

**CPMC 2020**

# Stanley/ AeroScout Healthcare Environmental Monitoring Design Session

August 9, 2017

# Welcome to our Environmental Monitoring (a.k.a. Temperature Monitoring) Discussion and Design Session

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Thank you for participating.

- Introductions
  - Who am I? Who is that? Why are we here?
- Logistics
- Meeting Purpose & Expected Outcomes
- Project Overview
- AeroScout Environmental Monitoring System and how it works
- Designing the System
- Requirements Recap
- Next Steps

In March many of us attended a CPMC 2020 Meeting where a hi-level AeroScout demo was presented.

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## Today's Meeting Purpose & Expected Outcomes

A more detail discussion and demo, allowing for Q&A and introducing the system design phase.

By the end of the day:

- Many design questions will be answered  
And
- Workgroups (to answer the rest of them) will be defined.

Glazing over. If at any point we get too technical or long winded – Raise your hand.

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After our meeting today, you will receive an email with a Sharepoint link.

This is where we will share all project and design documents.

# Temperature Monitoring



Using the combination of AeroScout temperature monitoring tags that are placed in the refrigeration units, along with the temperature ranges and parameters set-up in the MobileView system – alerts and alarms will occur if a unit temp goes out of range. Because alert types, responses and assignments are built into the system we can address the issue right away.

The medications and tissues that we store in the refrigerators and freezers throughout the hospital could be damaged if they are not kept in the appropriate temperature ranges. Not to mention the cost of having to replace it. How can tell if the refrigeration unit isn't working correctly?

| EventID | Priority | Asset Name              | Category         | Time                | Event                        | Temp | Corrective Action |
|---------|----------|-------------------------|------------------|---------------------|------------------------------|------|-------------------|
| 2       | Critical | Lab 8                   | Lab Refrigerator | 11/05/08 5:20:24 PM | Critical lab fridge warning! | -1.0 | Insert            |
| 3       | High     | Vaccines - East Storage | Lab Refrigerator | 11/05/08 5:20:24 PM | Lab Fridge Temp Warning      | -2.0 | Insert            |
| 1       | Critical | Lab 3                   | Lab Refrigerator | 11/05/08 5:20:24 PM | Critical lab fridge warning! | -1.0 | Insert            |
| 5       | Critical | Lab 3                   | Lab Refrigerator | 11/05/08 5:20:24 PM | Critical lab fridge warning! | 10.0 | Insert            |
| 6       | High     | Lab 8                   | Lab Refrigerator | 11/05/08 5:20:24 PM | Lab Fridge Temp Warning      | -5.0 | Insert            |
| 7       | High     | Vaccines - East Storage | Lab Refrigerator | 11/05/08 5:20:24 PM | Lab Fridge Temp Warning      | -5.0 | Insert            |
| 8       | High     | Vaccines 12             | Lab Refrigerator | 11/05/08 5:20:24 PM | Lab Fridge Temp Warning      | -5.0 | Insert            |
| 10      | High     | Lab 8                   | Lab Refrigerator | 11/05/08 5:20:24 PM | Lab Fridge Temp Warning      | -5.0 | Insert            |

*Alert responses, activity and assignments are built into the system, processes documented and staff trained – during the time of implementation.*

# Environmental Monitoring Project Overview

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- ✓ Server, backend set up in place
- ✓ Construction, Cabling, WiFi
- ✓ Install Mobile View/ software
- ✓ Compile a list of units to be monitored
- ✓ Determine unit(s) locations and naming conventions

## Design

- Identify contents of each refrig/freezer unit and appropriate temp ranges
- Alert and response types
- Roles & responsibilities
- Report(s) use, distribution & frequency
- Tag distribution and maintenance process
- Workflow

Test

Training

Roll-out

## Oh No!

Don't worry. We don't have to recreate the wheel.

- Our Sutter Project and Applications Teams will provide and walk us thru the established Sutter Standards regarding system use, reports use, distribution and support.
- Stanley AeroScout will provide information about Best Practices

\*\* We have copies of Eden's, SDMC and other facilities Temp Monitoring P&Ps that we will use as our templates.

# Environmental Monitoring Workshop

Sutter Healthcare



# Environmental Monitoring Solution Overview



# Solution Highlights

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- An automated, Wi-Fi based solution which leverages the hospital's existing Wi-Fi network
- FDA registered and meets the requirements for 21 CFR Part 11
- Easy to deploy
- Solution includes:
  - AeroScout T5 Sensor Tags
  - Hospital's Wi-Fi network infrastructure
  - MobileView software
  - MobileView Analytics



# Solution Use Cases

Pharmaceutical  
Temperature

Vaccine  
Temperature

Blood & Tissue  
Temperature

OR Humidity Level

Food Storage  
Temperature

Breast Milk  
Temperature

Patient Room  
Temperature

Blanket Warmer  
Temperature

IT Server Closet  
Conditions



## MobileView Visibility Platform

Visual  
Controls



Analytics



Integration



## Environmental Monitoring

- Pharmacy
- Laboratory
- Research
- OR
- Postpartum Unit
- IT



# Solution Use Cases, cont.



- **Pharmaceutical & Laboratory**
  - Monitor the temperature/humidity of refrigerators, freezers, open room storage and transportation of drugs, vaccines, blood and other critical tissues
- **Laboratory Incubation/Warmers**
  - Monitor temperature to maintain safe conditions
- **IT Equipment**
  - Monitor the temperature of server rooms or networking/telecom closets
  - Monitor the humidity to minimize potential for static electricity buildup
- **Food & Breast Milk Storage**
  - Monitor the temperature of refrigerators and freezers for safe storage of patients' meals

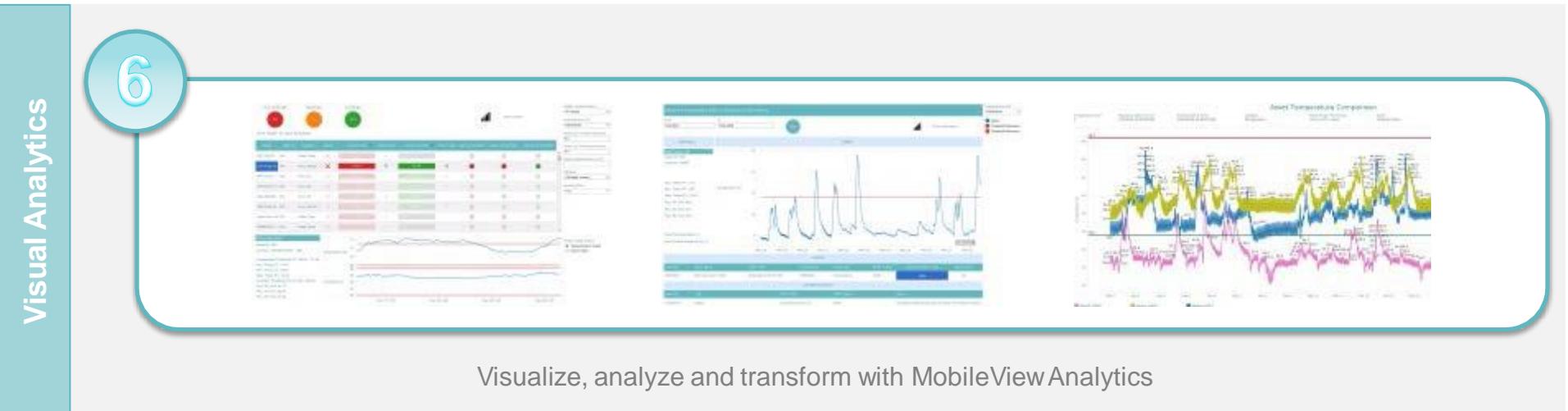
# Solution Use Cases, cont.



