

Automatic Mustering & Personnel Location System

Why Automatic Mustering?

- **Conventional manual systems such as T Cards, Entry/ Exit Logs & Card Reader Systems rely on personnel to make the action of signing in & out**
- **100% tag read rate means no false alarms of missing personnel**
- **Fastest possible certainty of site evacuated - manual systems take much more time due to no overall visibility of total number of people on plant & / or at muster areas**
- **Locate missing personnel with pin point accuracy**
- **Improved safety of personnel**

Suitable for all Hazardous Process Industries

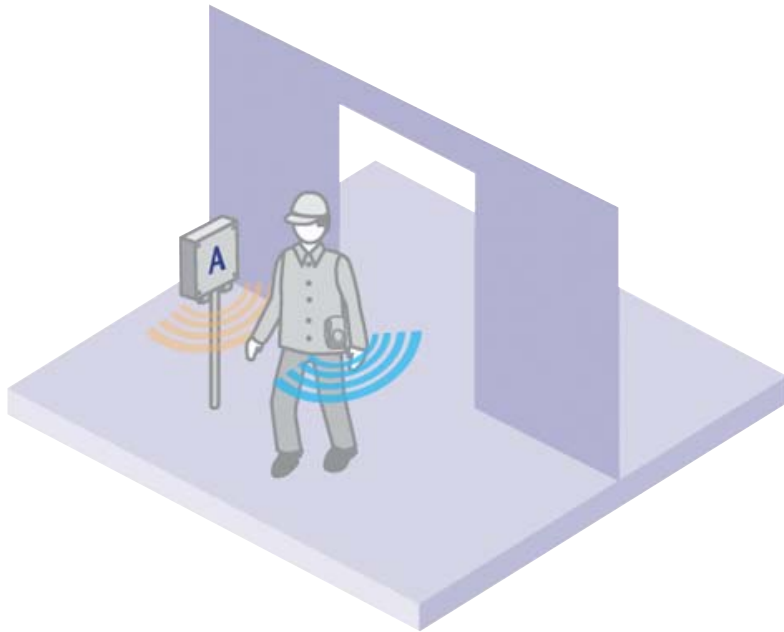
- **Offshore Production Platforms, Drilling Rigs, FSO & FPSO**
- **Oil Refineries & Gas Processing facilities**
- **Pharmaceutical & Chemical plants**
- **Any hazardous facility where speed of evacuation & certainty of all personnel being safely off the plant is critical**
- **Intrinsically safe & explosion proof versions of hardware**

System Features & Capabilities

- Scales from tens to thousands of personnel
- 802.11 standards based system protects investment & helps with ROI of already installed WLAN's
- Automatic opening & closing of gates on site entrance/exits
- Can grow with user requirements to a complete site wide personnel & asset location & tracking solution
- Lone worker features e.g. emergency call button, personnel temperature monitor & motion detection
- Web browser based user interface for desk top PC's & mobile PDA's
- Historical database to review practice or live musters as well as exact location trail around site

Location Principles

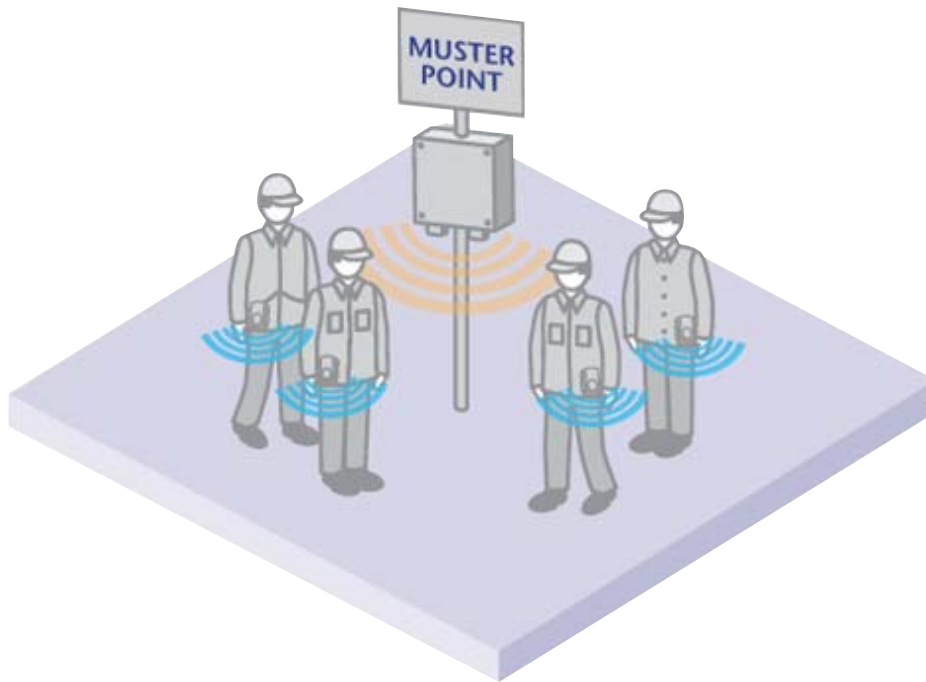
Location Tracking - Position by Choke Point Detection



In locations such as entries & exits Extronics Tag Exciter causes the tag to transmit & it's location is then known to be within the field of the Exciter.

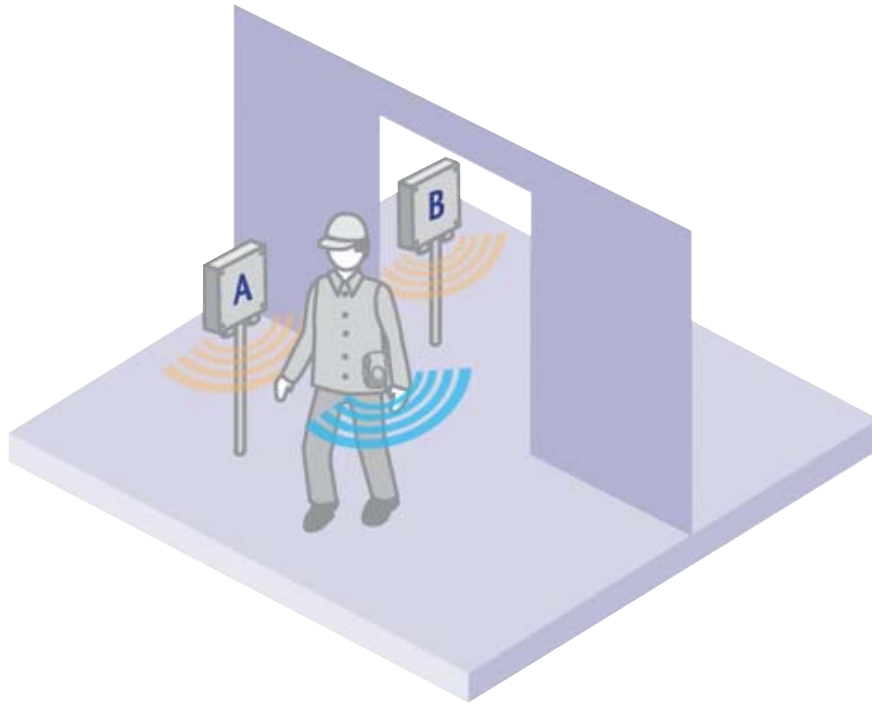
Also used for floor differentiation or change tags properties such as turning it off or altering blink rate

Location Tracking - Position by Choke Point Detection



- **Ideal for use as a Muster Point**
- **Multiple Exciters are used to cover larger areas**

