

**UW i310**

***RFID: Information Assurance/Cybersecurity***

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**2016**

*Introduction to IAC (Info Assurance – Cyber Security)*

## **Cyber Security versus Info Assurance**

**Enterprise IT Security** (*Policy, mechanisms*)

**Info Assurance** (*Systems Security Engineering, hardware and software assurance, policies, mechanisms*)

***Technology and Opportunities***

# Platform Cyber Security/IA: Engineering Perspective

## Key Considerations

Secure Op System

Secure RF Comm/Crypto

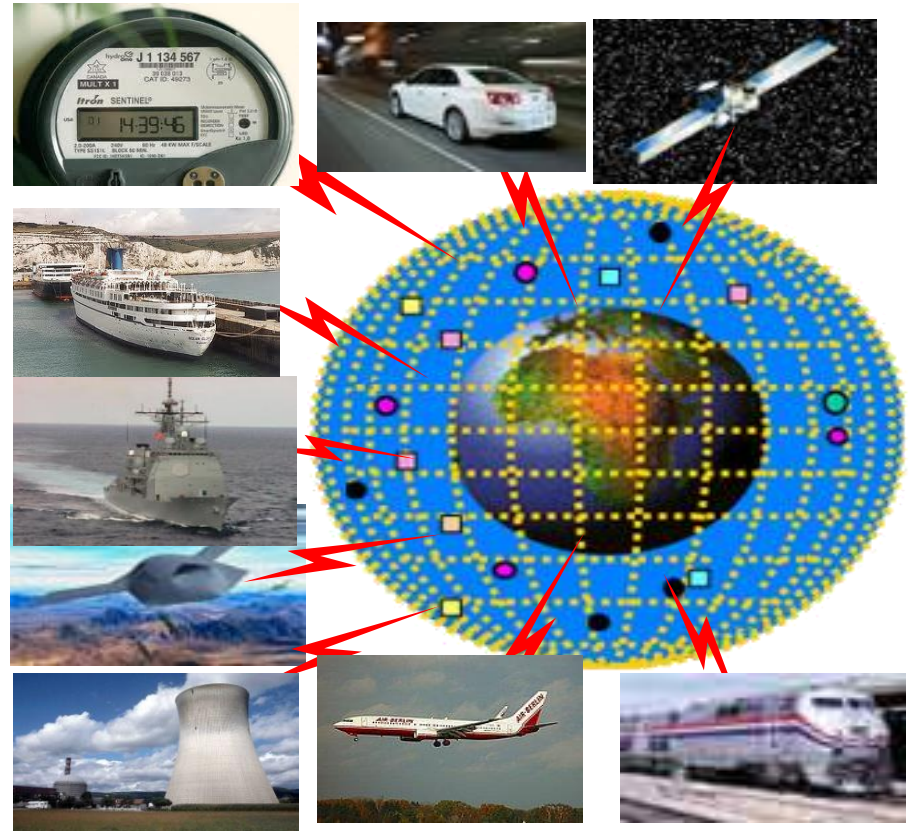
Software (inspect,VA)

Maint Link/Integration

End to End solutions

(SupplyChain,  
Maint/Logistics, Net  
Mgmt/Admin, Bus Continuity,  
VulnAnalysis, Eng/Factory  
Integration)

