



# Crisis Management Test Bed

Consequence Dissemination Meeting  
Imperial College London, 26/01/2011

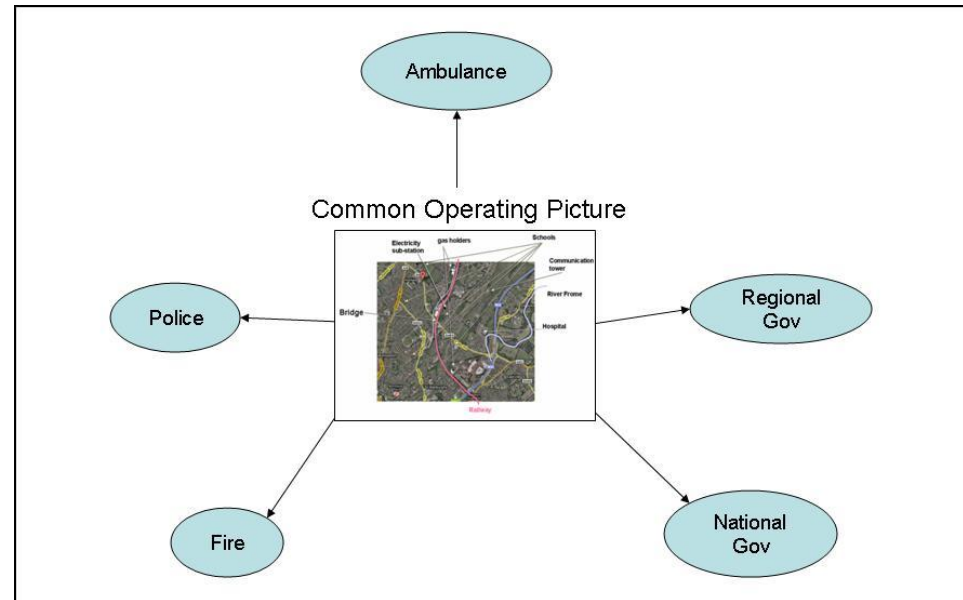
D Golby    BAE SYSTEMS

# Overview

- Background
- Objectives of the work
- Achievements to date
- Final stage of development
- Lessons learned

# Background

- Requirements
  - Protection of sensitive information shared during an emergency
  - Information from different sources is sensitive and needs to be protected during processing
- Common Operating Picture concept
  - Developed in the OASIS FP6 project
  - Exchange of Tactical Situation Objects
  - TSO containing sensitive data on the incident