Location Tracking – Entrance & Exit Detection & Counting

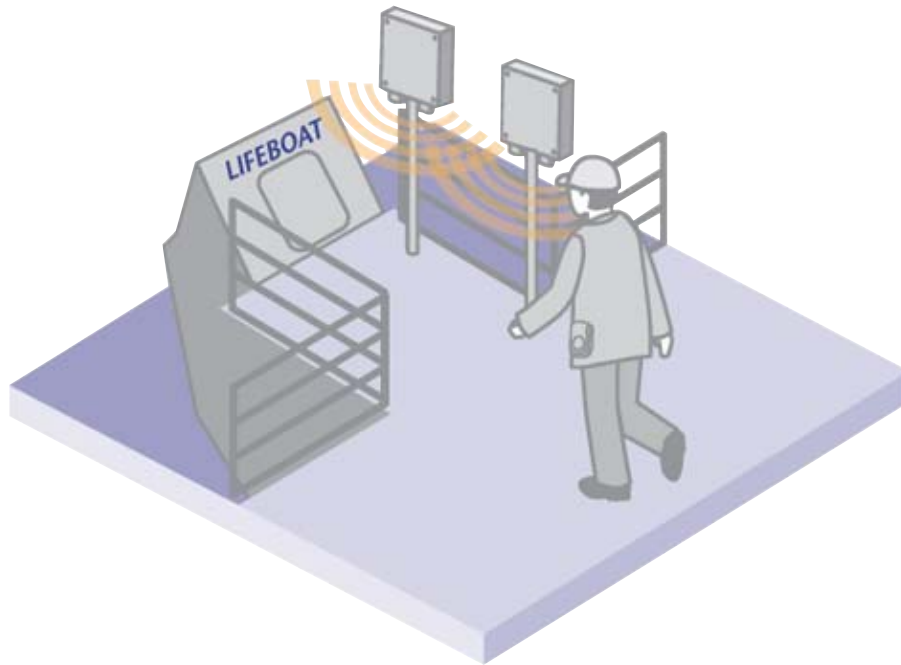


In locations such as entries & exits, two Extronics Tag Exciters can be used together to detect direction of movement.

“In” sequence A then B

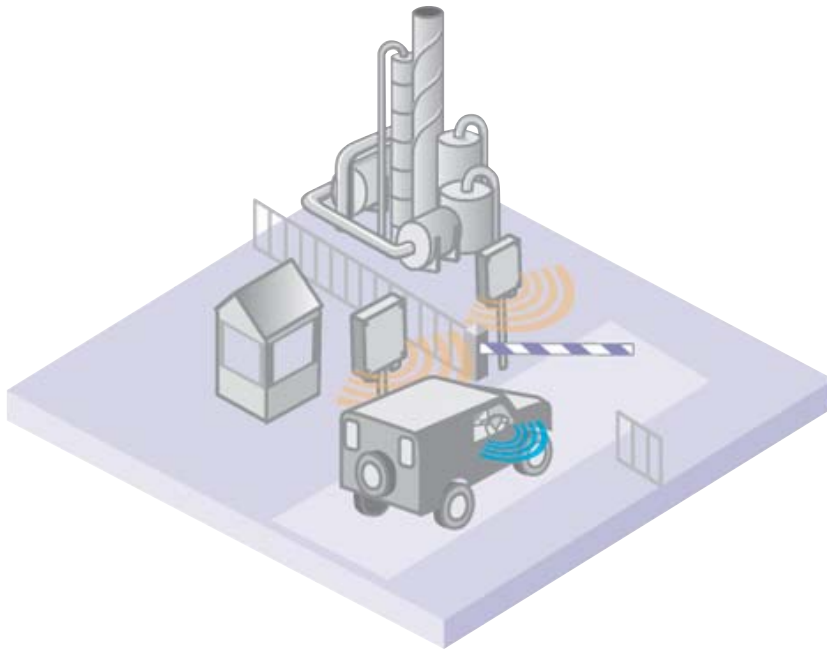
“Out” sequence B then A

Location Tracking – Entrance & Exit Detection & Counting



In locations such as entries & exits, two Extronics Tag Exciters can be used together to detect direction of movement
e.g. Counting personnel into a life boat on an offshore platform

Location Tracking – Entrance & Exit Detection & Counting

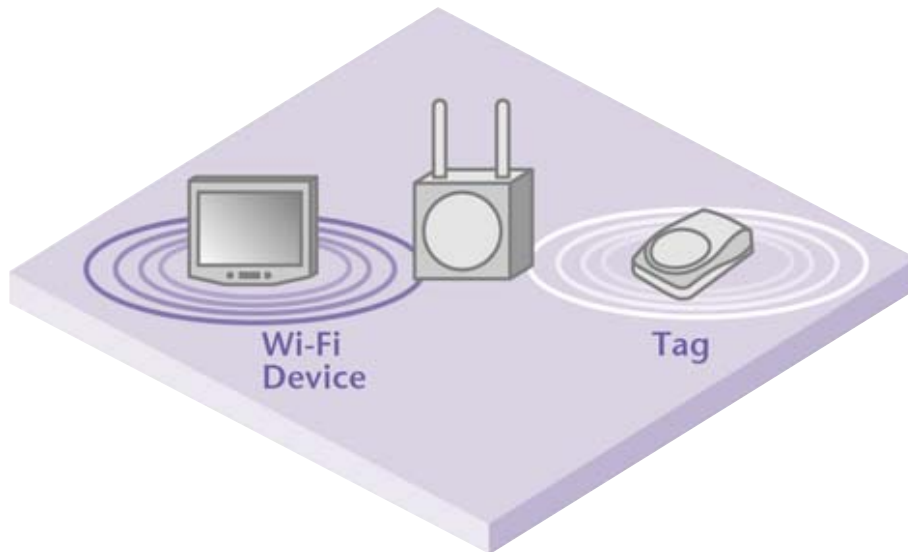


In locations such as entries & exits two Extronics Tag Exciters can be used together to detect direction of movement

e.g. Site entrances & exits

Automatic gate opening & closing possible

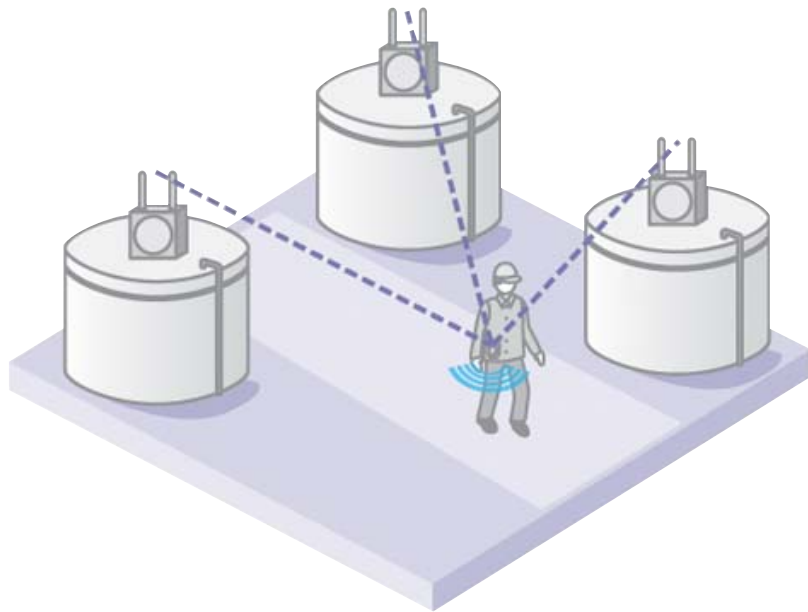
Location Tracking – Position by Presence Detection



This method of location of an Extronics WiFi tag or WiFi device is zone based.

