Transportation Security
Strategy Simulator Model

To protect the nation's transportation sector, the Transportation Security Administration (TSA) screens all commercial aviation passengers and their luggage for potentially dangerous items. LANL will model the complexities of the system and develop tools to streamline and improve the efficiency of the system as a whole.

Left: *Body x-rays, long lines and frustrated passengers are some of the scenes to be found in airports around the world.*

Background

The Transportation Security Administration seeks a model that captures the dynamics of human and technological interactions at aviation security checkpoints that ultimately will lead to improvements in system planning, policy development, collaboration, and problem solving. The goal is profoundly improved performance in our nation's aviation security.

Capabilities

We have developed a robust, user-friendly, real-time interactive model based on system dynamics modeling that demonstrates the characteristics, sensitivity and relative importance of relationships among interacting elements that impact security and detection capabilities at the security checkpoint. The model is based on an initial statistical analysis of the influencing factors among the 400 different operational, passenger experience, and security personnel metrics that TSA has collected plus interviews with subject matter experts.

Future Applications

This prototype model can help TSA understand how the various data elements they collect interact with each other and ultimately impact the effectiveness and efficiency of the aviation security checkpoint. This knowledge base can be extended to maritime and border security operations.

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Right: Causal loops model the morale of TSA operators—an example of the many positive and negative feedbacks in our system dynamics model.

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