

## Immediate Need

The New York City Department of Parks & Recreation noted the difficulty of placing cameras in parks to monitor pedestrian flow and activities. Sandia National Labs could offer assistance with this issue by utilizing the OpShed™ software to enable Parks and Recreation the ability to test potential camera views before placing them in a park. This work would require a 3D model of the parks of interest. These 3D models might currently exist, or sources of information such as topographical maps and satellite images could be used to rapidly create a 3D model.

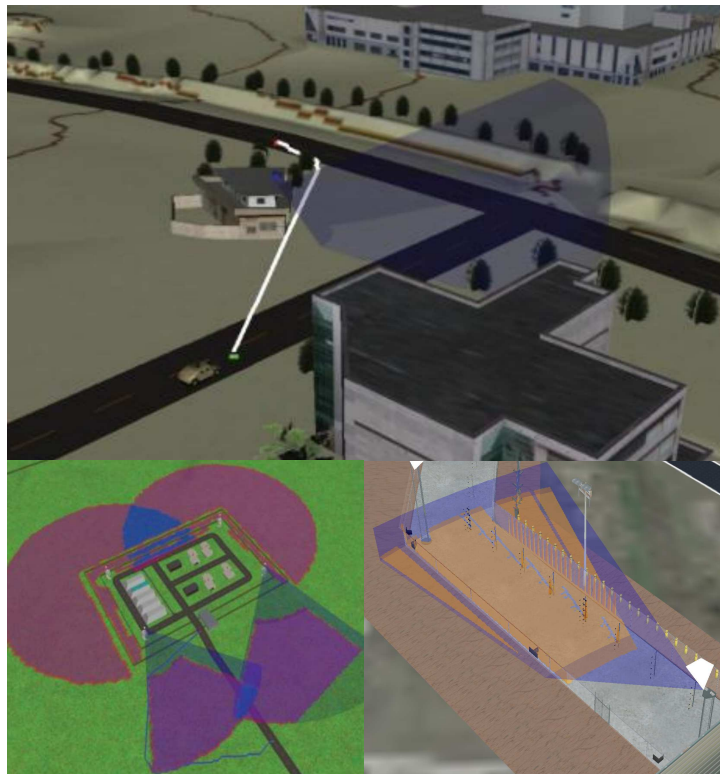
## OpShed™ Software

OpShed™ is a Sandia National Laboratories software tool developed to assist in planning the locations of cameras within the context of physical security. OpShed™ takes a 3D terrain and gives the user a variety of tools for placing cameras at user defined points.

The OpShed™ tool suite provides several tools, including finding optimal paths in a 3D terrain environment, creating easily understandable visuals for analysts and decision makers, and placing cameras. It allows simulation of the environment with simulated sensors, vehicles, people, and other objects to understand operations and areas of sensed coverage, or viewsheds. OpShed™ maps high and low areas of coverage and calculates sensor placement for maximum coverage and performance, all while minimizing time and cost to the user and providing tangible evidence of a science and engineering approach to camera placement.

OpShed™ also provides an interactive layout of sensors that allows users to evaluate the performance of proposed systems to maximize sensor coverage and performance. OpShed™ can model a variety of camera field of views and generate simulated images from cameras. Camera positions can be modified quickly, generating multiple scenarios in minutes and providing different setup options in minimal time.

OpShed™ is built upon the Umbra software framework, which gives it the ability to use real-time data and manage live, virtual, and constructive (LVC) components in a single simulation. These capabilities allow users to validate site simulation models by comparing live field data to a corresponding simulation and evaluate for accuracy and effectiveness.



## Future Development

OpShed™ is an easily extendable tool, and several modifications could be made so as to offer benefits to municipal agencies in New York City. Sandia National Labs proposes the development of a camera placement optimization algorithm that integrates statistics such as crime rates or traffic accidents into the OpShed™ program. This new optimization algorithm would enable municipal agencies to automatically place a limited number of cameras in the most beneficial location based on their particular need set. The integration of relevant statistics could be performed by CUSP, and could lay the groundwork for a larger city modeling tool.

## Contact Information

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