Hence only to the vicinity of a particular access point or location receiver

Location Tracking – Position by Triangulation



At least three access points or location receivers determine the position of a tag using either the tags' RSSI (received signal strength indicator) or TDOA (time difference of arrival) of the tag's radio signal. This allows calculation of the location to between 3 to 30 metre accuracy depending on type & density of infrastructure

Hardware Components

iTAG100 Active RFID WiFi Tag



- **ATEX Zone 0 certified for all hazardous areas including gassy mines**
- **FM Intrinsically Safe Class I, II, III Division 1**
- **US Mine Safety & Health Administration Approved**
- **Small battery powered tag for tracking people & assets**
- **Motion sensor for tracking if a person or asset is mobile & for battery life enhancement**
- **Call button for instant alert emergency assistance & temperature sensor (options)**
- **Up to 4 years battery life**

iTAG100 Mounting Options



The iTAG100 has multiple mounting options & can be provided with a suitable adapter depending on the asset geometry. As standard, the tag is supplied for strap or clip mounting.

EX2000 Tag Exciter



- Safe area indoor version
- 125KHz field up to 0.5 to 6.5 metres
- Can reprogram or activate / deactivate tags
- Can be chained to cover wide entrance & exits
- Applications include floor differentiation, entrance/exit monitoring, direction & precise location of people/assets

iCITE100 Tag Exciter



- Zone 1 & US Class I Zone 1 & Class 1 Div 2
- 125KHz field up to 0.5 to 6.5 metres
- Can reprogram or activate / deactivate tags
- Can be chained to cover wide entrance & exits
- Applications include floor differentiation, entrance/exit monitoring, direction & precise location of people/assets

WiFi Access Points



- Zone 2 or Zone 1 & 21 certified (Class I Div 1 pending)
- RSSI – Received Signal Strength Indication based location
- 802.11 a/b/g WiFi WLAN
- Intrinsically safe antenna outputs for connection of Extronics iANT200 antennas
- IP66 Marine grade aluminium enclosure
- Fibre or CAT5 Ethernet
- Options on power supply, lightning arrestor, enclosure heating & cooling

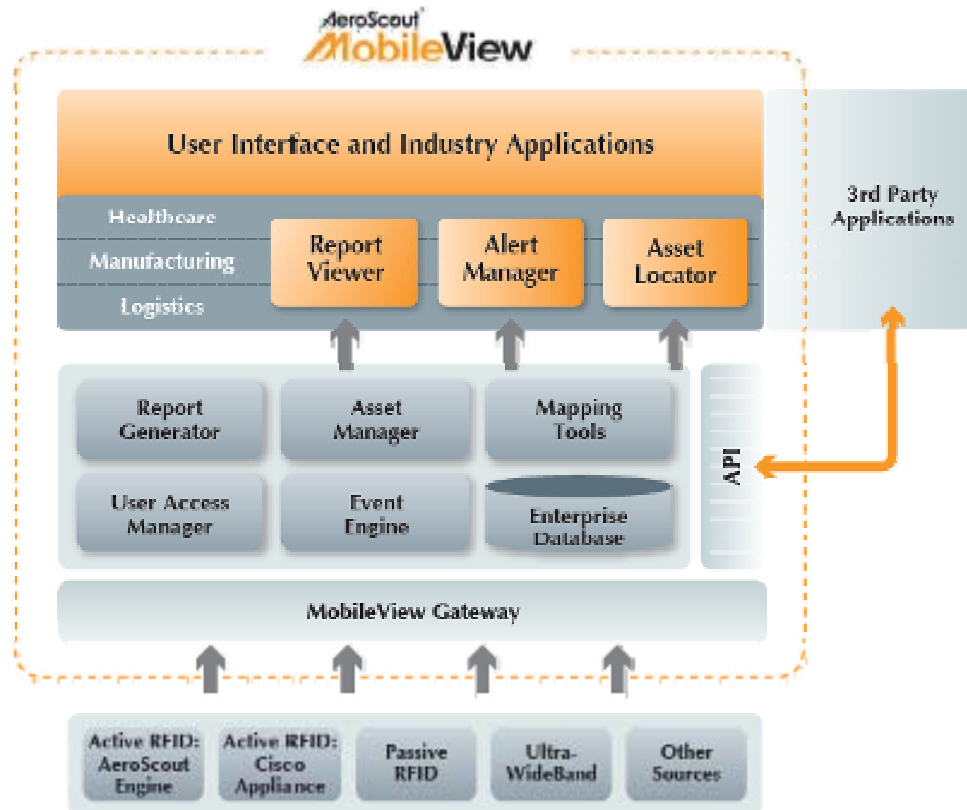
Location Receiver



- Zone 1 (Class I Div 1 pending)
- TDOA – Time Difference Of Arrival based location for outdoors or large buildings as well as RSSI – Received Signal Strength Indication
- Intrinsically safe antenna outputs for connection to Extronics iANT200 series of antennas
- Up to 200 metres range with TDOA location calculation principle with 3 to 6 metre location accuracy outdoors

Software

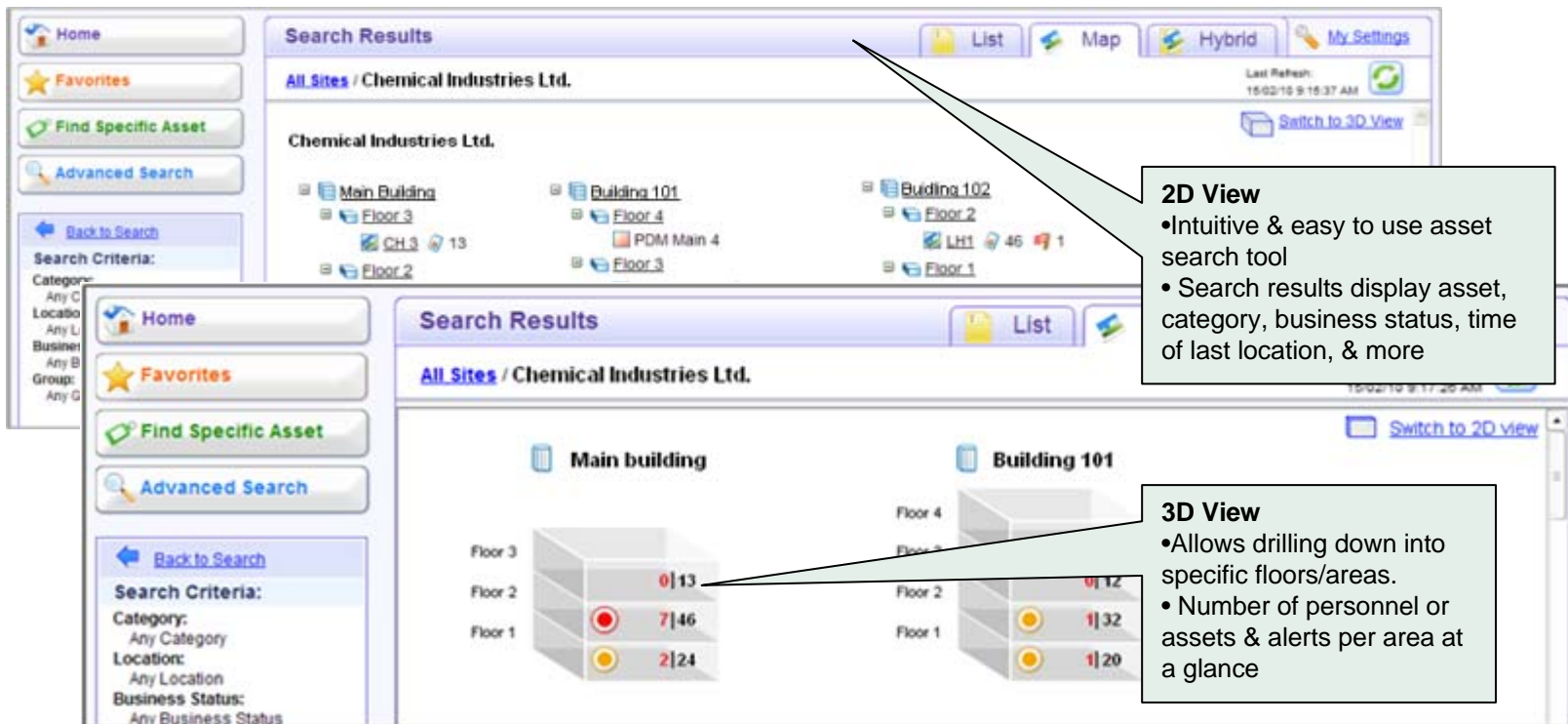
MobileView 4.0



- Powerful software platform for true site wide visibility – Modules include;
- Locator, Manager, Report Generator & Viewer, Event Engine, Alert Manager, Mapping Tools & User Access Manager
- Mobile Gateways for a variety of visibility sources
- API for enterprise application integration

Site Level View

Site-level view presents several facilities & summarises the number of people in the plant or a specific plant or area & alerts at each site at a glance



The screenshot displays two views of the software interface. The top view is the 2D view, showing a search results page for 'Chemical Industries Ltd.' with a tree structure of buildings and floors. The bottom view is the 3D view, showing 3D block representations of the buildings with data for each floor.

