**Objective**

To create a decision support tool to analyze the strength of existing facilities that store nuclear assets. The tool will evaluate the current overall security of the site then optimize the facility's strength and respective cost.

**Methods**

Research remains a continuous process through literature review, interviews with subject matter experts, and library expeditions. This semester's focus was determining the relationships between each risk factor and developing strength models for each subset of risk factor variables. Once these equations were developed they are used to develop code for a decision support tool. A prototype has been developed in Visual Basic.

**Facility Input Tables (2 of 7)**

<table>
<thead>
<tr>
<th>Facility</th>
<th>Overall Facility Information</th>
<th>Zone 1</th>
<th>Zone 2</th>
<th>Zone 3</th>
<th>Zone 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Access Points</td>
<td>Total</td>
<td>Access Points</td>
<td>Total</td>
<td>Access Points</td>
</tr>
<tr>
<td></td>
<td>Security Personnel</td>
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<tr>
<td></td>
<td>Patrolling Guards</td>
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<td>Escort Personnel</td>
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<tr>
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<td>CAS</td>
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<td>CAS</td>
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</tr>
</tbody>
</table>

**Zone Classification Diagram**

- **Blue - Zone 1 (Controlled Area):** This zone consists of the exterior perimeter of the property, the first checkpoint for visitors. Lighting, fences, gates, walls, intrusion detection sensors, delay sensors, guards on patrol and posted at property-line access points.
- **Yellow - Zone 2 (Restricted Area):** This zone consists of the entrance to the building excluding the secure area. Locked doors, security guards, access control systems (for windows and doors), window bars, badge check, parcel inspection, turnstiles, full body scanners, escort personnel, emergency communications system (response), and 24/7 video surveillance.
- **Red - Zone 3 (Special Access Area):** This zone consists of the secure area within the building containing the nuclear assets. Heightened security personnel, access control devices, 24/7 video surveillance, and control access panels.

**Zone 1 Strength Algorithm Outputs**

**Risk Factor Strengths for Mock Facility Data**

**Total Zone 1 Strength for Mock Facilities**

**Decision Support Tool Process Map**

- **User Inputs**
- **Find Strengths of Individual Risk Factors**
- **Use Individual Risk Factor Strengths to find each Zone's Strength**
- **Use Zone Strengths to find Total Facility Strength**
- **Use Linear Programming Model to Optimize Strength and Cost**
- **Use Optimal Values to Evaluate Insider Threat and Adversary Resistance**