- **OR Suite**
  - Monitor and maintain the humidity levels in OR suites to prevent growth of mold and mildew
- **Blanket Warmers**
  - Monitor the temperature to prevent overheating of blankets prior to placement on patients
- **Endoscope & Cath Lab Storage**
  - Monitor the humidity of scope cabinets when wet/clean scopes are put in the cabinet
  - Monitor the temperature/humidity pedigree of catheters and stents if required



# Solution Workflow



# Vaccines for Children (VFC) Compliant Datalogger

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- A partnership with an established VFC vendor to offer a 100%-compliant datalogger for the CDC's Vaccines for Children (VFC) program
  - Uses Wi-Fi network to transmit readings
  - Is a cloud-enabled infrastructure
  - Provides local display of current/min/max temps
  - Has a reset function
  - Has a button to record manual observations
  - Hold 1,000,000 records in onboard cache
- Key features of the VFC300 and VFC300XB include:
  - LCD display
  - Rechargeable battery and external power options
  - Time and date stamped temperature measurements
  - High/low breach alarms with visual indicator
  - Removable Thermistor Probe in shatter proof glycol buffer bottle
  - USB port for configuration and local data access
  - VFC300XB includes a dual battery with double the battery life



# Environmental Monitoring

## T5 Sensor Tags Overview



# Available T5 Sensor Tags



**T5a Tag:** On-board temperature sensor  
 $-30^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$  ( $-22^{\circ}\text{F}$  to  $+167^{\circ}\text{F}$ )



**T5b Tag:** External temperature sensor  
 $-60^{\circ}\text{C}$  to  $+140^{\circ}\text{C}$  ( $-76^{\circ}\text{F}$  to  $+284^{\circ}\text{F}$ )



**T5c Tag:** External temperature sensor  
 $-200^{\circ}\text{C}$  to  $+140^{\circ}\text{C}$  ( $-328^{\circ}\text{F}$  to  $+284^{\circ}\text{F}$ )



**T5h Tag:** Humidity & temp sensor  
 $0\%-100\% \text{ RH}$ ,  $-30^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$



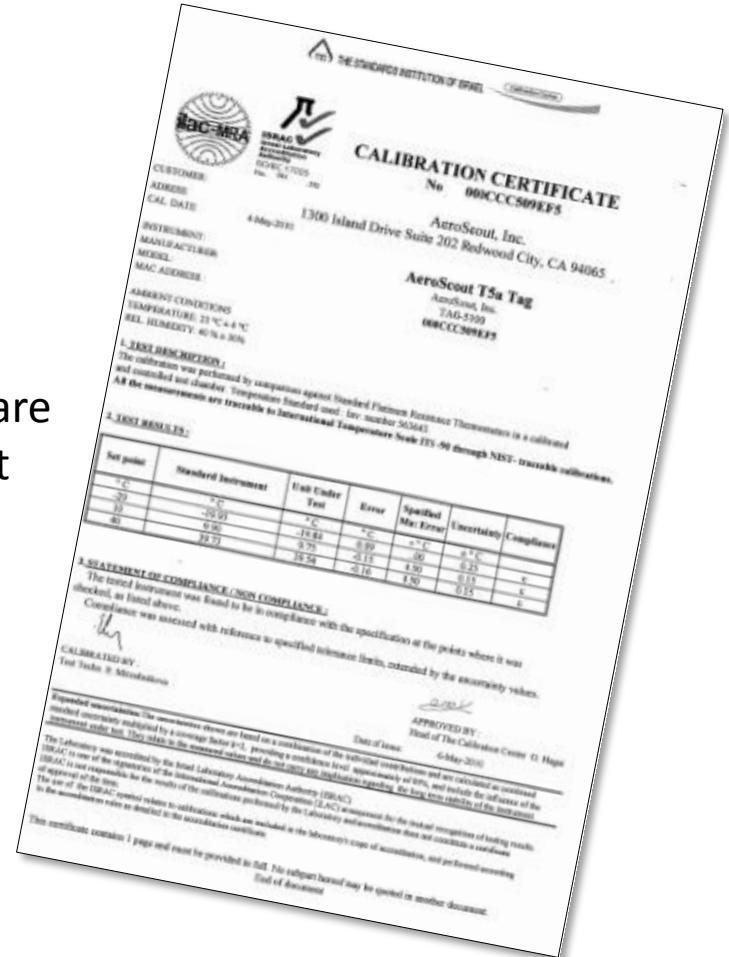
**T5m-v Tag:** Humidity, temp & voltage sensor  
 $0\%-100\% \text{ RH}$ ,  $-30^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$ ,  $4\text{-}30\text{V}$



# Tag Calibration and Certification Program

## Tags are NIST Certified

The calibration services of the National Institute of Standards and Technology (NIST) are designed to help the makers and users of precision instruments achieve the highest possible levels of measurement quality and productivity.



# T5a Tag – Container for Glass Beads

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- When temperature reading fluctuations need to be stabilized (e.g. when device door is frequently opened), the T5a Tag can be placed in a container with glass beads to prevent such fluctuations



Silica Glass



Container

# Refrigerator / Freezer – Common Types

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**Laboratory Refrigerator**



**Pharmaceutical Refrigerator**



**Laboratory Freezer**



**Blood Bank Refrigerator**



**Lab Chest Freezer**



**Vaccine Freezer**

# Tag Mounting Options



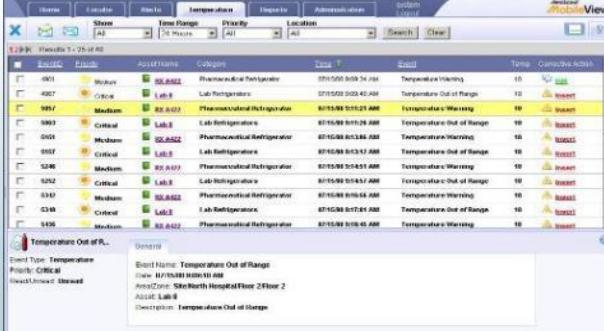
# How does it work?

# Environmental Monitoring MobileView Application

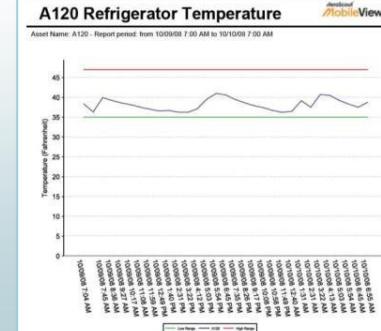


# MobileView Application

## Dashboard Alerts



## Reports



## Corrective Actions

The screenshot shows a 'Corrective Action' form. The user has entered the name 'Steven Wright' and the date/time 'May 20, 2008, 16:30:55'. The corrective action selected is 'Reconnected power supply.' The description field contains the text: 'There was a problem with the electrical supply.'

