

Subgroup Exercise 2

Sensor Placement of Interior Sensors

Session Objectives

After the session, the participants will be able to do the following:

1. Determine when detection occurs during a sequence of events.
2. Evaluate the effective placement of intrusion sensors and cameras.

Exercise A: Determining Point of Detection

Let's assume, for just this exercise that the licensee has integrated sensors and cameras so they can immediately assess any alarm via CCTV. Assume that there is an alarm station at the security desk in the facility with a monitor for assessing the alarms. For the following two sets of sequences, read through the list of events described below and determine the point (step) at which intrusion detection takes place.

- A1. A BMS sensor alarm signal is generated from the basement exterior maintenance door in the facility.
 - A2. Alarm signal is transmitted to security desk.
 - A3. Operator is alerted of an incoming alarm at the exterior maintenance door.
 - A4. Operator scans the CCTV images of alarming sensor for cause of alarm from the exterior maintenance door.
 - A5. In searching for cause of alarm, operator observes an unauthorized person opening the maintenance door and entering the basement.
 - A6. Operator radios other security personnel, identifying nature and location of intrusion.
 - A7. Security personnel interdicts intruder.
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- B1. A BMS sensor alarm signal is generated from the basement exterior maintenance door in the facility.
- B2. Alarm signal is transmitted to security desk.
- B3. Operator is alerted of an incoming alarm at the exterior maintenance door.
- B4. Operator is unable to assess alarm immediately because her 6-year old, who she is babysitting because her ex failed to pick up the child before her work shift began, is using the monitor to play Pac-Man. The 6-year old screams her bloody head off and refuses to allow the operator to switch the monitor back to its intended use, so the operator radios the roving patrol and instructs him to check out the exterior maintenance door, which is the code for the Basement exterior maintenance door. The roving patrol is currently in the visitor cafeteria and it takes him approximately 1 minute and 35 seconds to get to the exterior maintenance door.
- B5. The patrol arrives at the exterior maintenance door and finds nobody there and the door shut.
- B6. The patrol radios the operator and informs her that there is nobody in the area and the door is shut.
- B7. Patrol returns to cafeteria. Operator writes up alarm as a false alarm.

Exercise B: Interior Sensor and Camera Placement

Below is an example facility with two targets. The sensor and camera systems were installed as shown. The sensor detection envelopes shown represent the lab tested results and not the results of testing the sensors when in place. All lighting in the facility stays on in all rooms during normal business hours and dims to one light panel per room in off hours. There is a backup system but it can only run for 10 minutes before it shuts down and all power is lost.