2D View

- Intuitive & easy to use asset search tool
- Search results display asset, category, business status, time of last location, & more

3D View

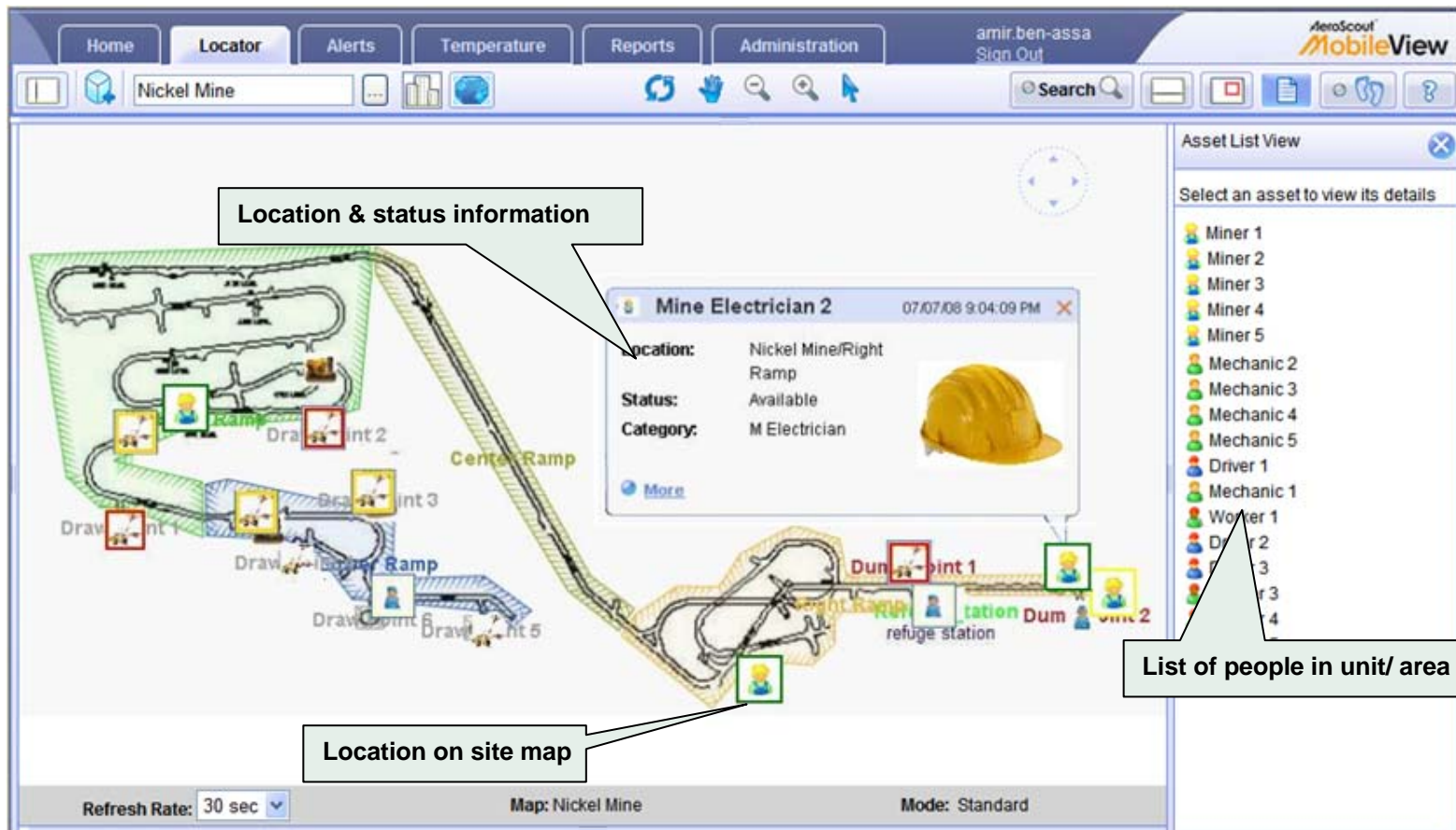
- Allows drilling down into specific floors/areas.
- Number of personnel or assets & alerts per area at a glance

Building	Floor	Alerts	Personnel
Main Building	Floor 3	0	13
Main Building	Floor 2	7	46
Building 101	Floor 4	0	12
Building 101	Floor 3	1	32
Building 101	Floor 1	1	20

Building	Floor	Alerts	Personnel
Main building	Floor 3	0	13
Main building	Floor 2	7	46
Main building	Floor 1	2	24
Building 101	Floor 4	0	12
Building 101	Floor 3	1	32
Building 101	Floor 1	1	20

Real - Time View

Real-time view of people in each unit / area



The screenshot displays the AeroScout MobileView software interface for a Nickel Mine. The interface includes a navigation menu with options: Home, Locator, Alerts, Temperature, Reports, and Administration. The user is logged in as amir.ben-assa and has a Sign Out option. The main area shows a site map with various units and areas labeled, such as Draw Point 1, Draw Point 2, Draw Point 3, Draw Point 4, Draw Point 5, Center Ramp, and Dump Point 1. A detailed view of a person is shown, titled "Mine Electrician 2", with the following information:

- Location: Nickel Mine/Right Ramp
- Status: Available
- Category: M Electrician

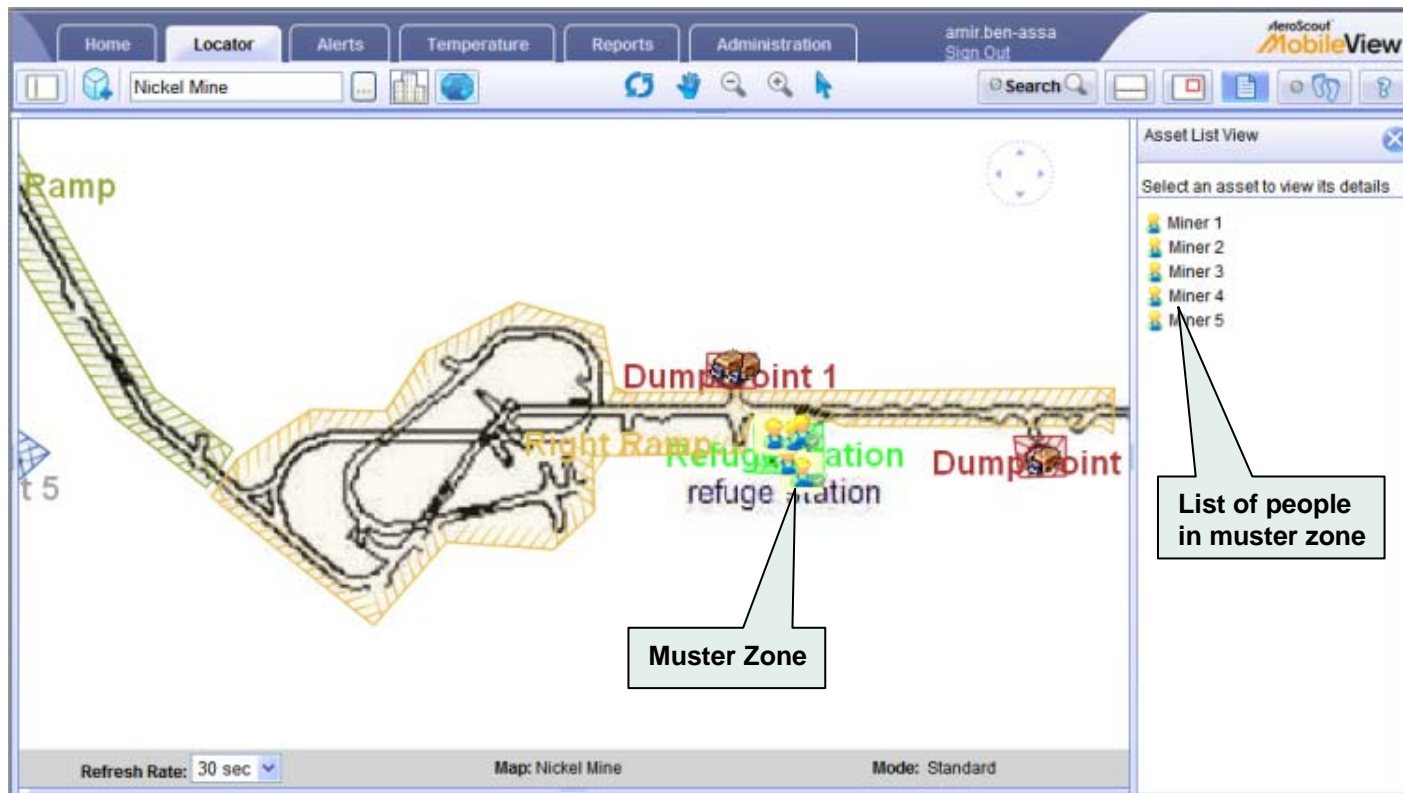
The interface also features an "Asset List View" on the right side, which lists the following people in the unit/area:

- Miner 1
- Miner 2
- Miner 3
- Miner 4
- Miner 5
- Mechanic 2
- Mechanic 3
- Mechanic 4
- Mechanic 5
- Driver 1
- Mechanic 1
- Water 1
- Driver 2
- Driver 3
- Driver 4

Callouts highlight the "Location & status information" for the selected person, the "Location on site map", and the "List of people in unit/ area". The interface also shows a Refresh Rate of 30 sec, Map: Nickel Mine, and Mode: Standard.

Muster Point View

Drill down to each Muster Point & see number of personnel assembled instantly. When personnel enter the muster zone the status changes into “mustered” & appears with a check mark on the map



The screenshot displays the MobileView software interface for a Nickel Mine. The main map shows a layout with a yellow hatched area labeled "Muster Zone" containing a "Refuge station". Other labeled areas include "Ramp", "Right Ramp", "Dump point 1", and "Dump point". A callout box points to the "Muster Zone" label. On the right, an "Asset List View" panel shows a list of assets: Miner 1, Miner 2, Miner 3, Miner 4, and Miner 5. A callout box points to this list with the text "List of people in muster zone". The interface includes a top navigation bar with tabs for Home, Locator, Alerts, Temperature, Reports, and Administration. The user is logged in as "amir.ben-assa" and can "Sign Out". The bottom status bar shows "Refresh Rate: 30 sec", "Map: Nickel Mine", and "Mode: Standard".

Locate Missing People

Instantly locate the whereabouts of missing personnel in the event of emergency evacuation procedures

The screenshot displays the AeroScout MobileView software interface. At the top, there are navigation tabs: Home, Locator, Alerts, Reports, and Administration. The 'Locator' tab is active. Below the tabs, there is a search bar with fields for 'Find:', 'In: Asset Name', 'Category:', 'Status:', and 'Location:'. A search button and a 'Clear' button are also present. Below the search bar, it shows 'Results 1 - 24 of 24'. A table lists the results with columns for Category, Name, Location, Status, ID, MAC, and Last Update. Below the table is a floor plan map of a facility, with a red square indicating the location of a selected asset. A callout box points to the map with the text 'Easy to use navigation tools'. At the bottom of the interface, there is a 'Refresh Rate: 10 sec' dropdown, 'Map: Area 1', and 'Mode: Standard'.

Category	Name	Location	Status	ID	MAC	Last Update
Equipment	Asset 1	Area 1			000CCC000003	28/12/07 4:08:50 AM
Equipment	Asset 2	Area 1	Available		000CCC000007	28/12/07 4:08:50 AM
Equipment	Asset 3	Area 1	In Use		000CCC000008	28/12/07 4:08:50 AM
Equipment	Asset 4	Area 1	In Use		000CCC00000F	28/12/07 4:08:48 AM
Beds	Bed 3	Area 1			000CCC000002	28/12/07 4:08:51 AM
Beds	Bed 4	Area 1	In Maintenance		000CCC000004	28/12/07 4:08:51 AM

Historical View

Database stores location data for review at later date

AeroScout MobileView
LOGO Asset History - Showing history for: Wheel Chair 12

General Tags History Other

Select the period for which you would like to see the location history:

From: Jan 1, 2008 At: 0 : 0 : 0

To: Jan 9, 2008 At: 0 : 0 : 0

Report Strategy: zone Show History Map

Personnel or asset historical trail along the map & in between maps

Timeline indicates time & date of personnel or asset location at each point

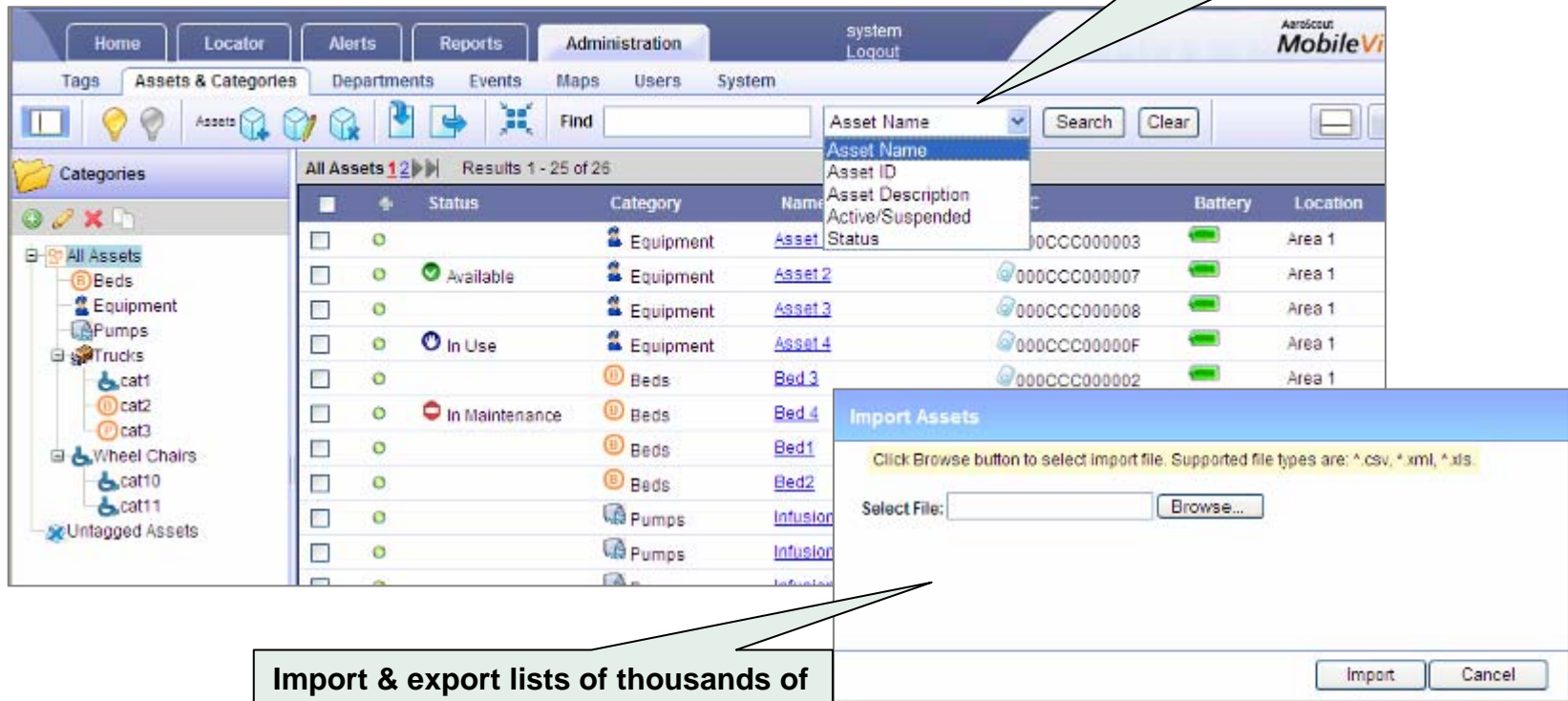
History Panel: --- error not set --- From: 16/10/2007 17:07 To: 17/10/2007 20:52

