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 based on various inputs and designate a strength rating along with possible areas of improvement.

Projected Use

Our decision support tool has a wide range of uses, including: rating the strength of all types of high-risk facilities, determining where facilities are weak, and optimizing different facility areas to get desired strength and budget.

User Interface

Administrator

In our decision support tool, the administrator would allow to input desired strength rating for the facility. Also, the user would be able to input required number of guards, response time, access point, guard towers for each zone which would correspond to the desired strength rating. These values will form a basis in our algorithm to obtain current strength values for each risk factor and also for overall facility. The role of an administrator is assumed to be played by the client who wants to assess their current facility with respect to the strength they actually desire in the facility.

Main Code

VB for MS Excel was used as platform for our decision support tool. The user interface was created considering human factors principles for easy accessibility. Different pages exist for different zones and within each zone; information about each risk factor can be entered.

Facility Schematic

This schematic represents the components of strength within a nuclear facility that our decision support tool analyzes. The zone diagram includes the interior perimeter detection of the facility, the delay system of the access points, and the locations of concentrated security personnel.

Each component is integrated into our model as an individual variable that affects the appropriate strength equation. The values of these variables vary according to the details of the facility system that is currently in place at the nuclear site.

Mock Facilities Comparison

The above figures show the optimization part of the tool. The visual representation of relative increase and decrease in strength of risk factors allows for users to be aware of their decisions while changing specific values for optimization. At any point, the user has full capability to go back and check information entered for each zones initially as shown in figure 3.