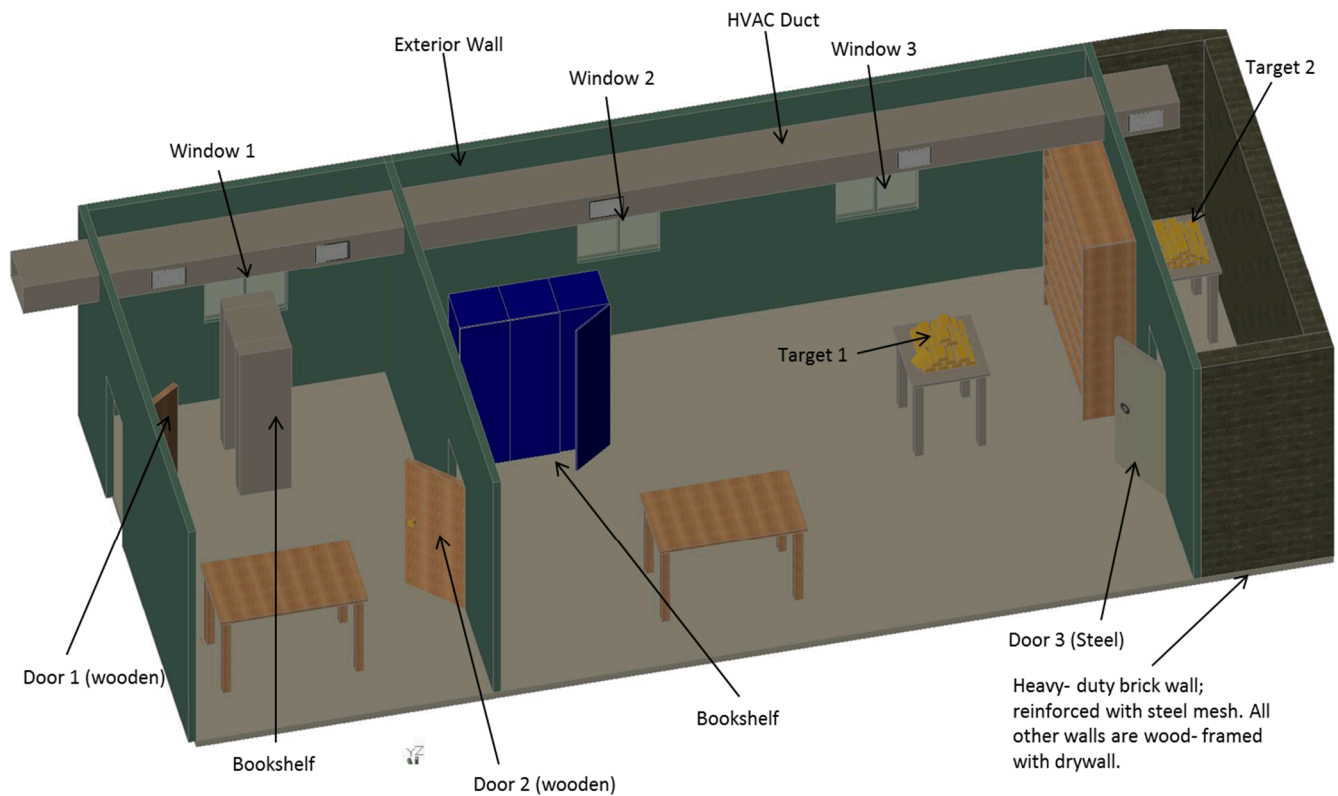


Figure 1: 3D layout of Licensee facility showing construction and target location.

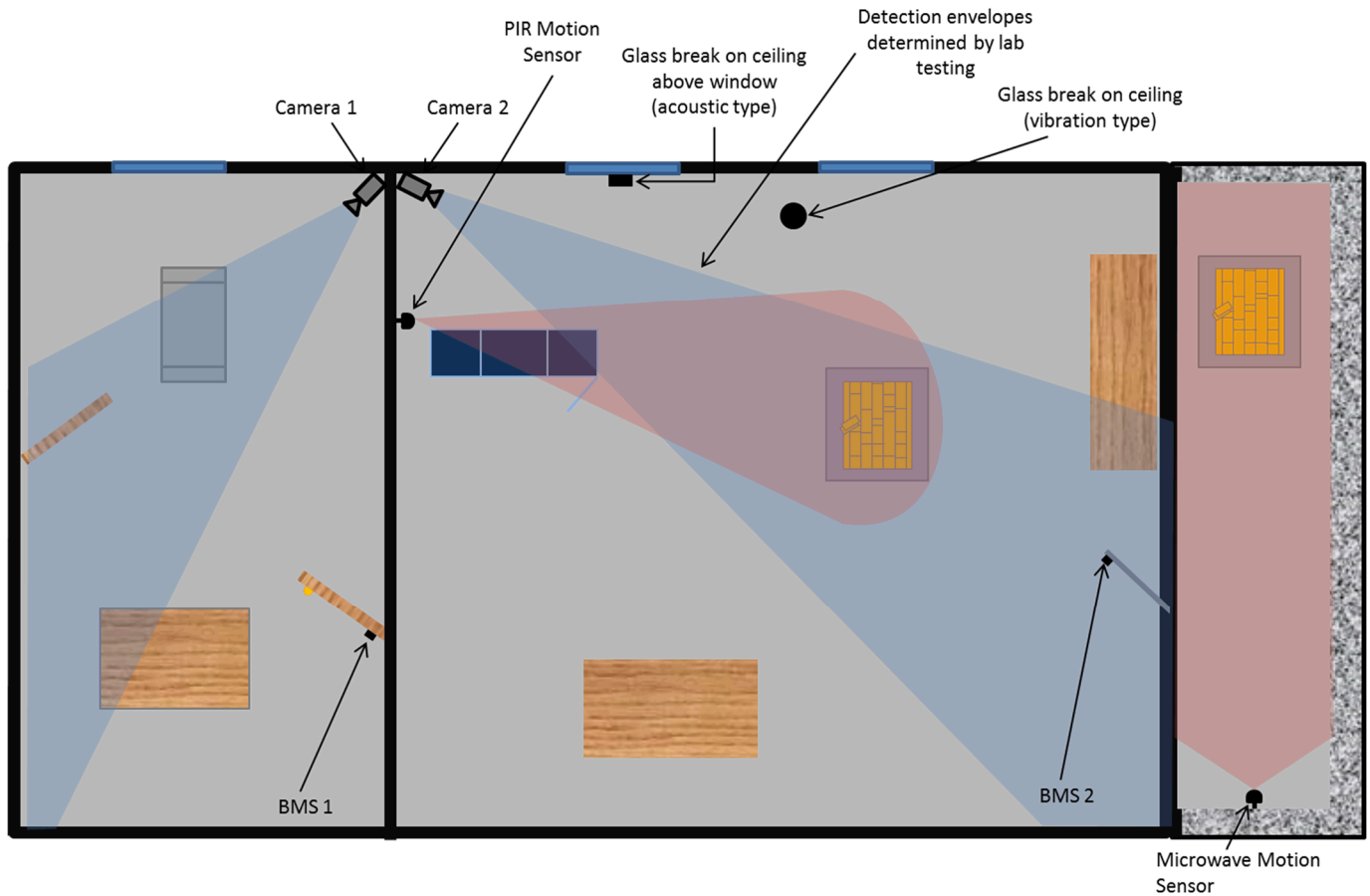


Figure 2: 2D layout of Licensee facility with sensors and video systems installed.