17:07 16/10/2007 07:00 17/10/2007 18:07 19:30

Personnel Management

Easily manage & integrate large numbers of people

Quick personnel search tool
All personnel are displayed with icons, name, tag, battery status, location & status



The screenshot displays the 'Administration' section of the software. The 'Assets & Categories' tab is active, showing a search bar and a table of assets. The table has columns for Status, Category, Name, Asset ID, Asset Description, Active/Suspended Status, Battery, and Location. An 'Import Assets' dialog box is open in the foreground, prompting the user to click 'Browse' to select an import file. Supported file types are listed as ^*.csv, ^*.xml, ^*.xls.

Status	Category	Name	Asset ID	Asset Description	Active/Suspended Status	Battery	Location
Available	Equipment	Asset1	0000000003			Full	Area 1
Available	Equipment	Asset2	0000000007			Full	Area 1
Available	Equipment	Asset3	0000000008			Full	Area 1
In Use	Equipment	Asset4	000000000F			Full	Area 1
In Maintenance	Beds	Bed3	0000000002			Full	Area 1
Available	Beds	Bed4				Full	Area 1
Available	Beds	Bed1				Full	Area 1
Available	Beds	Bed2				Full	Area 1
Available	Pumps	Infusion				Full	Area 1
Available	Pumps	Infusion				Full	Area 1

Import & export lists of thousands of people
Supports XML, Excel or Text files

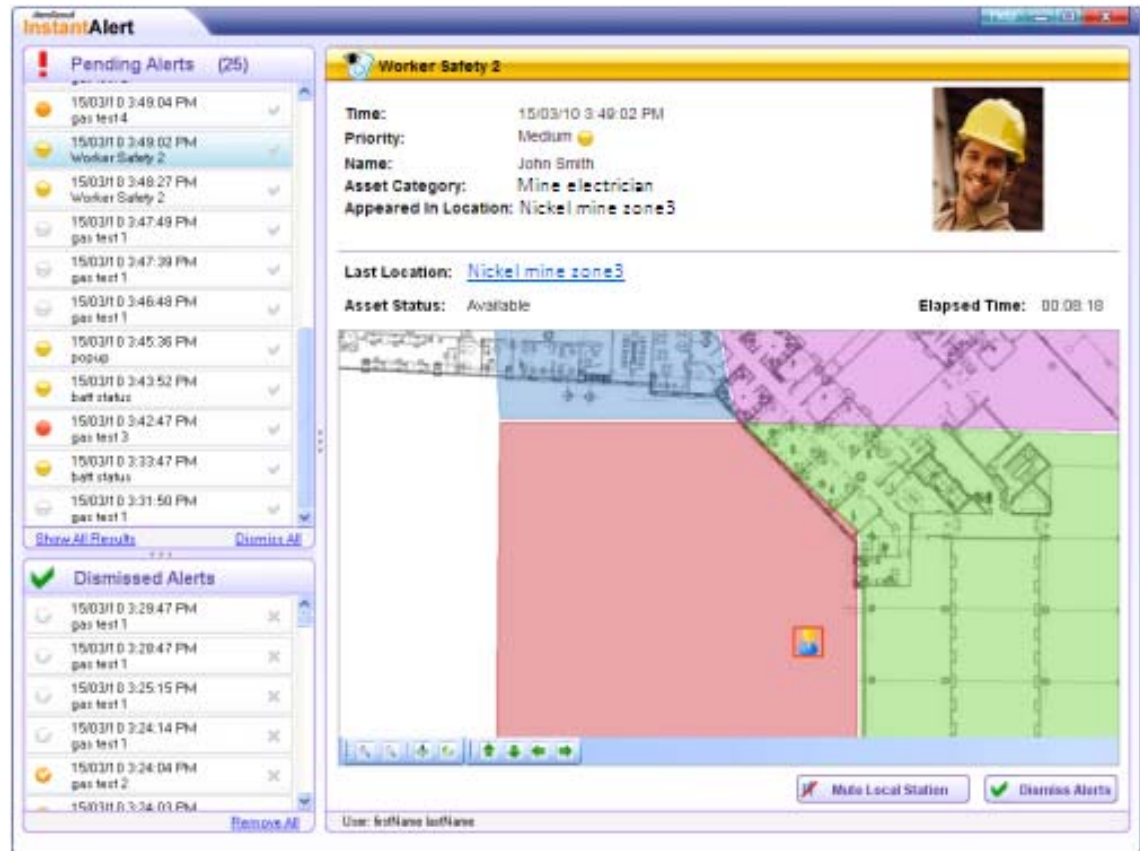
Injury & Distress Alerting



- **Intrinsically Safe Certification Pending**
- **Workers can press the tag's panic button in case of distress**
- **When a person is not in motion for a period of time**
- **Tag activates a buzzer & allows the user to cancel the alarm**
- **If the user does not respond the tag sends an immediate alert to the control room**

Injury & Distress Alerting

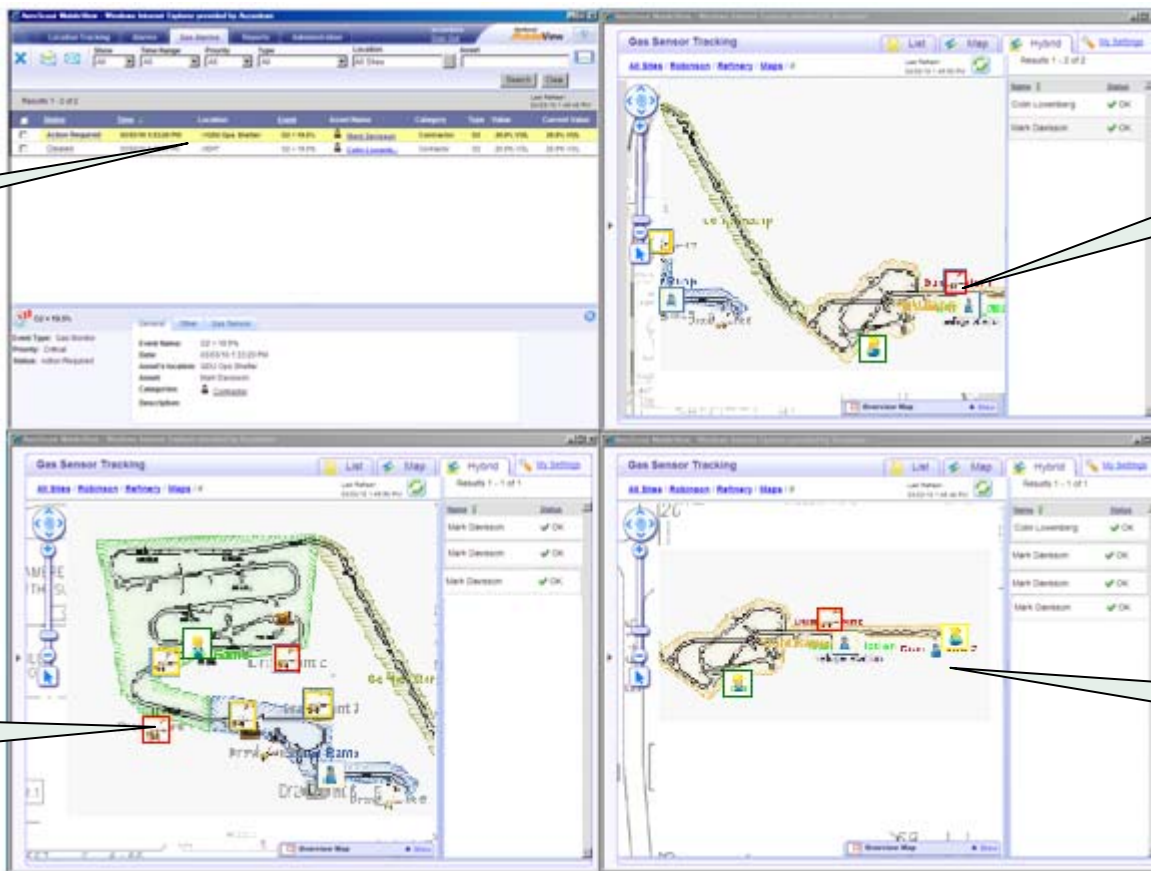
- Security personnel receive an alert with the person's current location
- Popup window
- Pager message
- IP Phone instant message