Corrective Action:

Name: Steven Wright

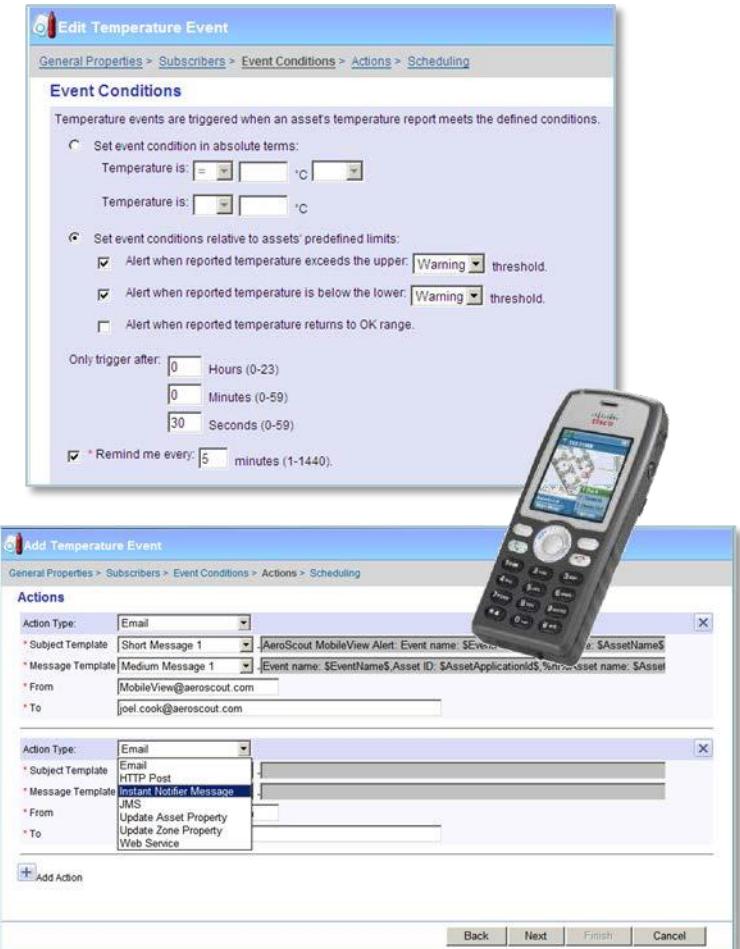
Date/Time: May 20, 2008 16:30:55

Corrective Action: Reconnected power supply.

Description: There was a problem with the electrical supply.

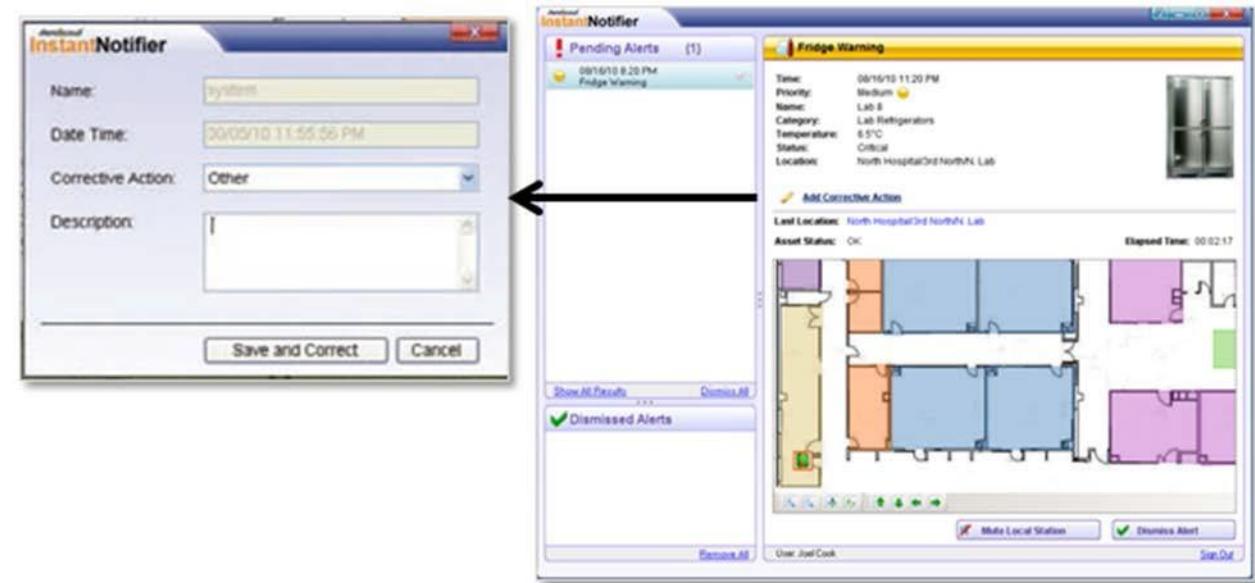
# MobileView Alerts

- Alert Types
  - **Out of Range** - Alerts when measured value is out of range
    - Prevent false alarms by setting alert to a desired level of sensitivity (timing)
  - **Out of Sight** - Alerts on tags not reporting for a certain period of time
  - **Tag Battery** - Alerts on low battery status of tags
  - **Temperature Sensor Malfunction** – Alerts when a temperature report is not received for a configurable amount of time
- Notification Methods
  - Email, pager, text message, VoIP phones and badges, PC-based MobileView Instant Notifier, visual alert on map, and integration to 3<sup>rd</sup> party information system