## Platforms/Products/Services



## Info Assurance

# *Platform Cyber Security/IA: H/W S/W Assurance*



wireless



Wired  
Ethernet

*Supplier Software*

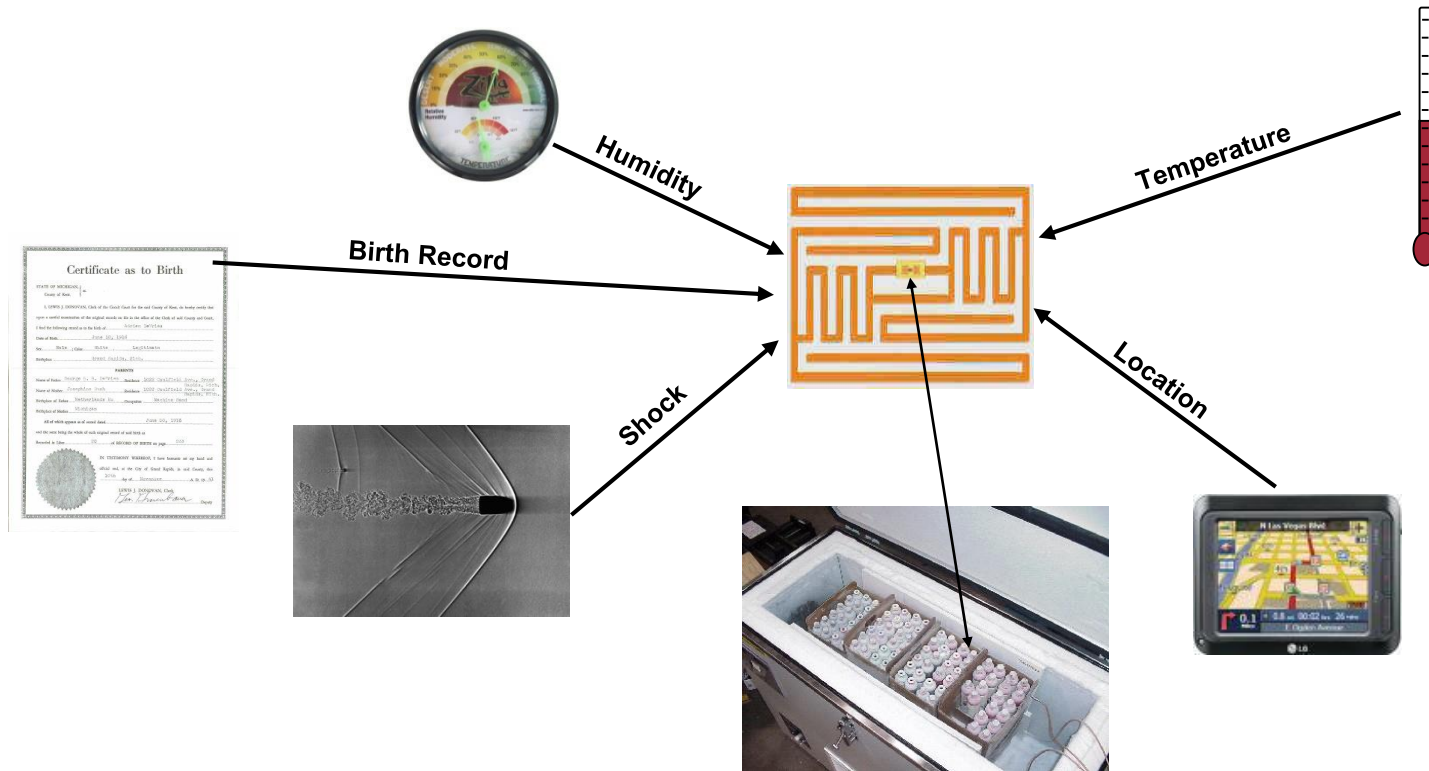
*COTS Components (cost driven)*

*Software Loading/Maintenance laptops/test tools*

*Engagement w/accreditation TWG/Orgs*

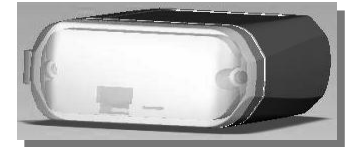
# AIT/RFID: Health & Environmental Mgmt Potential

**The RFID tag can be connected to external sensors to manage environmental conditions.**



# AIT/RFID Wi-Fi Active RFID Tags

- **Interoperability:**
  - Interoperable with any standards based 802.11 tag
- **Battery life:**
  - 3-5 years, depends on beacon/blink rates
  - Unassociated tags promote battery life; *intelligent motion detectors provide alerting only*, preserving battery life
- **Security mechanisms:**
  - Tags do not associate to network
- **Dimensions:**
  - Varies slightly by vendor
- **Various Mounting Options**
- **Environmental Durability:**
  - Operating Temperature:
  - Dirt/Dust/Water resistance