The screenshot displays the 'InstantAlert' software interface. On the left, there is a list of 'Pending Alerts (25)' and 'Dismissed Alerts'. The main window shows a detailed view for a 'Worker Safety 2' alert. The alert details include: Time: 15/03/10 3:49:02 PM, Priority: Medium, Name: John Smith, Asset Category: Mine electrician, and Appeared in Location: Nickel mine zone3. A small photo of a worker in a yellow hard hat is shown. Below the details, the 'Last Location' is 'Nickel mine zone3' and the 'Asset Status' is 'Available'. An 'Elapsed Time' of 00:08:18 is displayed. A map shows the location of the alert with a red icon. At the bottom, there are buttons for 'Mute Local Station' and 'Dismiss Alerts', and a user field showing 'User: testName testName'.

Injury & Distress Alerting

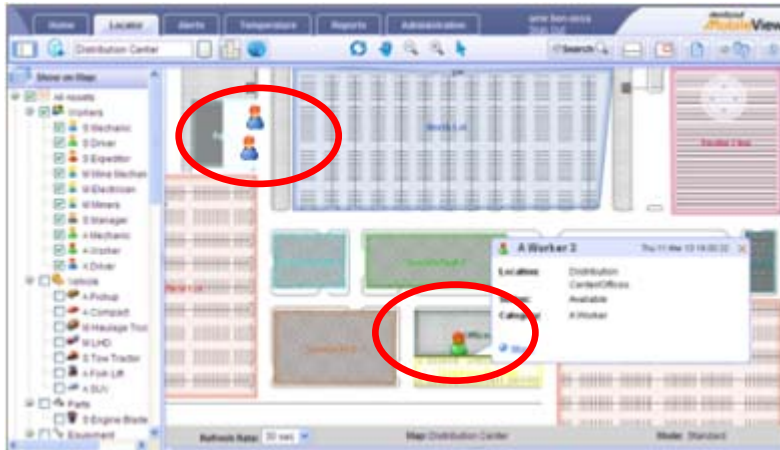
Control room operators can view several areas & alerts at-a-glance



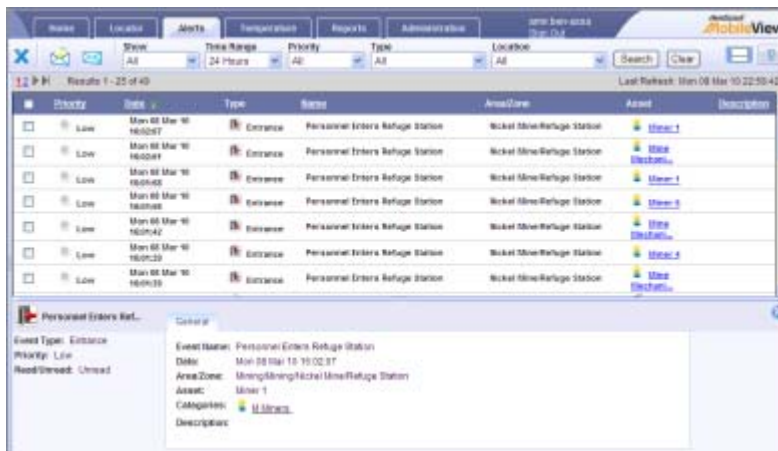
The screenshot displays a software interface for hazardous area monitoring. It is divided into four main sections:

- Top Left:** A table titled "List of Alerts" showing a list of alerts with columns for Status, Date, Location, Last, Alert Name, Category, Task, Value, and Current Value. A callout box labeled "List of Alerts" points to this table.
- Top Right:** A map view titled "Gas Sensor Tracking" showing a "View of Central Ramp" with various sensor locations and status indicators. A callout box labeled "View of Central Ramp" points to this map.
- Bottom Left:** A map view titled "Gas Sensor Tracking" showing a "View of West Ramp" with various sensor locations and status indicators. A callout box labeled "View of West Ramp" points to this map.
- Bottom Right:** A map view titled "Gas Sensor Tracking" showing a "View of East Ramp" with various sensor locations and status indicators. A callout box labeled "View of East Ramp" points to this map.

Injury & Distress Alerting



Location of worker in distress as well as dynamic display of rescue team



Alerts dashboard & reports

Handheld Locator & Manager



- Add, edit & remove people or assets
- Search for people/assets & view in list or map view
- Disconnected mode for users who are not always in WiFi coverage area
- Runs on Windows Mobile 5.0 OS
- UI designed for stylus free use
- Barcode functionality means Tags can be assigned to people or assets in 1-2-3 steps;
- Scan Tag barcode – Assign name – Press OK!









Events & Alerts

- Create events which are monitored by MobileView
- If activated an alert/alarm is initiated with notification by Email, Web Service, HTTP post, JMS Queue, Skype Chat, XML
- Alert Viewer

Events

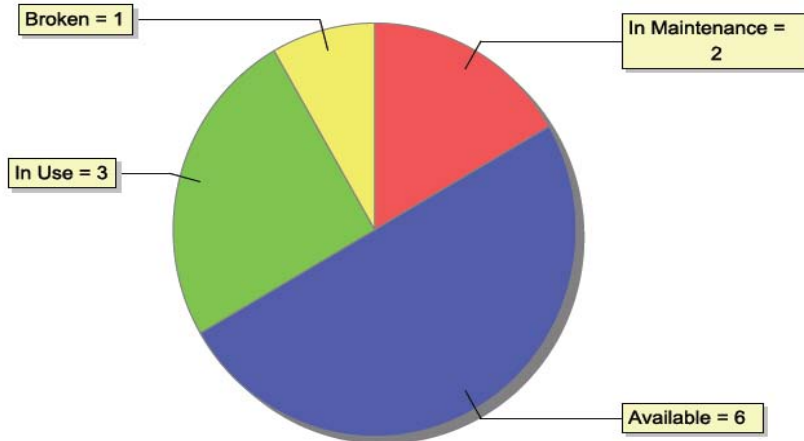
Event Types

-  Absence (0)
-  Battery Level (4)
-  Call Button (0)
-  Dwell (0)
-  Entrance (0)
-  Exit (0)
-  Foe (0)
-  Friend (0)
-  In Sight (0)
-  Location Update (0)
-  Motion status (0)
-  Out Of Sight (1)
-  Overflow (0)
-  Shortage (0)
-  Tamper (0)
-  Telemetry (0)
-  Temperature (0)