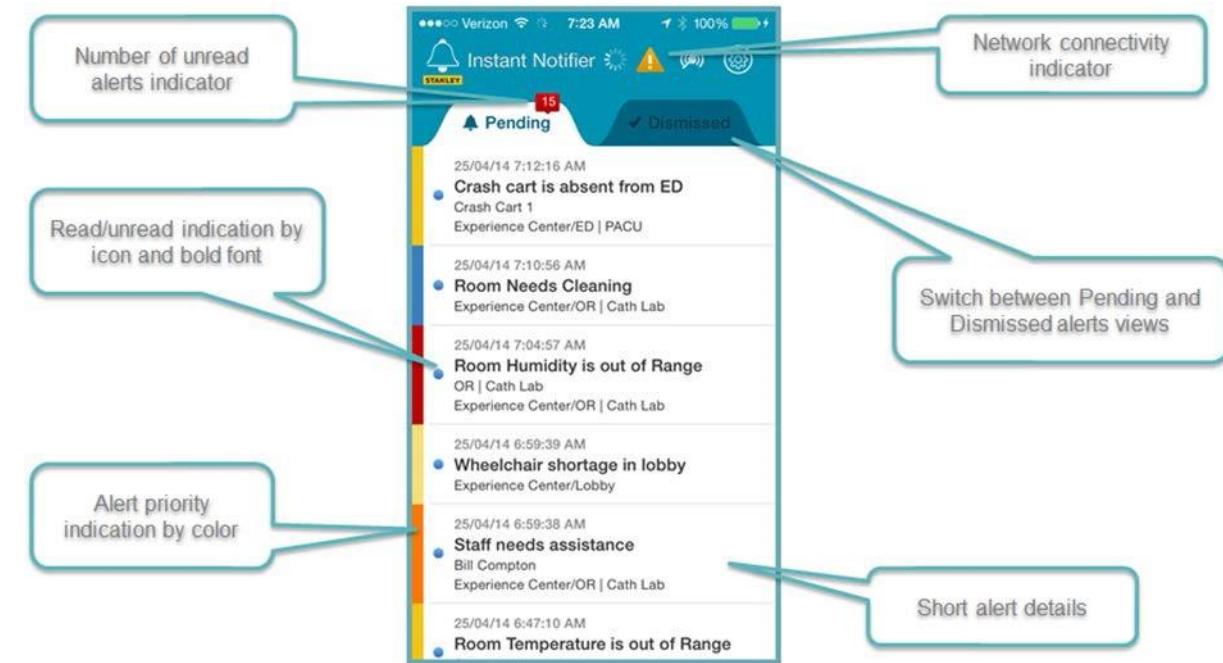
# MobileView Instant Notifier

- Incoming alerts initiate audio alerts and message popups on screen
- Detailed map displays device's location
- Management panel includes queues of pending and dismissed alerts
- Ability to navigate between alerts, link directly to the MobileView alerts tab, and document corrective actions
- Application runs in the background, and alerts pop up automatically without requiring an open Browser session



# MobileView Instant Notifier for iOS

- Available for Apple iPhone®, iPod Touch®, and iPad®
- Features include:
  - Alert Inbox View
  - Alert Details View
  - Map View
  - Corrective Action
  - Dismiss and Delete Alerts
  - Support for Push Notification when application is running in the background
- Available for Apple AppStore, the license can be shared with the desktop client



# Alert Dashboard

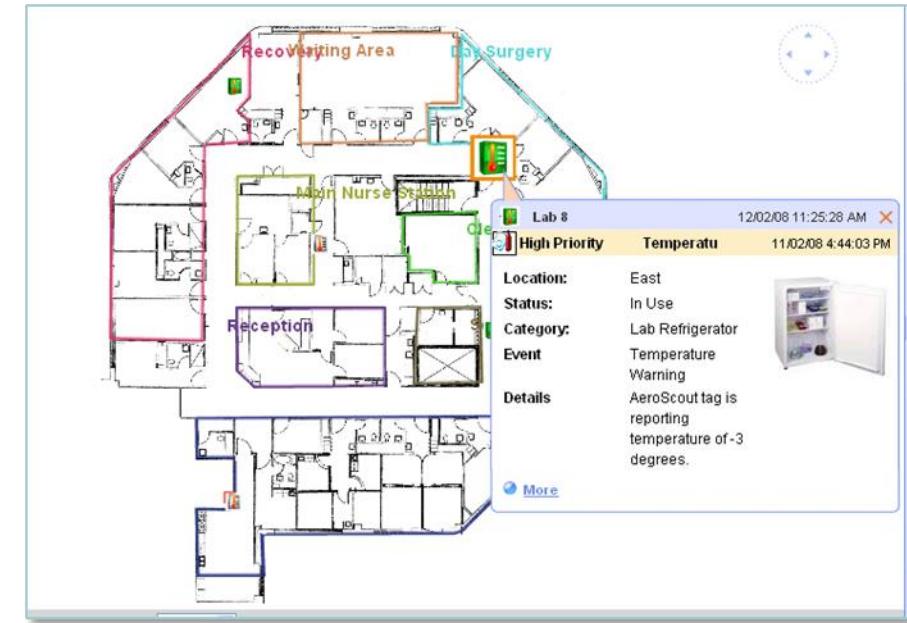
- Displays all temperature alerts that have been triggered
- Alerts can be displayed by time range, priority, location, asset, etc.
- Only alerts relevant per user or department are displayed
- Enables corrective action documentation for each alert

The screenshot shows the AeroScout MobileView interface for managing alerts. The top navigation bar includes tabs for Locator, Alerts, Temperature, Humidity, Reports, and Administration, along with system status and sign-out options. The main area displays a list of alerts with columns for Event ID, Priority, Status, Asset Name, Category, Time, Event, Temp, Current Temp, and Corrective Action. One specific alert is selected, showing its details in a modal dialog. The dialog is titled "Edit Temperature Event" and contains sections for "Event Conditions" and "Corrective Action". The "Event Conditions" section allows setting thresholds for temperature relative to asset limits, with options for "Warning" or "OK" ranges and triggers based on time intervals. The "Corrective Action" dialog is titled "Corrective Action:" and includes fields for "Name" (Steven Wright), "Date/Time" (May 20, 2008, 16:30:55), "Corrective Action" (Reconnected power supply), and "Description" (There was a problem with the electrical supply). A reminder message at the bottom of the dialog indicates it will be shown every 5 minutes.

# MobileView Locator - Map View and List View

- View all or a group of devices on a floor plan
- Intuitive user interface represents devices via icons and photos
- Alert indications are highlighted on the map, along with specific alert details per device
- Temperature and humidity columns are shown in the Tag Locator List View, enabling the constant display of real time measurements

| Status | ID           | Temp     | RH    | Last Update          |                         |
|--------|--------------|----------|-------|----------------------|-------------------------|
| In Use | 000CCC7159FA | 24.78 °C | 57%   | 10/11/15 11:43:30 AM | <a href="#">Details</a> |
| In Use | 000CCC715A1B | 24.96 °C | 58.4% | 10/11/15 11:43:54 AM | <a href="#">Details</a> |
| In Use | 000CCC715ABF | 24.93 °C | 54%   | 10/11/15 11:44:43 AM | <a href="#">Details</a> |



## Integration Note:

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Integration with Vocera and other communication devices is currently in the design phase.

Determining who and how alerts are received.



## Oh No!

Don't worry. We don't have to recreate the wheel.

- Our Sutter Project and Applications Teams will provide and walk us thru the established Sutter Standards regarding system use, reports use, distribution and support.
- Stanley AeroScout will provide information about Best Practices

\*\* We have copies of Eden's, SDMC and other facilities Temp Monitoring P&Ps that we will use as our templates.

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# What type of reports can I get?