# Active RFID Tag Management, Monitoring, Visibility

Engineering, Operations & Technology | Information Technology

Computing & Network Operations



## Wireless Control System

Username: |

| Logout

| Refresh

| Print View

Monitor Reports Configure Location Administration Help

Maps > n > 1st floor

-- Select a command --

GO

RSSI Color Lookup

Zoom

Refresh

> Layers

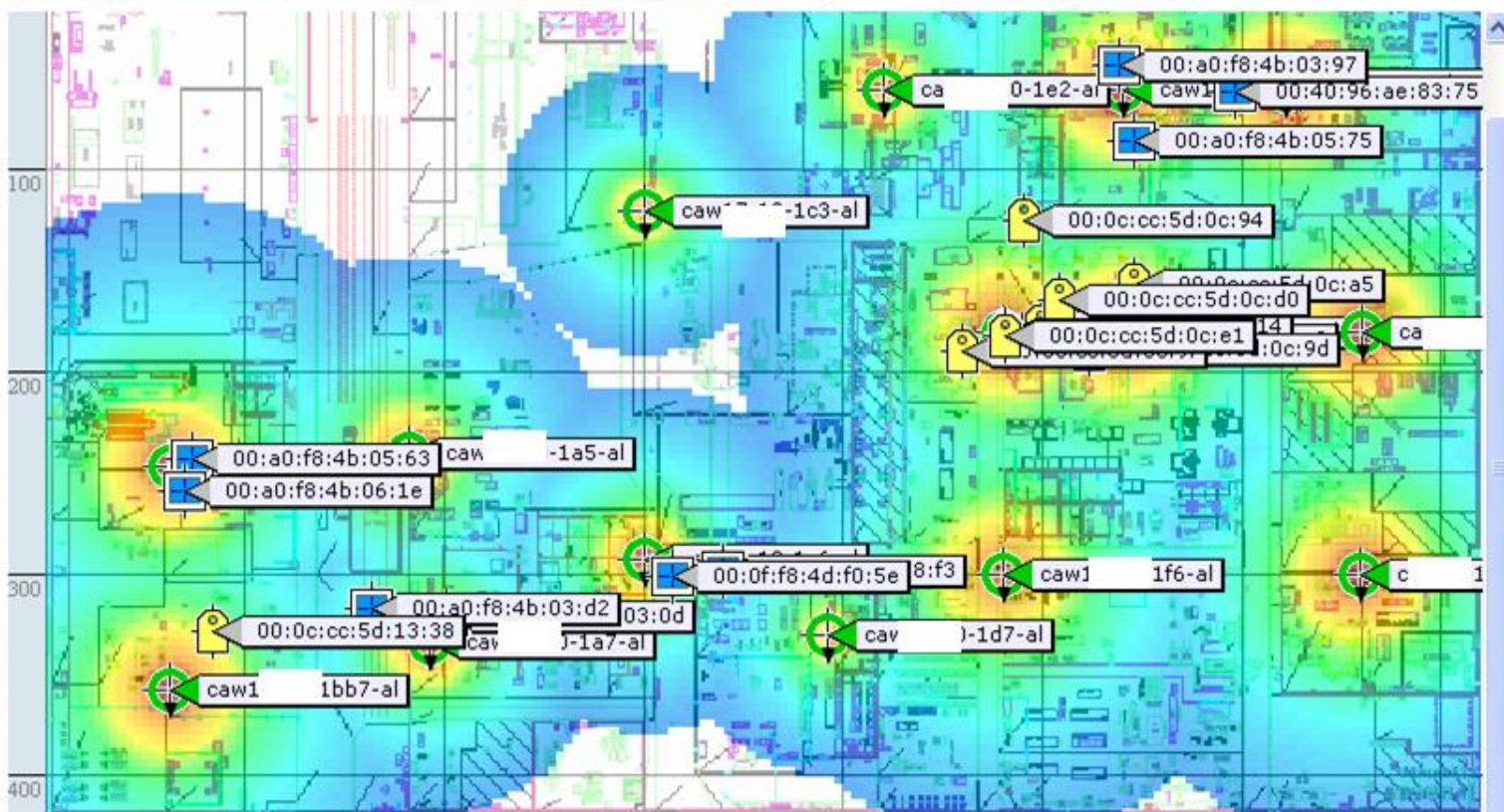
-35 dBm

-90 dBm

100 %

5 min

Full Screen



### Contributing APs

- ☒ (
- ☒ (
- ☒ (

Refresh Heatmap

Load

Loaded 19 out of 19  
Tags  
Done.  
Loading heatmaps..  
Done.