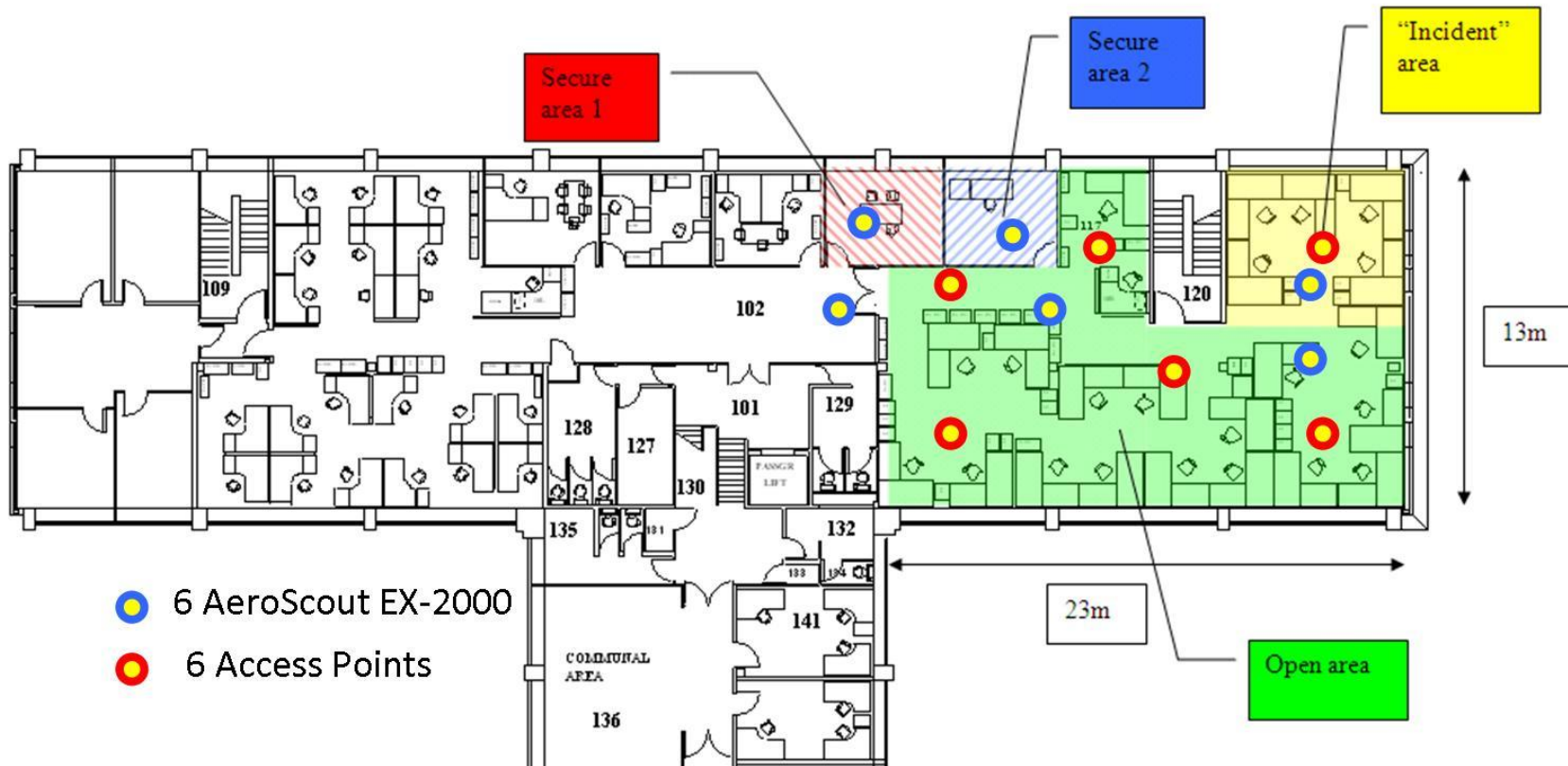
# Objectives of the work

- Investigate the subject of context and demonstrate one basic capability of location tracking
- Use the TSO as the target of data security
  - As an example of an XML document with data security requirements
- Determine any special requirements of Data Sharing Agreements in Crisis Management and demonstrate any novel capabilities
- Investigate how Consequence data security could benefit a Service Oriented Architecture

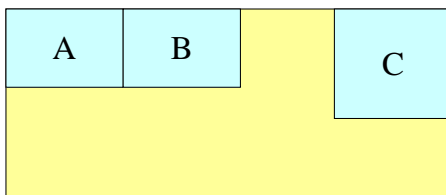
# Achievements to Date

- First edition of the Crisis Management Test Bed
  - Aeroscout™ deployment and integration
  - First integration with the Consequence Framework
- First edition used:
  - InfoPath as the target application
  - X.509 for user authentication
  - Aeroscout™ for context management
  - A first implementation of a Context Security Token Service using the Microsoft Geneva Framework
  - A basic notification system for location change events
  - The whole document is encrypted