# MobileView Reports

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- Key features:
  - All historical data is stored in enterprise database
  - On-demand and scheduled reports
  - Graphical and tabular views
  - Temperature reports can be printed or exported to Excel, PDF, or HTML
- Reports include:
  - Temperature/Humidity Summary Report
  - Temperature/Humidity History Report
  - Current Temperature/Humidity Readings Report
  - Temperature/Humidity Events and Corrective Actions Report
  - Condition Monitoring Audit Report
  - Integrated Temperature History Report
  - Past Temperature Report
  - Multiple Asset Temperature/Humidity History Report
  - Battery Level Report
  - Out of Sight Events Report

# Current Temperature Report

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- This report displays the latest temperature reported for each asset in the selected asset group, department, or category.

| Asset Name                 | Category          | Range         | Temperature (°C) | Date                               | Location  | Tag  |
|----------------------------|-------------------|---------------|------------------|------------------------------------|---|------|
| Lab-872                    | Lab Refrigerators | -18.0 to -5.0 | -13.0            | Sun Oct 18 22:13:17 GMT-06:00 2009 | Building 1/Floor 1/Emergency                    | 0000 |
| Lab-873                    | Lab Refrigerators | -18.0 to -5.0 | -13.0            | Sun Oct 18 22:13:17 GMT-06:00 2009 | Building 1/Floor 1/Emergency/Treatment - Trauma | 0000 |
| Lab-874                    | Lab Refrigerators | -18.0 to -5.0 | -10.0            | Sun Oct 18 22:13:17 GMT-06:00 2009 | Building 1/Floor 1/Emergency                    | 0000 |
| Lab-875                    | Lab Refrigerators | -18.0 to -5.0 | -12.0            | Sun Oct 18 22:13:17 GMT-06:00 2009 | Building 1/Floor 1/Emergency                    | 0000 |
| Lab-876                    | Lab Refrigerators | -18.0 to -5.0 | -15.0            | Sun Oct 18 22:13:17 GMT-06:00 2009 | Building 1/Floor 1/Emergency                    | 0000 |
| Lab-877                    | Lab Refrigerators | -18.0 to -5.0 | 0.0              | Sun Oct 18 22:13:17 GMT-06:00 2009 | Building 1/Floor 1/Emergency                    | 0000 |
| Total number of results: 6 |                   |               |                  |                                    |   |      |

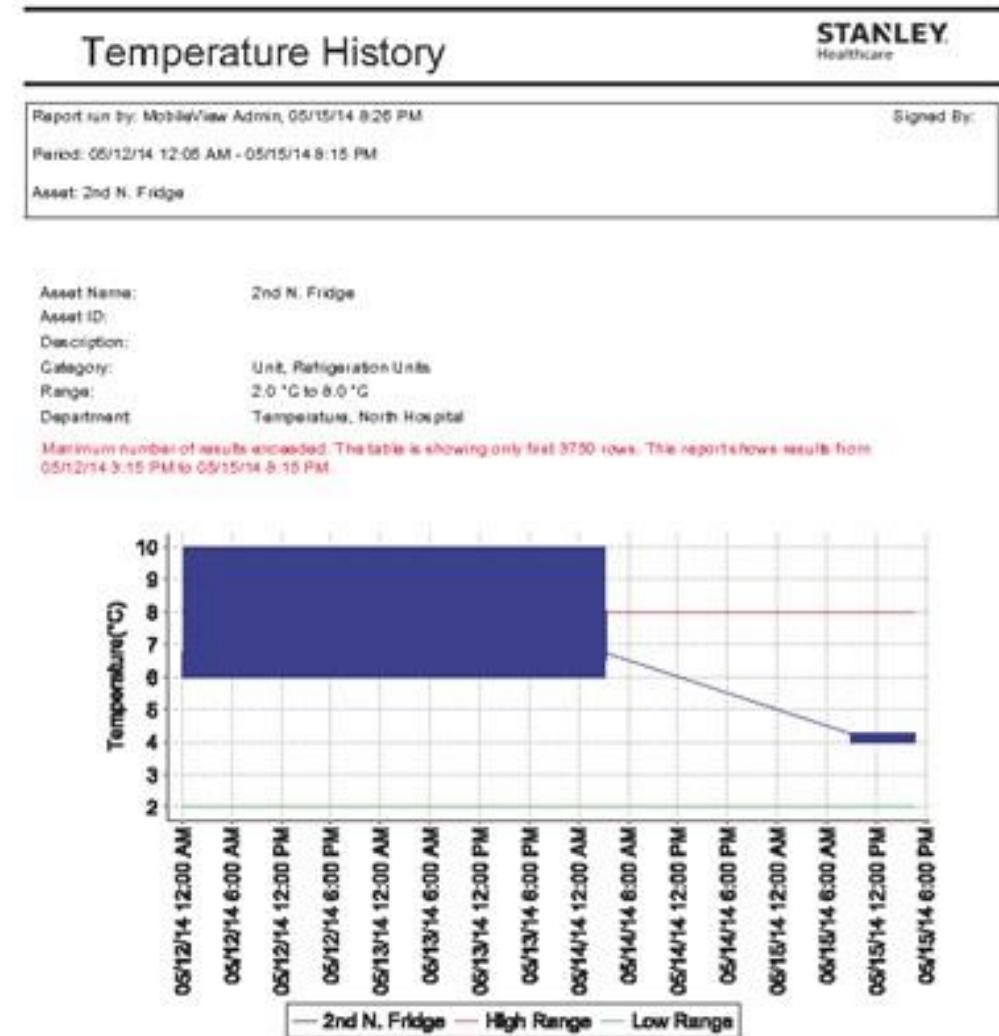
# Temperature Summary Report

- This report returns the current temperature, minimum and maximum temperatures registered by tags over a period, and the average reading.
- Shows number of events and pending corrective actions for selected time period
- Columns are configurable
- Helps ensure compliance with documentation of corrective actions

| Temperature Summary                               |  |                  |                     |     |      |     |             |                                       | STANLEY<br>Healthcare |
|---|--|------------------|---------------------|-----|------|-----|-------------|---------------------------------------|-----------------------|
| Report run by: MobileView Admin, 05/15/14 8:12 PM |  |                  |                     |     |      |     |             |                                       | Signed By:            |
| Period: 05/15/14 12:15 PM - 05/15/14 8:12 PM      |  |                  |                     |     |      |     |             |                                       |                       |
| Assets located in: Any Location                   |  |                  |                     |     |      |     |             |                                       |                       |
| Only units reporting out of range: No             |  |                  |                     |     |      |     |             |                                       |                       |
| Asset Name  | Current Location   | Range            | Temperature<br>(°C) | Min | Max  | Avg | # of Alerts | # of Alerts Pending Corrective Action | Last Report Date      |
| 1st S. Fridge                                     | South Hospital/Floor 1/1st South East                                      | 2.0 °C to 8.0 °C | 4.0                 | 4.0 | 4.0  | 4.0 | 0           | 0                                     | 05/15/14 4:40 PM      |
| 2nd N. Fridge                                     | North Hospital/Floor 2/2nd North/Medication RM                             | 2.0 °C to 8.0 °C | 4.0                 | 4.0 | 4.25 | 4.0 | 0           | 0                                     | 05/15/14 4:40 PM      |
| 3rd N. Fridge                                     | North Hospital/Floor 3/3rd North/Nursing                                   | 2.0 °C to 8.0 °C | 6.5                 | 6.5 | 6.5  | 6.5 | 0           | 0                                     | 05/15/14 4:39 PM      |
| EDLab-01  | South Hospital/Basement/Basement South West                                | 2.0 °C to 6.0 °C | 5.0                 | 5.0 | 5.0  | 5.0 | 0           | 0                                     | 05/15/14 4:39 PM      |
| EDLab-02  | South Hospital/Basement/Basement South East                                | 2.0 °C to 6.0 °C | 5.0                 | 5.0 | 5.0  | 5.0 | 0           | 0                                     | 05/15/14 4:39 PM      |
| Freezer   | South Hospital/Floor 2/2nd South East                                      | 2.0 °C to 6.0 °C | 4.0                 | 4.0 | 4.0  | 4.0 | 0           | 0                                     | 05/15/14 4:39 PM      |
| Fridge 1  | South Hospital/Floor 2/2nd South West                                      | 2.0 °C to 6.0 °C | 4.0                 | 4.0 | 4.0  | 4.0 | 0           | 0                                     | 05/15/14 4:39 PM      |
| Fridge 2  | North Hospital/Floor 1/1st North West/Intermediate ICU                     | 2.0 °C to 6.0 °C | 4.0                 | 4.0 | 4.0  | 4.0 | 0           | 0                                     | 05/15/14 4:39 PM      |
| Lab 1   | North Hospital/Floor 1/1st North East/Labor and Delivery, Women's Services | 2.0 °C to 6.0 °C | 4.0                 | 4.0 | 4.0  | 4.0 | 0           | 0                                     | 05/15/14 4:39 PM      |