Load Location Server data as  
old as: 15 Minutes

### Alarm Summary

Rogue AP	0	304
Coverage Hole	0	0
Security	81	686
Controllers	11	0
Access Points	79	9
Mesh Links	0	0
Location	0	6

# Active RFID Tag Management, Monitoring, Visibility



## Wireless Control System

Client 'unknown' - Symbol:4b:06:1e

-- Select a command -- **GO**

**General** **Statistics** **Location**

### Client Location

Floor >1st floor  
Last located at May 5, 2007 10:19:30 PM  
On Location Server cws33-0312



[Enlarge](#)

### Asset Info

Name   
Group   
Category   
Location Debug ☐ Enabled\*

**Update**

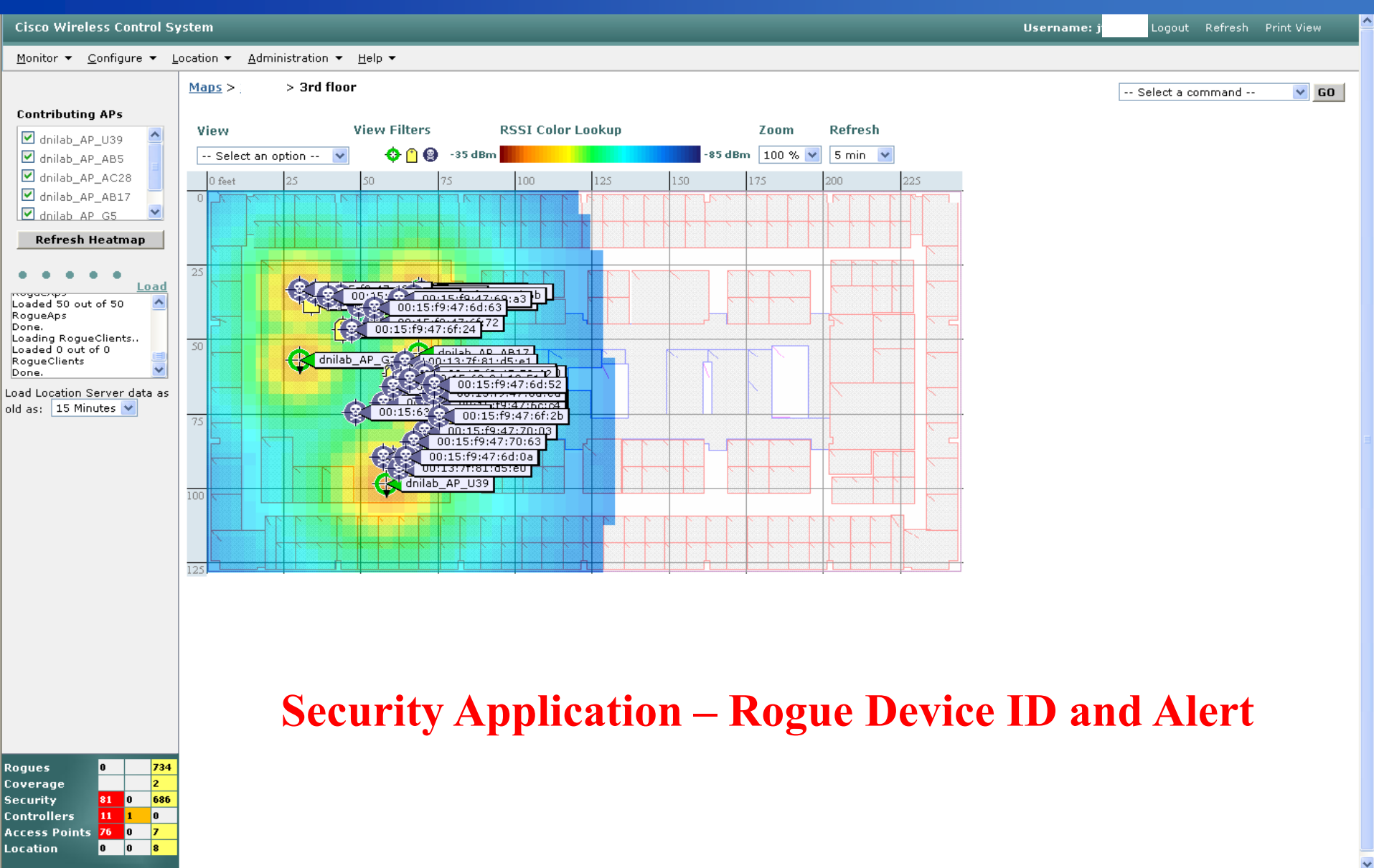
\* This will show AP RSSI Information on the Map.