# Aeroscout Installation

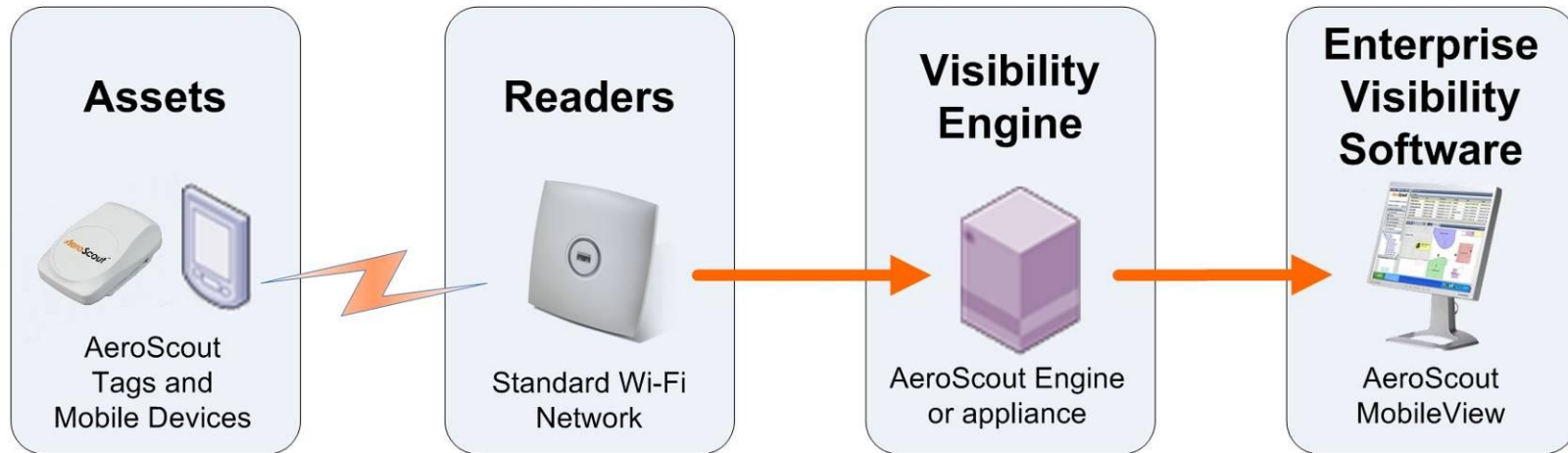


## Ambulance Control Centre



- A, B – offices where sensitive documents can be opened
- Incident Room- where top-level info is used
- The rest of the area is 'public'.