# Temperature History Report

- This report retrieves historical data, showing the temperature read from an asset during a given period.
- Can be filtered according to out-of-range units
- Provides upper and lower limit temperature indicators
- Analyze temperature trends over time to proactively prevent incidents



# Temperature / Humidity Events Report

- This report displays a list of events triggered by temperature / humidity readings that violate predefined acceptable limits.
- Includes the corrective actions taken in response to each alert
- Report can be run over a user defined period of time, and for a selected unit, group of units, or all units in the hospital
- Can be used to support regulatory audits

| Temperature Events                                |                   |               |                     |                   |                  |                 | STANLEY<br>Healthcare |
|---|-------------------|---------------|---------------------|-------------------|------------------|-----------------|-----------------------|
| Report run by: MobileView Admin, 05/15/14 8:26 PM |                   |               |                     |                   |                  |                 | Signed By:            |
| Period: 05/12/14 12:05 AM - 05/15/14 8:26 PM      |                   |               |                     |                   |                  |                 |                       |
| Event Occurred in: Any Location                   |                   |               |                     |                   |                  |                 |                       |
| Event ID  | Event Name        | Asset Name    | Category            | Date              | Temperature (°C) | Event Condition |                       |
| 3422007   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 3:13 AM  | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421988   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 3:03 AM  | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421989   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 2:53 AM  | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421950   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 2:43 AM  | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421931   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 2:33 AM  | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421912   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 2:22 AM  | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421894   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 2:12 AM  | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421874   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 2:02 AM  | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421855   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 1:52 AM  | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421836   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 1:41 AM  | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421817   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 1:31 AM  | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421798   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 1:21 AM  | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421779   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 1:11 AM  | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421760   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 1:01 AM  | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421741   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 12:50 AM | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421722   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 12:40 AM | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421703   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 12:30 AM | 10.0             | < 2.0 OR > 8.0  |                       |
| 3421684   | Temperature Alert | 2nd N. Fridge | Refrigeration Units | 05/14/14 12:20 AM | 10.0             | < 2.0 OR > 8.0  |                       |

05/15/14 8:26 PM

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# Integrated Temperature History Report

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- This report shows a list of selected temperature reports, as well as any events and (optionally) corrective actions from the time period selected.
- Shows 1-24 readings per device each day (customizable)
- Includes details on all the alerts that were triggered due to temperature being out of permitted range
- Includes the corrective actions taken in response to each alert
- Can be used to support regulatory audits and replace manual temperature logs

| Asset Name            | Date                            | Time       | Type                              | Description   | Temperature (°C) |
|-----------------------|---------------------------------|------------|-----------------------------------|---|------------------|
| Range:                | -8.0 to 2.0                     |            |                                   |   |                  |
| Device:               | Labcold E900 - J87241 (2358652) |            |                                   |   |                  |
| Labcold E900 - J87241 | 29/04/11                        | 2:24:15 PM | Regular Report                    |   | 1.5              |
| Labcold E900 - J87241 | 29/04/11                        | 2:24:45 PM | Regular Report                    |   | 2.5              |
| Labcold E900 - J87241 | 29/04/11                        | 2:24:55 PM | Alert! Critical Temperature Event | Unit is too warm. Temperature when alert fired: 2.5 | 2.5              |
| Labcold E900 - J87241 | 29/04/11                        | 2:25:00 PM | Regular Report                    |   | 1.0              |
| Labcold E900 - J87241 | 29/04/11                        | 2:25:15 PM | Regular Report                    |   | 1.5              |
| Labcold E900 - J87241 | 29/04/11                        | 2:25:45 PM | Regular Report                    |   | 2.5              |

# Offline Environmental Monitoring

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- Environmental Monitoring tags support the offline monitoring feature with on-board memory that can collect up to 8 temperature readings for temperature tags, and 8 humidity readings for humidity tags.
- One reading is stored every 3 hours
  - This is configurable, but STANLEY Healthcare's best practice is 3 hours.
- Once the network is available, all cached data is uploaded
  - This feature helps mitigate risk of data loss due to power or network related failures

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What are some *Best Practices* when it comes to reports?

# MobileView Reports

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- Saved Reports
  - Temperature/Humidity Summary report is emailed to department managers daily
  - Temperature/Humidity Event reports and/or Integrated Temperature History report are emailed to department managers weekly
  - Weekly reports are saved to SAN or other backed-up drive for audit support
- Instant Reports
  - Use Current Temperature/Humidity reports (can be saved and run on demand) for a snapshot of the department or whole hospital
  - Use Temperature/Humidity History reports to analyze devices causing regular events to fire or to investigate a particular event
  - Use Environmental Monitoring Archive report to access temperature and humidity logs for up to 1200 days back; can be used during audits
- Additional Reports
  - Out of sight reports – Indicate tags that are not being “heard” by MobileView and can help IT identify coverage issues
  - Battery reports – are used to determine when batteries in tags need to be replaced

# Trend Analysis and Performance Improvement

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- Use **Event Reports** to spot devices that are creating regular alerts
- Use **Temperature/Humidity History** reports to enable analysis of equipment that needs to be adjusted, repaired or replaced
  - Will be used during early stages of the deployment to identify “out of range” or “bad” devices

*“Tags and screens and reports! Will this ever end?”*

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*“All I want is that the refrigerator and its contents stays at the right temperature.  
Is that too much to ask?”*

## **Remember:**

Once we set-up the system with your preferences, you will rarely think about it.

# Ready for a break?

# Environmental Monitoring Best Practices



## Oh No!

Don't worry. We don't have to recreate the wheel.

- Our Sutter Project and Applications Teams will provide and walk us thru the established Sutter Standards regarding system use, reports use, distribution and support.
- Stanley AeroScout will provide information about Best Practices

\*\* We have copies of Eden's, SDMC and other facilities Temp Monitoring P&Ps that we will use as our templates.