1. Examine Figure 1 and 2 above and find 4 **best practices** and 8 incorrect applications of the sensor and video systems installed in Figure 2. **NOTE:** Think about detection and assessment of the alarm.

Best Practices	Incorrect Application

- Now that you have determined the incorrect applications above in Figure 2 populate Figure 3 with the corrections. Markup Figure 3 with your design. Feel free to add additional sensors if you feel necessary.

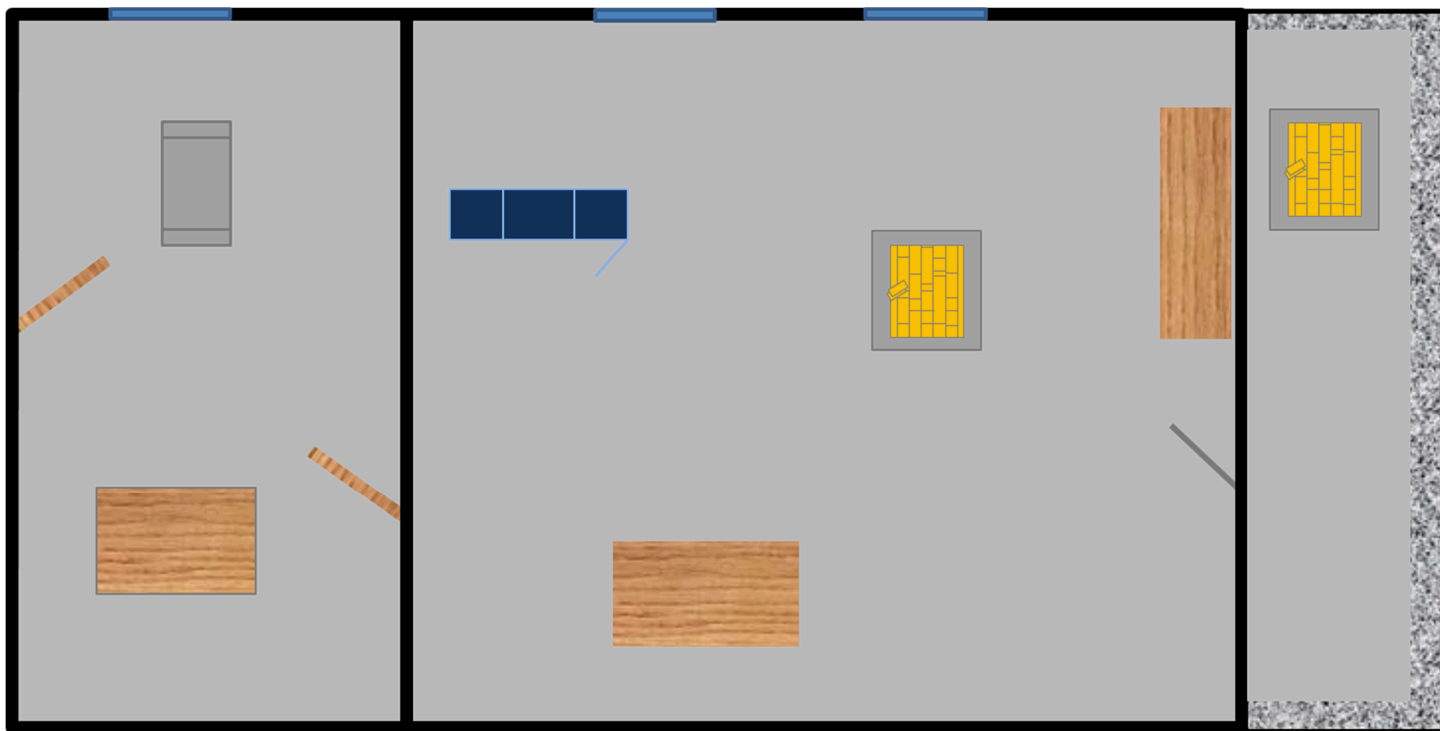


Figure 3: 2D layout of Licensee facility that needs sensor and video systems installed.

Application Considerations

1. Under what circumstances, would you recommend a dual-tech interior sensor?
2. Why would a facility not want to install acoustic glass-break sensor in an area with continuous background noise?
3. Once a sensor has been tested and characterized in a lab setting, why is it important to test the sensor's detection envelope in the real deployment at a licensee's facility?
4. Is a sensor effective if the intended radioactive materials target is outside of its detection envelope?
5. Can line-of-sight obstructions (large bookshelves, other furniture) between the intruder and the sensor be a problem?
6. Does it matter when the sensors and cameras are in access mode versus secure mode? Also what about the video recording system?