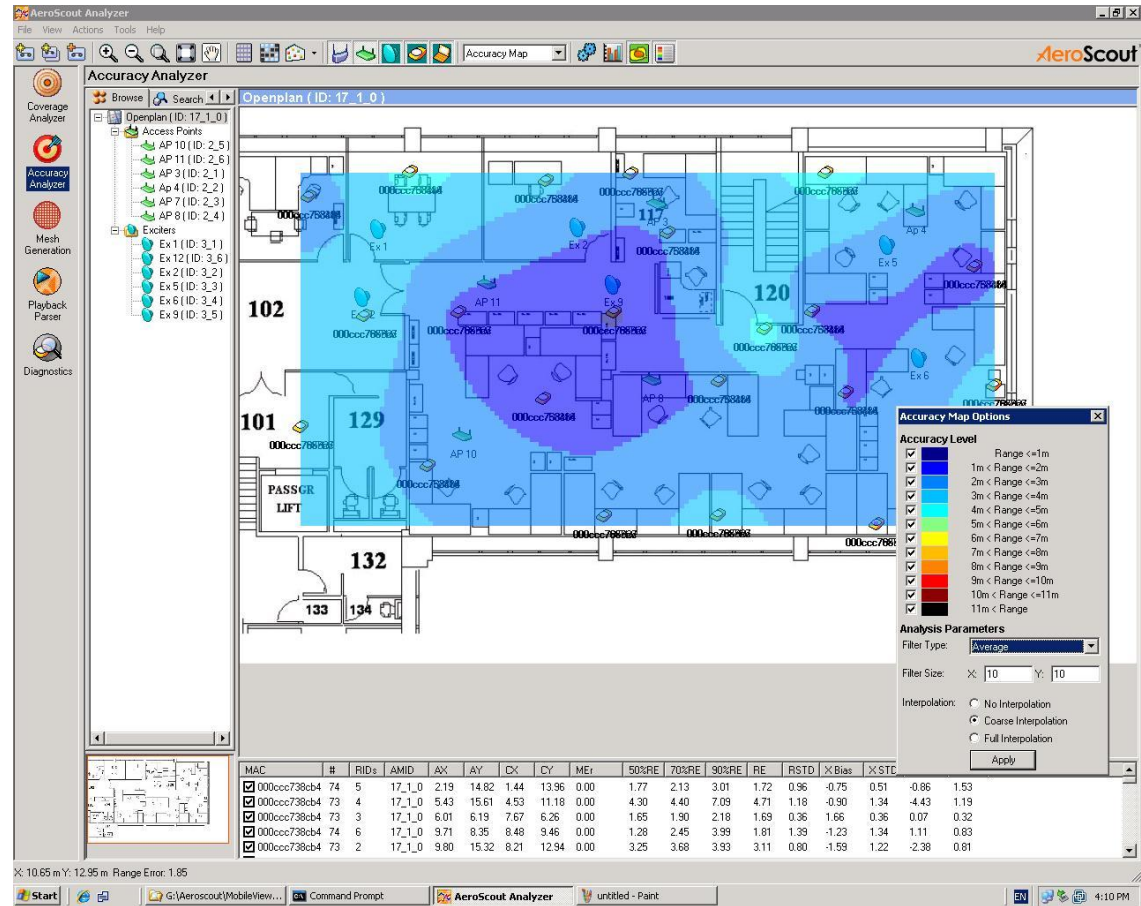
# Aeroscout principles of operation



- 1) Active RFID tags and/or standard wireless devices send a tiny wireless signal at a regular interval
- 2) Signal is received by the Wi-Fi wireless network (or location receivers), and is sent to an Engine
- 3) The Engine uses multiple algorithms to determine location, and sends asset data (location, status, etc.) to enterprise software
- 4) Enterprise software uses location and status data to display maps, enable searches, create alerts, manage assets, etc.