# Asset General Fields

- Each asset has the following identifiers:
  - Name
  - Asset ID Number
  - Serial Number
  - Description
- Consider adding custom fields like:
  - Preventive Maintenance due date
  - Calibration due date
  - Manufacturer / Model
- Define temperature / humidity ranges:
  - Ranges are typically set in the category
  - Assets can be assigned with their unique temperature and humidity ranges
- Assign asset as static:
  - Use static X,Y locations to make it easy to locate a device once an alert is received
  - Having maps with assets locations marked is beneficial
- Include device photographs in the asset definition

Edit Asset

General > Custom Properties > Stationary Asset > Temperature > Humidity

Asset Details

Asset ID: A14763      \* Name: RWC - Conference Room      Serial Number:      Last Modified: 02/03/12 8:50:58 AM

\* Categories: Condition Monitoring,Nutrition Refrigerators,...

\* Primary Category: Nutrition Refrigerators

Status: In Use

Department:

Group:

Active/Inactive:  Active  Inactive

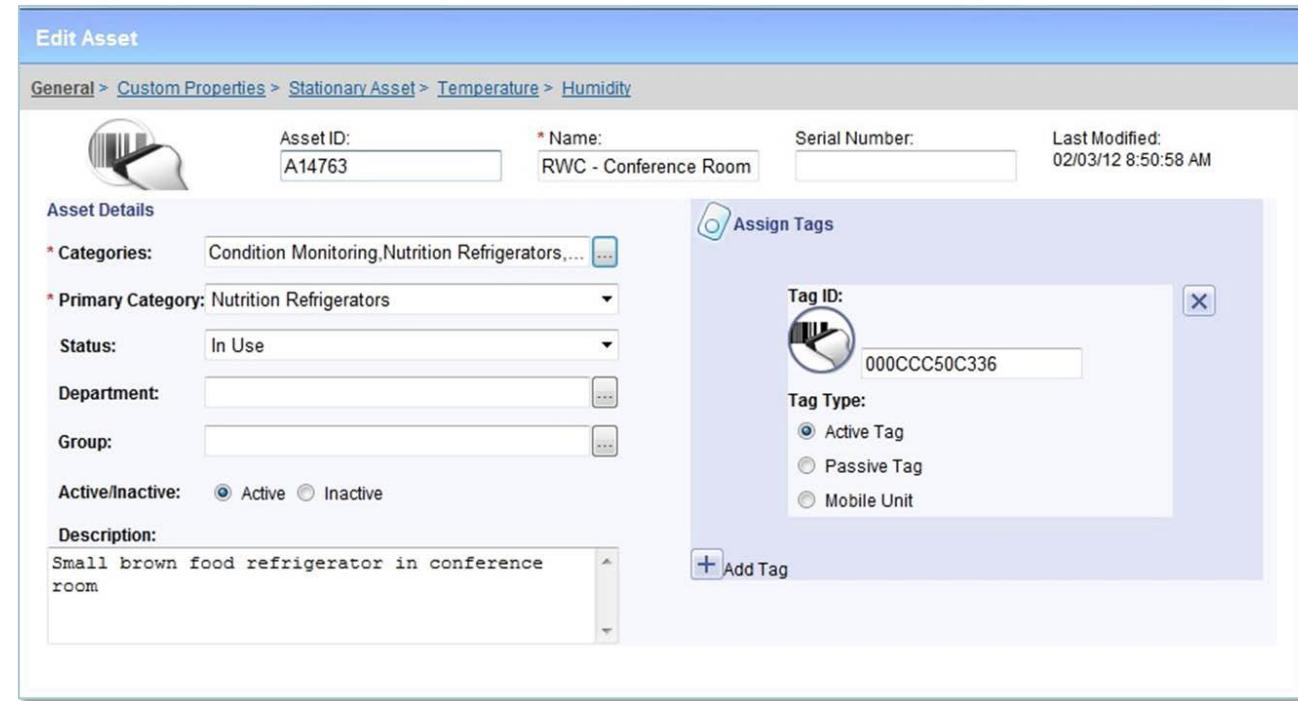
Description: Small brown food refrigerator in conference room

Assign Tags

Tag ID: 000CCC50C336

Tag Type:  
 Active Tag  
 Passive Tag  
 Mobile Unit

+ Add Tag



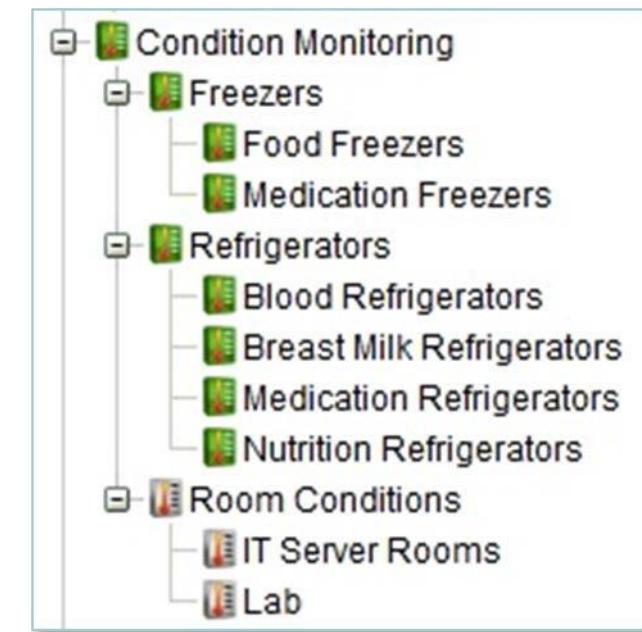
# Asset Naming (Sutter Standard naming convention)

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- Naming Conventions: will be set up with the SUTTER STANDARD
  - Including device type or category in asset name is recommended
  - Name should include a unique identifier
  - Asset name can also include department (if applicable)

# Categories (Sutter Standard)

- Category structure is based on device type
  - Use main categories like Freezers, Refrigerators, Blanket Warmers, Rooms, etc.
  - Use sub categories specific to device type
- Each category can hold its unique temperature and humidity ranges
  - The use of “Warning” threshold is optional



# Receiving and Managing Alerts

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- Subscribers (which assets are monitored by the event)
  - Each event typically monitors multiple assets (group or category)
- Temperature / Humidity ranges
  - Temperature ranges are set in the category or asset
- Timing
  - Identify how long the monitored devices can be out of range before alert is triggered
  - Time ranges should be long enough to avoid false alarms (e.g. temperature fluctuations caused by door opening or restocking)
- Reminders
  - Reminders will resend the alert until temperature or humidity is back in range
  - Reminder timing should be long enough to allow the recipient to respond to the alert
- Recipients
  - Can be sent to nursing, department managers and/or technicians, administrative assistants, maintenance, etc.
  - Alerts can be sent to email, cell phone, pager (through email) or Instant Notifier
- Scheduling
  - Typically always on (24x7)
  - Multiple alerts can be set to support different schedules and recipients (e.g. clinics)

