panic Alert	✓	✓	✓
 Quick Peer Help Request	✓	✓	✓
 Mass Messaging System	✓	✓	✓
 Mobile App Connectivity	✓	✓	✓
 Location Tracking	✓	✓	✓
 Monitors Low Light Conditions	X	✓	✓
 Monitors High Sound Level	X	X	✓

## 9. Conclusion

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The connected worker I-Card has a potential to reduce workplace injuries, improve productivity, enhance employee control, and monitor compliances.