### Location Notifications

Absence	<a href="#">0</a>
Containment	<a href="#">0</a>
Distance	<a href="#">0</a>
All	<a href="#">0</a>



# Active RFID Tag Management, Monitoring, Visibility



## Is Your Cat Infected with a Computer Virus?

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### Abstract

*RFID systems as a whole are often treated with suspicion, but the input data received from individual RFID tags is implicitly trusted. RFID attacks are currently conceived as properly formatted but fake RFID data; however no one expects an RFID tag to send a SQL injection attack or a buffer overflow. This paper is meant to serve as a warning that data from RFID tags can be used to exploit back-end apps*

Years after the successful introduction of RFID-based pet tagging, Seth the veterinarian's pet identification system started displaying odd behavior. First, the RFID reader seemed to be reporting incorrect pet address data.. A couple hours later, the system seemed to be erasing data from pets' RFID tags. Then the LCD display on the pet identification computer froze and displayed the ominous message: .All your pet are belong to us.

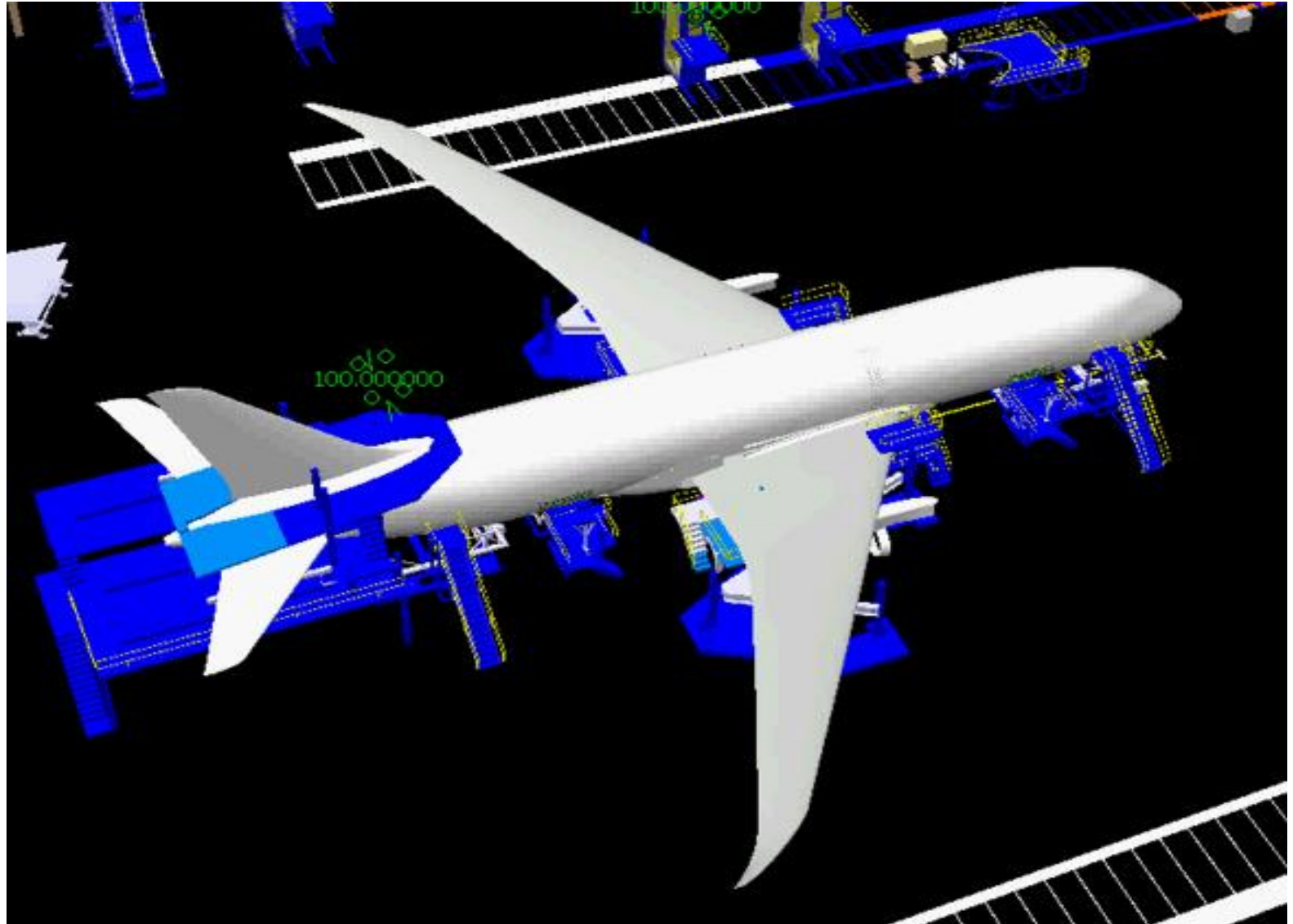
Input data can be used by hackers to exploit back-end software systems. This is old news, but it has not prevented RFID system designers from implicitly trusting the structural integrity of data provided by RFID tags.