# Accuracy plot

- RSSI and geometry data provide an accuracy estimate for the simulation area
- Most areas  $2 < x < 5m$
- Some recalibration to improve uniformity.



# Aer Scout toolset

## AeroScout MobileView software

**Track** – Web-based visualization tools for pinpointing and tracking

**Alert** – variety of events and notification methods

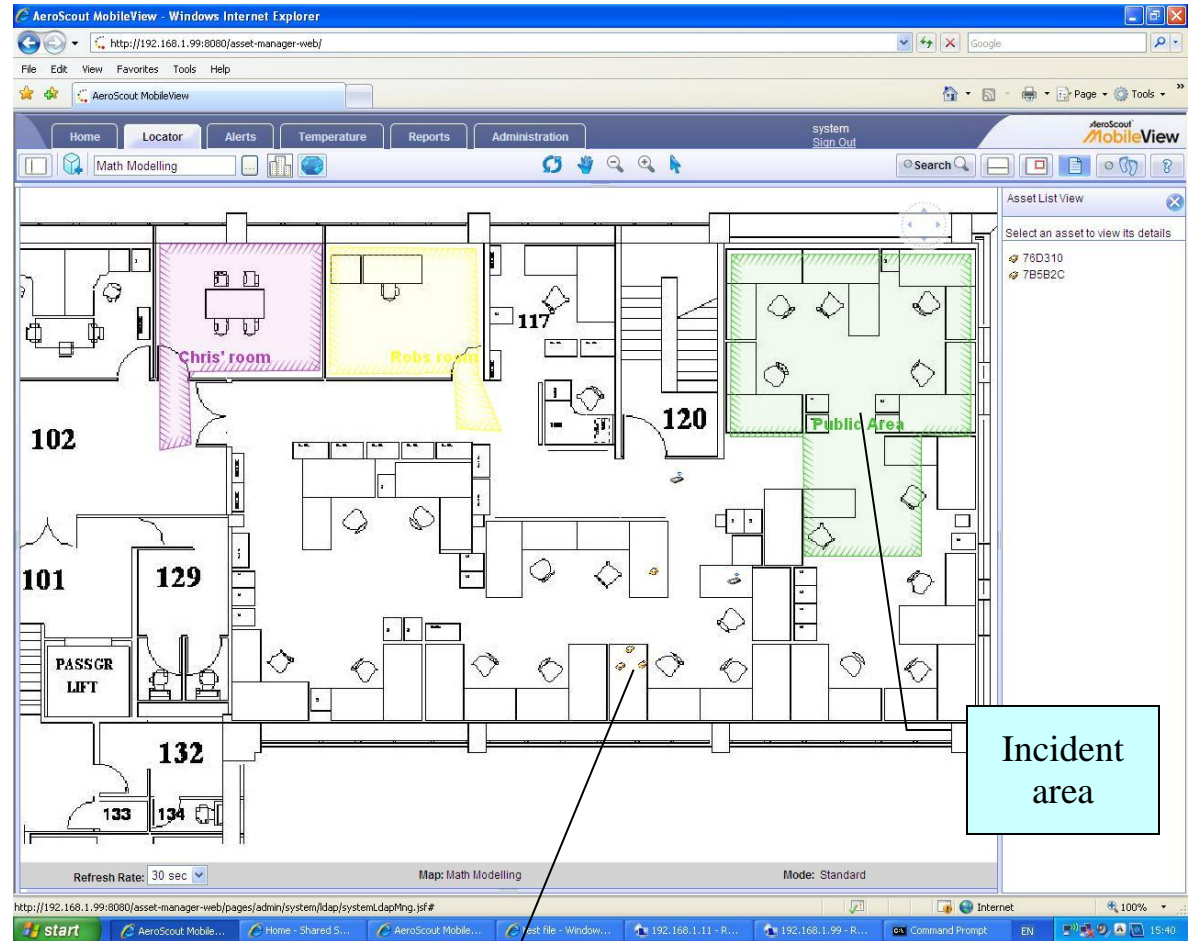
**Manage** – control assets, reports, maps and zones, users