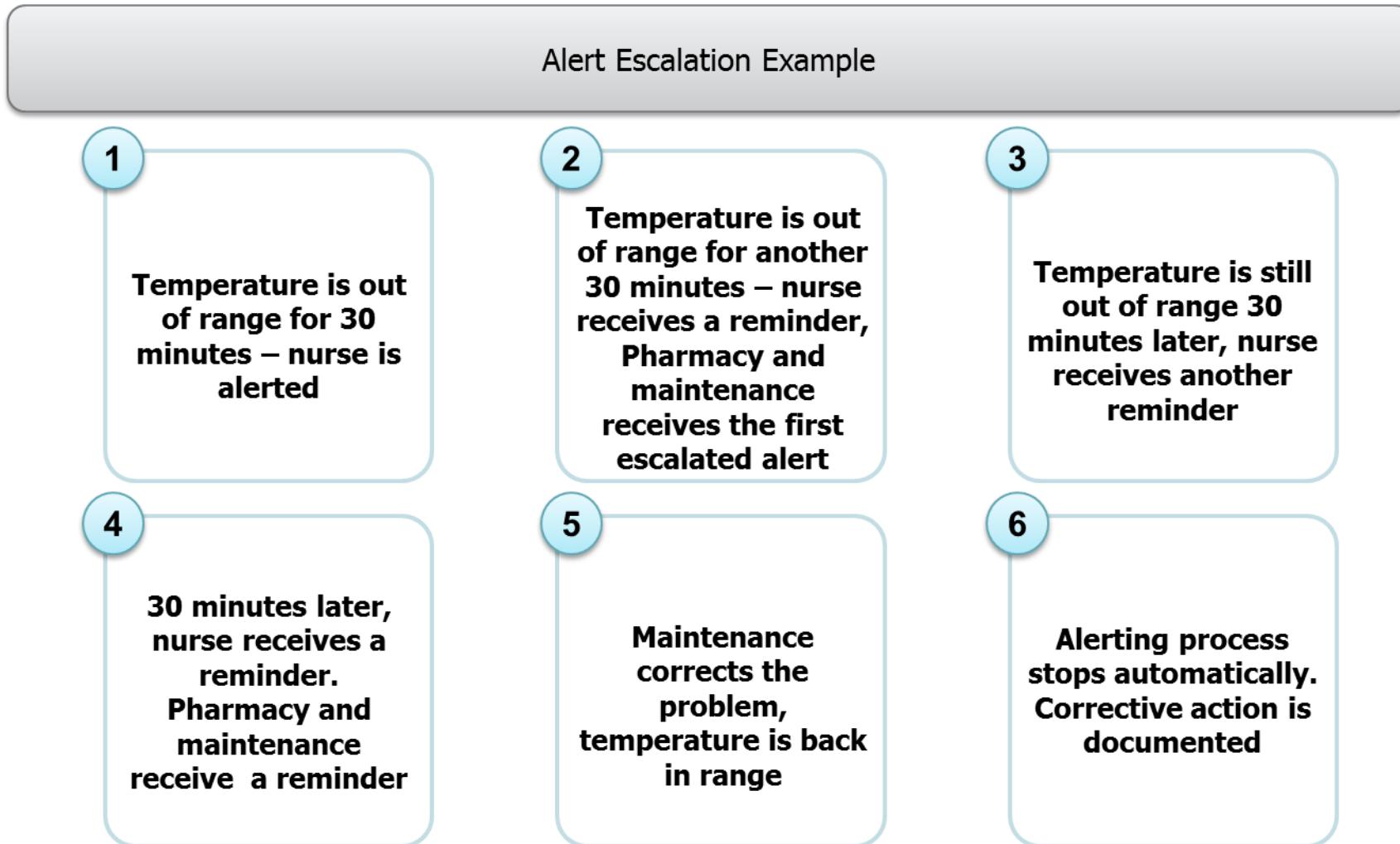
# Alert Escalations

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- Escalations are optional
- Typically based on extended out-of-range timing
- Example:
  - Medication refrigerator on the 6th floor is out of range for 30 minutes, alert nurse manager, remind every 30 minutes
  - Medication refrigerator on the 6th floor is out of range for 60 minutes, escalate to pharmacy and maintenance, remind every hour

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# Alert Escalation Example



# Alert Best Practices

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- Corrective Action documentation should be completed daily
  - Identify staff responsible for ensuring that action is taken and documented, either by doing it themselves, or reminding others until it's done
- Low battery and out of sight alerts ensure data continuity
  - Typically sent to technical staff (IT, Facilities, Biomed)
  - Ensures that these issues are resolved quickly
- Be wary of “alert fatigue” and use care when setting up alerts

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Who does what?

# Assigning Roles & Permissions

## System Administrator

Has all permissions  
System Back-ups



## Super User

System Administrator permissions except for System and User Administration  
Name Super User by Title or Name?

## Alert Manager

User permissions plus the ability to edit alerts and report capability

## Users

Basic read-only view  
Name Super User by Title or Name?

## Facilities and/or Application Administrator(s)

Responsible for setting up assets, categories, groups, alerts, reports and any other use case specific configuration  
Responsible for tag calibration  
Responsible for battery maintenance

# Roles

Roles define permission level and reports access for users



Consider at least 3 roles: administrator, super user, user

Separate IT and application administrator

May include additional roles

Need to define roles and permission

Who can edit corrective actions and dismiss and/or delete an alert?

Who can access reports?

Who can create new saved reports?

\*\*In our WORKFLOW workgroup, we will further refine these roles and responsibilities

# Okay – so that seems like a lot to take in.

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*“All I want to know is that the refrigerator and its contents stays at the right temperature.”*

## Remember:

Once we set-up the system with your preferences, you will rarely think about it, until you receive the occasional alert/alarm or have to read an environmental monitoring report.

# Here is where we need your help

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Please sign up for work groups TODAY!

Workgroups:

- Workflow
- Sutter Policies/ Documentation
- Report Use
- System & Tag Maintenance
- Training

Meetings will begin in September, meet twice each month, for 1-2 months depending on progress.

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# Example of workgroup activity - Reports

We'd like to make it as easy as possible for you.

Things to think about...



- What reports do you use now? Who gets them and how are they distributed?
- How would you like to receive your reports?
- Emailed to your mailbox?

Here's an idea

- Shall we produce reports each day/ week/ month then store them in sharepoint and email a link to you, reminding you that they are available.

Advantages:

We wont fill up your email box

You can retrieve them when ever you need to

They will remain there, and will be useful when you need to recall history

Remember, if you have access, you may run reports on demand as well

## Example - Workflow Workgroup



- Examine existing documentation for environmental monitoring. How is information being captured and reported now?
- Who is responsible for developing and enforcing operational decisions regarding environmental monitoring?
- Who is responsible and what is the process for addressing alerts and alarms?
  - How should they receive those alerts/alarms?
  - What should the response be? And, how is it recorded?
- What types of reports are used to review, enforce or report temperatures?
- Who is responsible for maintenance of the units and the tags?
- What will we do in the case of a power outage or unit failure? (Downtime procedures)
- What other information is needed as the compliance workgroup determines system use?

# How will you use this system?

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## What P&Ps will you put in place to get the most out of it?

This system is a tool – How will you use it?

- Policies
  - Think about how you will use reports.
  - Think about what happens if a refrigerator breaks?
  - What do you do with the contents?
  - What do you do if the electricity goes out?
- You are the regulatory experts, responsible for compliance & reporting requirements.
- Need your expertise



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# Next Steps

- Sign up for a workgroup
- Compile the information that we collected today.
- Schedule break-out meetings to refine and approve system set-up and system use decisions.
- Workgroup discussions and development.

How about a recap?

Questions?

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Thank You