Alerts						
Show		Last	Priority	Type	Area	
All		All	All	All	All	Search Clear
Results 426 - 439 of 439						
<input type="checkbox"/>	Priority	Date	Type	Name	Area/Zone	Asset
<input type="checkbox"/>	Low	28/12/07 4:07:43 AM	Battery Level	Low	Site/Building 1/Floor 1/Area A	 Wheel 2
<input type="checkbox"/>	High	28/12/07 4:07:43 AM	Battery Level	High Bat Status	Site/Building 1/Floor 2/Area 1	 Pump 4
<input type="checkbox"/>	Critical	28/12/07 4:07:43 AM	Battery Level	Critical	Site/Building 1/Floor 2/Area 1	 Bed1
<input type="checkbox"/>	Low	28/12/07 4:07:43 AM	Battery Level	Low	Site/Building 1/Floor 2/Area 1	 Wheel 1
<input type="checkbox"/>	Medium	28/12/07 4:07:43 AM	Battery Level	Medium Bat Status	Site/Building 1/Floor 2/Area 1	 Truck 2
<input type="checkbox"/>	High	28/12/07 4:07:43 AM	Battery Level	High Bat Status	Site/Building 1/Floor 1/Area A	 Infusion Pump7
<input type="checkbox"/>	Medium	28/12/07 4:07:42 AM	Battery Level	Medium Bat Status	Site/Building 1/Floor 2/Area 1	 Truck 1
<input type="checkbox"/>	Medium	28/12/07 4:07:42 AM	Battery Level	Medium Bat Status	Site/Building 1/Floor 2/Area 1	 Truck 2

Powerful Reporting

By Business Status:



- Standard reports as well as customised reports possible
- Create reports on people or assets or historical data for printout or export to other applications

Event Dashboard & Reports

- Event Dashboard & reports provide accurate mustering data & event recording for post event analysis
- Exact time of mustering
- How long it takes to muster
- Count of people at muster points

Event Type	Event Name	Severity	Description	Asset Name	Location	Date
Entrance	Personnel Enters Refuge Station	Low		Miner 1	Mining/Mining/Nickel Mine/Refuge Station	Tue 09 Mar 10 16:02:11
Entrance	Personnel Enters Refuge Station	Low		Mine Mechanic 2	Mining/Mining/Nickel Mine/Refuge Station	Tue 09 Mar 10 16:02:05
Entrance	Personnel Enters Refuge Station	Low		Miner 1	Mining/Mining/Nickel Mine/Refuge Station	Tue 09 Mar 10 16:02:02
Entrance	Personnel Enters Refuge Station	Low		Miner 5	Mining/Mining/Nickel Mine/Refuge Station	Tue 09 Mar 10 16:02:01
Entrance	Personnel Enters Refuge Station	Low		Mine Mechanic 1	Mining/Mining/Nickel Mine/Refuge Station	Tue 09 Mar 10 16:01:45
Entrance	Personnel Enters Refuge Station	Low		Miner 4	Mining/Mining/Nickel Mine/Refuge Station	Tue 09 Mar 10 16:01:43
Entrance	Personnel Enters Refuge Station	Low		Mine Mechanic 3	Mining/Mining/Nickel Mine/Refuge Station	Tue 09 Mar 10 16:01:43

Feature Rich API

The AeroScout logo, with 'AeroScout' in orange and 'Enterprise Visibility Solutions' in smaller black text below it.

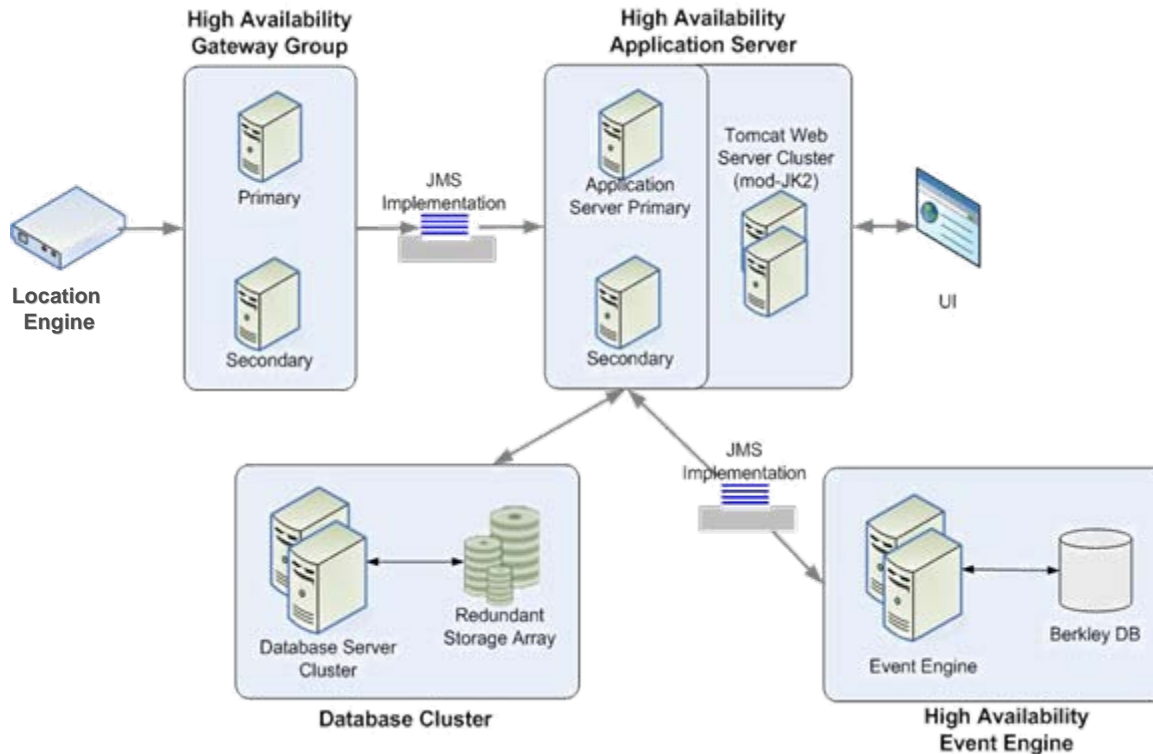
AeroScout
Enterprise Visibility Solutions

**AeroScout MobileView v4.0
Integration Guide**

- Easily integrate MobileView into existing site software systems such as SAP, Site DCS, MRP & ERP systems
- Variety of methods to facilitate the simplest to the most complex integrations
- Standard templates & guides to simplify integration

High Availability Architecture

Support for both hardware & software high availability, database clustering & load balancing of MobileView components



Conclusion

Extronics & AeroScout



Product Roadmap



- Ultra Wide B& (UWB) location principle support for sub 1 metre location accuracy in dense metallic environments such as processing units & offshore oil platforms
- Combined WiFi & UWB Tag with intrinsic safety certification
- Enhanced personnel safety features such as man down, human life signs monitoring & voice communication

High Availability Architecture



- RF site surveys, network planning & cable infrastructure surveys
- Coverage performance guarantees to meet your requirements
- Documentation to include installation plans, electrical diagrams & “cells of coverage” diagrams etc
- Commissioning of Mustering, Location & WLAN systems with benchmark testing to prove performance

Summary

- **Most flexible automatic people & asset visibility system on the market**
- **100% tag read rate means no false alarms**
- **Multiple location technologies ensures lowest total system cost by applying granular approach to accuracy requirements**
- **Scales from tens to thousands of people & assets**
- **Can be used for telemetry by adding tag based sensors**
- **Web browser software enables system access anywhere**
- **Feature rich API enables easy integration with other software applications such as SAP, MRP, ERP & site DCS**