**Integrate** – Data from Active & Passive RFID, sensors, UWB, other sources; SOAP API to 3<sup>rd</sup> party applications



# Location view

- Provides visual location data together with last event notification
- 'Zones' used to define areas with customised attributes
- Tag entry into a zone can change status of zone

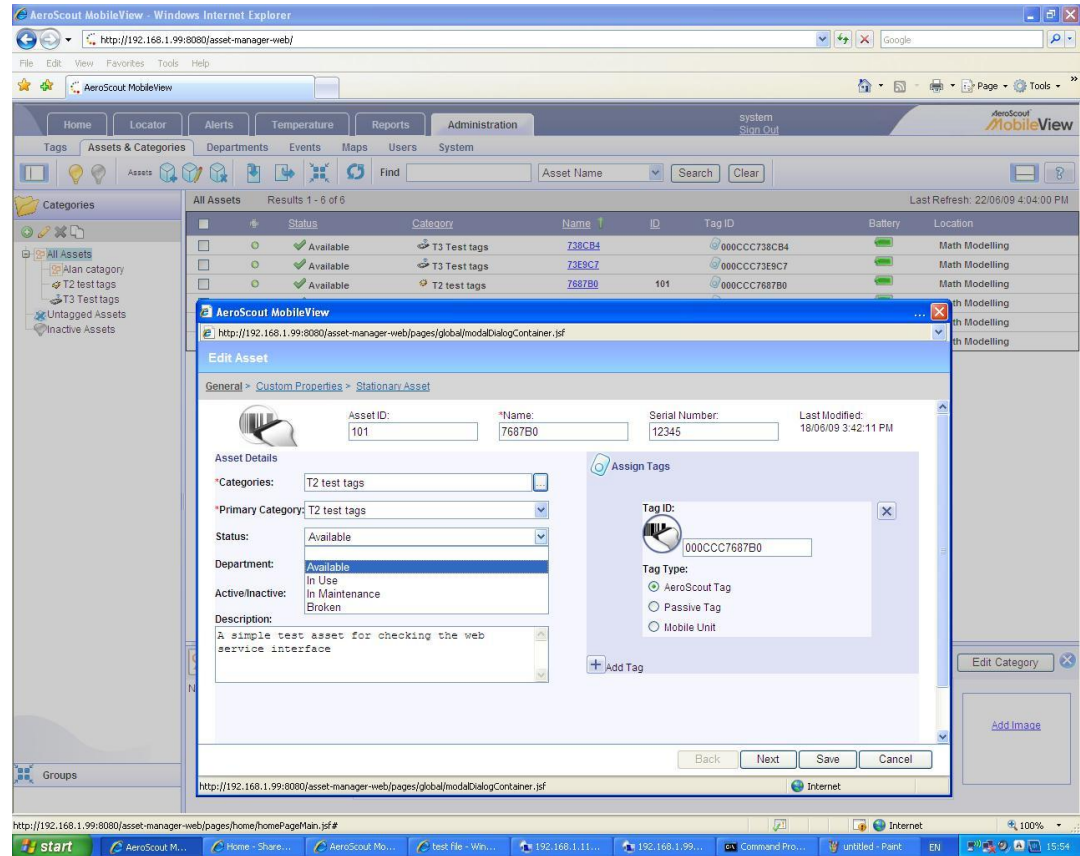


Incident area

Tag locations

# Asset management

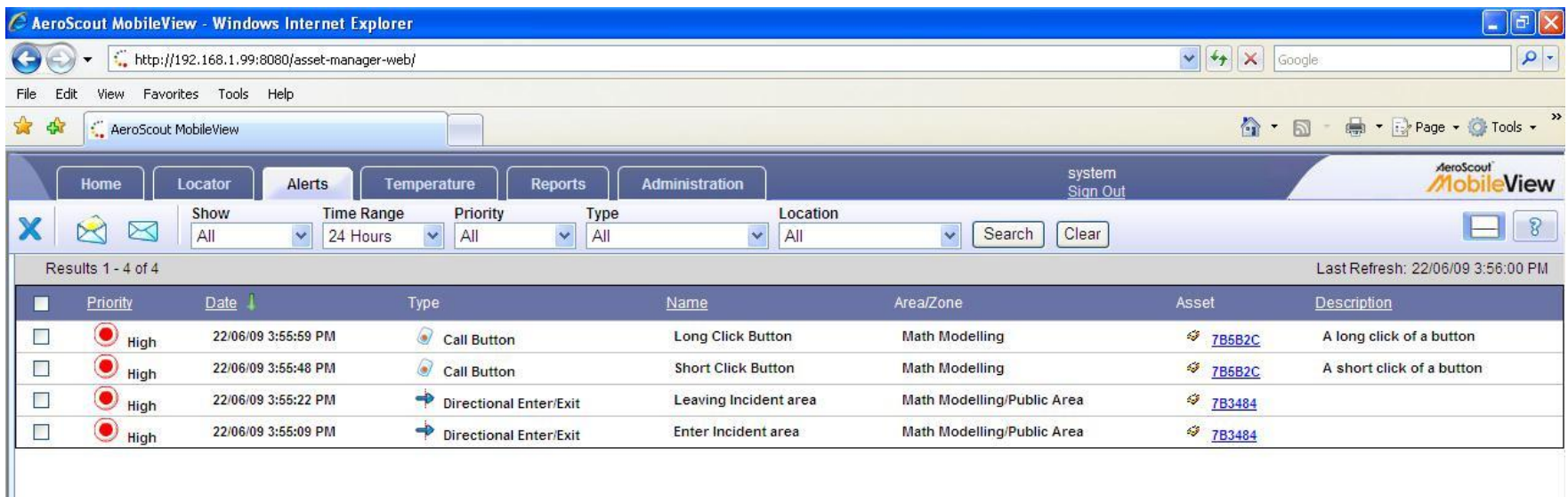
- Assets associated with tags
- Assets have custom properties
- Properties can be changed according to context of tag



Status	Category	Name	ID	Tag ID	Battery	Location
Available	T3 Test tags	739CB4		000CCC739CB4		Math Modelling
Available	T3 Test tags	73E9C7		000CCC73E9C7		Math Modelling
Available	T2 test tags	7687B0	101	000CCC7687B0		Math Modelling

# Events/Alerts

- Events are generated by tags
  - Passing exciters
  - Moving into/out of zone
  - Call buttons
  - Proximity
  - etc



The screenshot shows the AeroScout MobileView web interface in a Windows Internet Explorer browser. The address bar shows the URL <http://192.168.1.99:8080/asset-manager-web/>. The interface includes a navigation menu with tabs for Home, Locator, Alerts, Temperature, Reports, and Administration. The Alerts tab is active, displaying a search and filter interface with options for Show (All), Time Range (24 Hours), Priority (All), Type (All), and Location (All). Below the search interface, there is a table of results showing 4 alerts.