## Well-Known RFID Threats

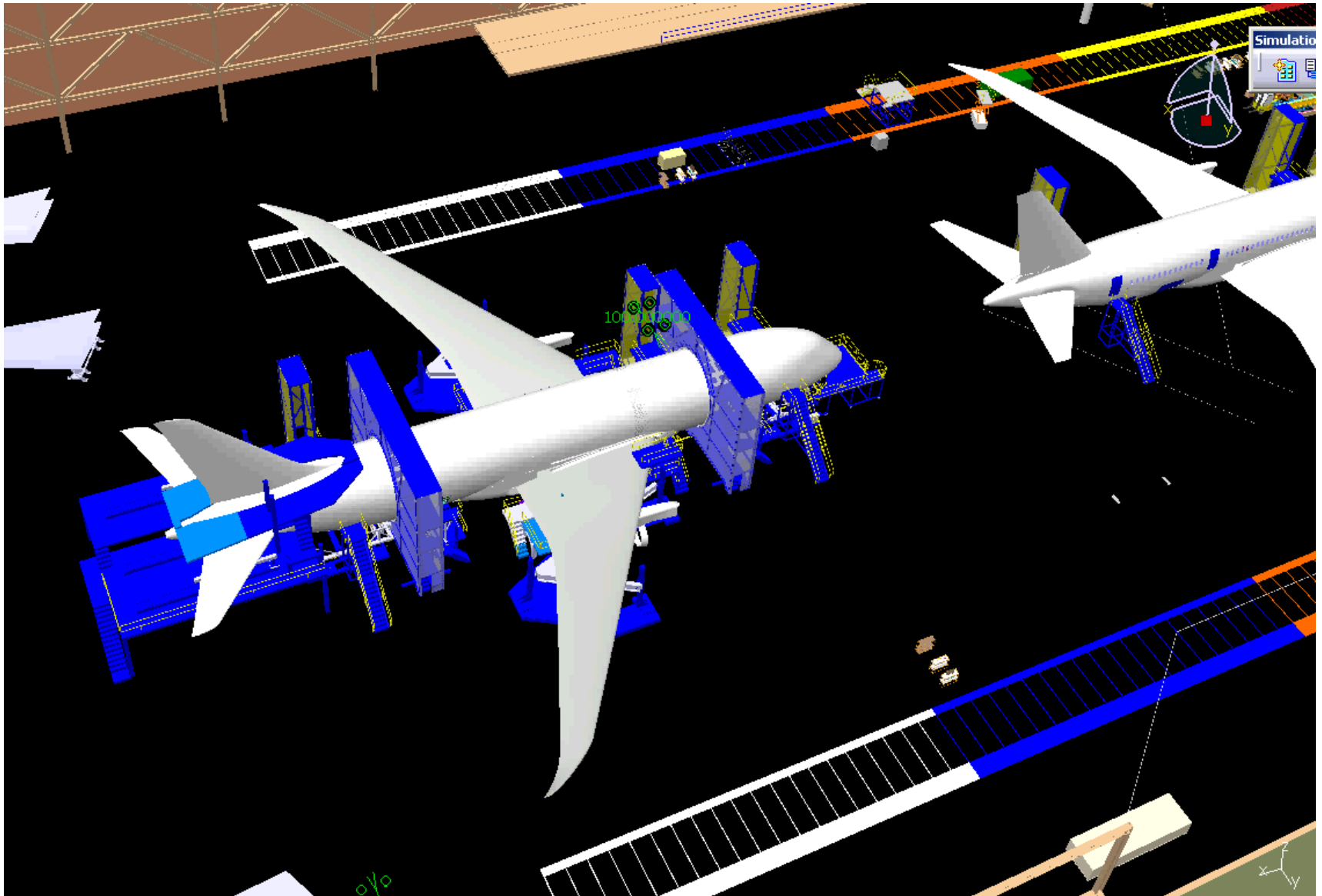
**Number of well-established RFID security and privacy threats.**