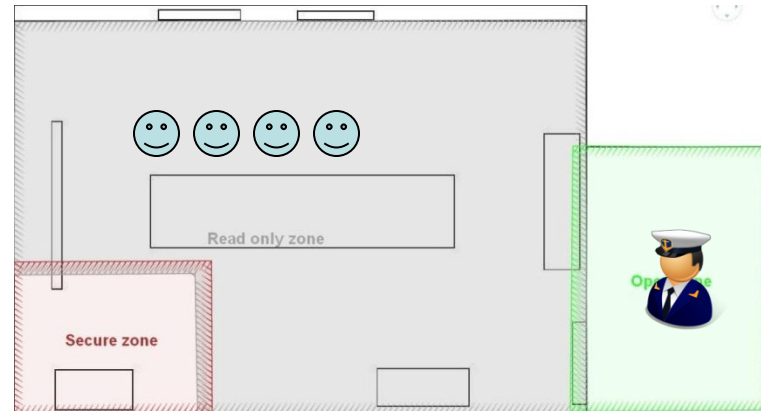
Priority	Date	Type	Name	Area/Zone	Asset	Description
High	22/06/09 3:55:59 PM	Call Button	Long Click Button	Math Modelling	7B5B2C	A long click of a button
High	22/06/09 3:55:48 PM	Call Button	Short Click Button	Math Modelling	7B5B2C	A short click of a button
High	22/06/09 3:55:22 PM	Directional Enter/Exit	Leaving Incident area	Math Modelling/Public Area	7B3484	
High	22/06/09 3:55:09 PM	Directional Enter/Exit	Enter Incident area	Math Modelling/Public Area	7B3484	

# Abingdon Demonstration 2010

## 1 Access Denied

**Access Denied**

Access to this document is denied.



## 2 Access Granted

**TSO Incident Report Form**

Complete this form with the basic details of the incident.

**Basic Incident Information**

TSO ID:

MODE:

MSGTYPE:

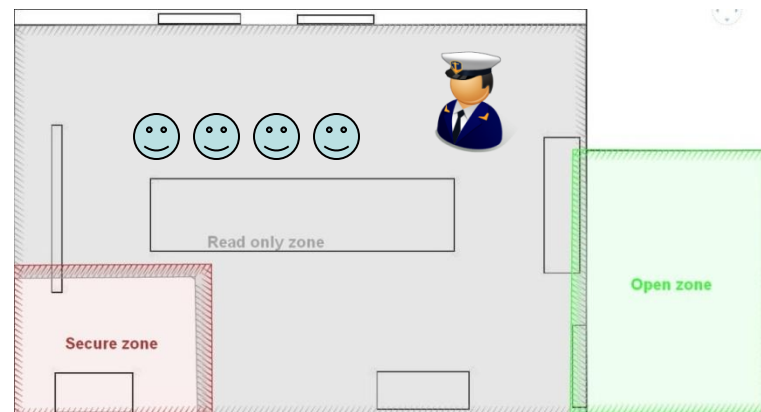
DESCRIPTION:

FREETEXT:

URGENCY:

LEVEL:

INCIDENT ID:



# Video

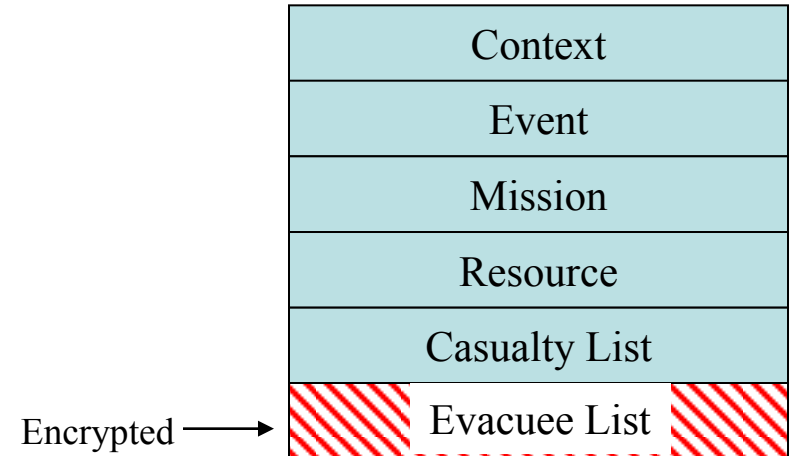
- A preliminary integration with SharePoint was demonstrated in Jan 2010
- Showed how access to a document was controlled based on the user's location
- Aeroscout™ location tracking was adopted

# Final Stage of development

- Currently in progress
- Objectives of the second edition
  - Demonstrate integration within the OASIS FP6 COP Service
  - Demonstrate integration with Windows Authentication
  - Show protection of parts of a document using XML encryption

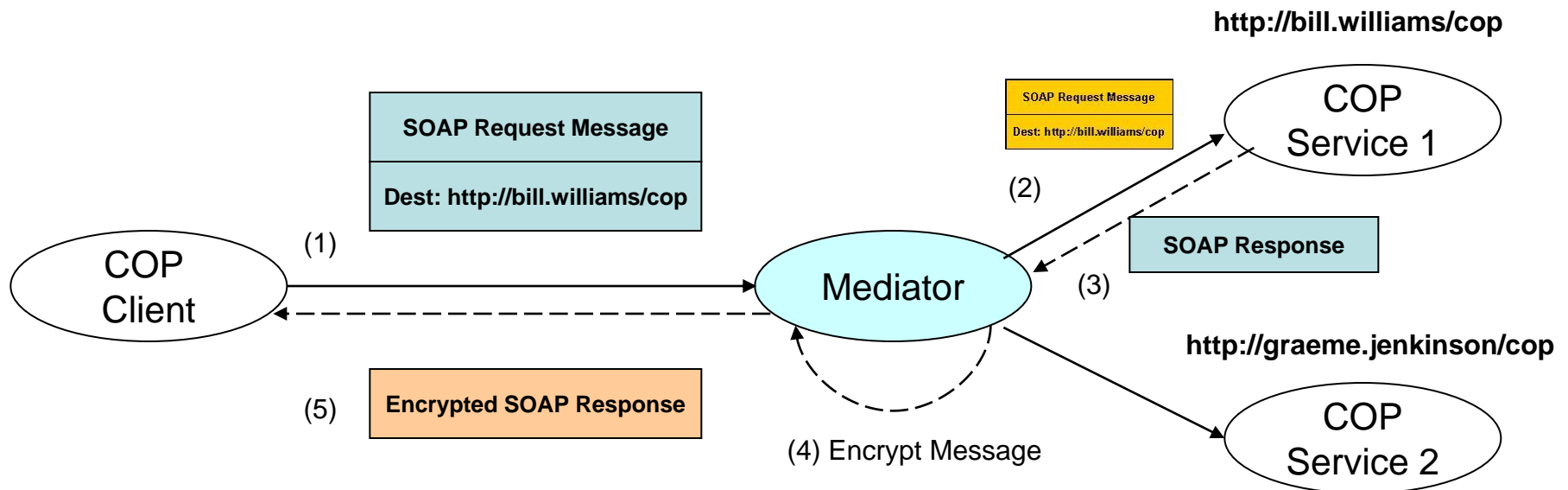
# XML Encryption

- Particular sections of an XML document encrypted using Consequence
- XML Encryption standard adopted
- Enables a mixture of protected and clear text to be processed
- A means of protecting sections referring to individuals
  - Eg casualty or evacuee data



# Integration within the COP Service

- Introduce a mediator service for message routing and encryption



# Lessons Learned

- Don't do collaborative projects... 😊
- Should have been more emphasis on consolidation in year 3
  - Mature the technology rather than strike out in new research directions!
- Integration with the Imperial College PAES system
  - This was planned but had to be deferred in favour of other tasks...



Any Questions?