1. **Sniffing. RFID tags are designed to be read by any** compliant reading device. Tag reading may happen without the knowledge of the tag bearer, and it may also happen at large distances. One recent controversy highlighting this issue concerned the .skimming. of digital passports (a.k.a Machine Readable Travel Documents[4]).
2. **Tracking. RFID readers in strategic locations can** record sightings of unique tag identifiers (or .constellations. of non-unique tag IDs), which are then associated with personal identities. The problem arises when individuals are tracked involuntarily. Subjects may be conscious of the unwanted tracking (i.e. school kids, senior citizens, and company employees), but that is not always necessarily the case.
3. **Spoofing. Attackers can create .authentic. RFID tags** by writing properly formatted tag data on blank or rewritable RFID transponders. One notable spoofing attack was performed recently by researchers from Johns Hopkins University and RSA Security[8]. The researchers cloned an RFID transponder, using a sniffed (and decrypted) identifier, that they used to buy gasoline and unlock an RFID-based car immobilization system.
4. **Replay attacks. Attackers can intercept and retransmit** RFID queries using RFID relay devices[14]. These retransmissions can fool digital passport readers, contactless payment systems, and building access control stations. Fortunately, implementing challenge-response authentication between the RFID tags and back-end middleware improves the situation.
5. **Denial of Service. Denial of Service (DoS) is when** RFID systems are prevented from functioning properly. Tag reading can be hindered by Faraday cages or signal jamming., both of which prevent radio waves from reaching RFID tagged objects. DoS can be disastrous in some situations, such as when trying to read

# Intelligent Tooling



# Imagine if Intelligent Tooling Moving !!





*Investing: Personal/Career Investing and \$\$ investing*

*1990's/2000 - Major Technology Investments ?*

*Internet, Windows, Web , Cellular*

*2010 - 2020 - Major Technology Investments ?*

*Mobility - Wireless*

*Cyber Security*

*Data Analytics – Data Fusion*

# eCommerce Architect Deloitte

## Job Details

### eCommerce Architect

#### Location:

Los Angeles, California

San Francisco, California

Denver, Colorado

Washington, District of Columbia

Miami, Florida

Atlanta, Georgia

Chicago, Illinois

Minneapolis, Minnesota

New York, New York

Charlotte, North Carolina

Cleveland, Ohio

Pittsburgh, Pennsylvania

Austin, Texas

Dallas, Texas

Seattle, Washington

**Firm Service:** Consulting

**Reference Code:** E14NATCMGRPD714-AMS

## Job Description

**Application Management Services:** Provide complete operations services for application management, custom development, and business process outsourcing for clients. Develop the post implementation go-live support environment, construct the transition plan from the project team to the support team, and support and maintain the client applications and technology infrastructure

Deloitte Consulting LLP is one of the world's leading management consulting firms for executable strategy, operations, technology, and human capital advisory services. The consulting practice is built around integrated core capabilities - people, process and technology and industry expertise - the capabilities needed to help clients to tackle their most complex challenges.

## ***TECHNOLOGY***

Deloitte Consulting's technology professionals help clients identify and solve their most critical information and technological challenges. We provide advisory through end-to-end implementation services as well as outsourcing services and are recognized in the marketplace for capabilities across the spectrum.

## **Required Skills:**

TOGAF (The Open Group Architecture Forum) Certification (or studying towards it).

7 to 10 years designing and delivering high volume customer facing systems.

Demonstrated ability to effectively implement large-scale eCommerce solutions incorporating the following capabilities: UI/UX concepts around content first design, advanced navigation, collapsed content, content chunking, long pages, responsive design (Twitter Bootstrap) and single page applications (AngularJS, Backbone, Knockout, etc.).

**Working knowledge of security tokens, digital certificates, identify and access management, Content Management, Personalization, Rich Internet, Cascading Style Sheets, Test Automation, various Java-based frameworks, decision engines, etc.**

Experience using cutting edge technologies such as Message Bus Technologies (like WebSphere), Drools, Struts/Springs frameworks, Distributed Caching, and Restful processing.

Deep technical understanding of variety of portal technologies in the market place.

Ability to work with minimal supervision.

## **Desired Skills:**

**Understanding of online and mobile applications.**

**Deadline oriented, able to identify risks and quickly resolve issues.**

4 year degree in computer science or equivalent experience.