

The Center for Cyber Defenders

Expanding Computer Security Knowledge



MACCS Animations

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Problem Statement:

Scientists require software tools to help them visualize and assess the impact of radiological events and disasters. MELCOR Accident Consequence Code System (MACCS) Animations will assist scientists who are analyzing the safety and potential risks from operating a facility and planning responses to radiological incidents.

Objective:

The goal of this project is to create a Java based application with the ability to animate and create videos of radiation plumes moving on a map.

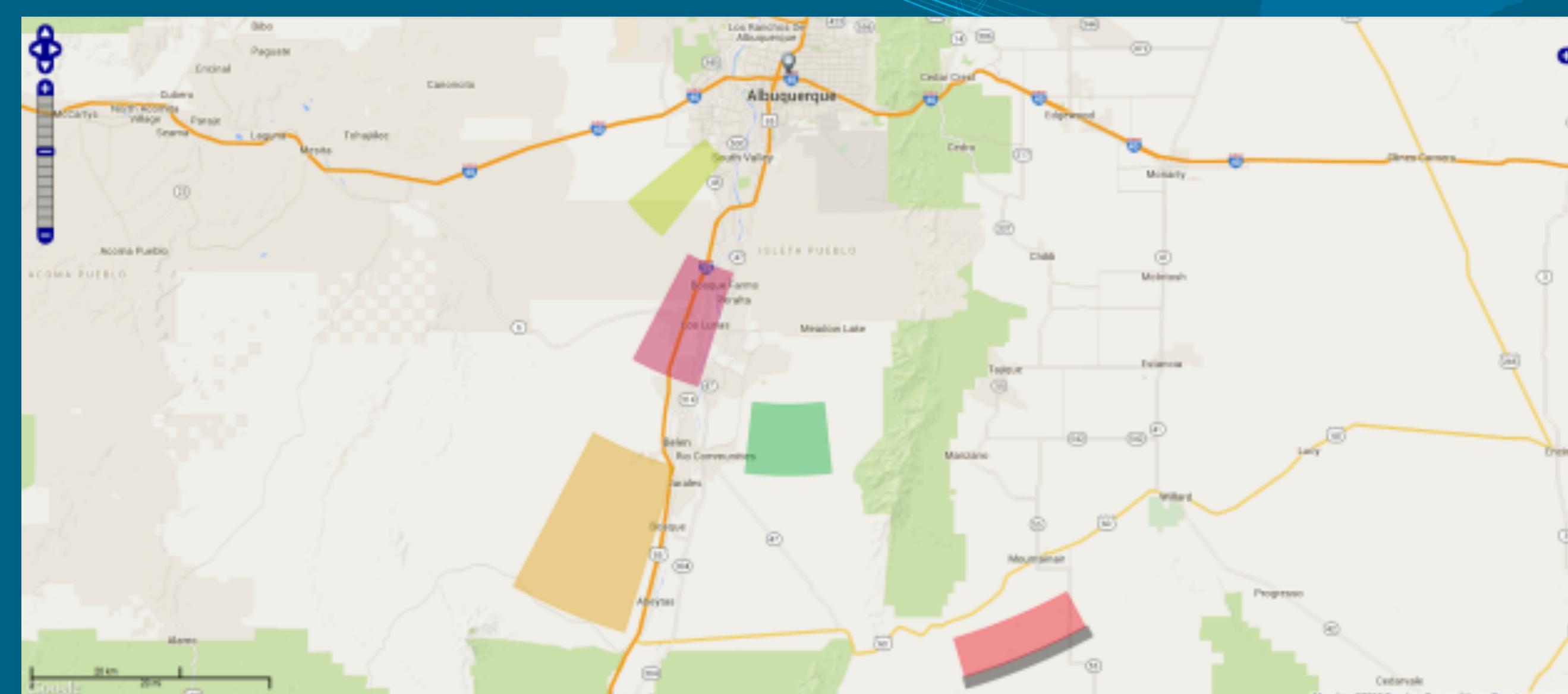
Major Software Components:

- Open Layers JavaScript API
- WebView JavaFX browser component

Major Application Features:

- Google Maps Display
- Radiation Plume Rendering
- Radial Spatial Grid Rendering
- Multiple Speed Plume Animation
- Animation Controls
- Variable Interval Data Interpolation
- Variable Length Video Creation
- Screen Capture Ability
- Multiple Thumb Slider for Video and Animation Control
- Multiple Aspect Ratio Map Views
- Automatic Map Zooming
- Drag and Drop File Loading
- Map Layer Visibility Controls

Results:



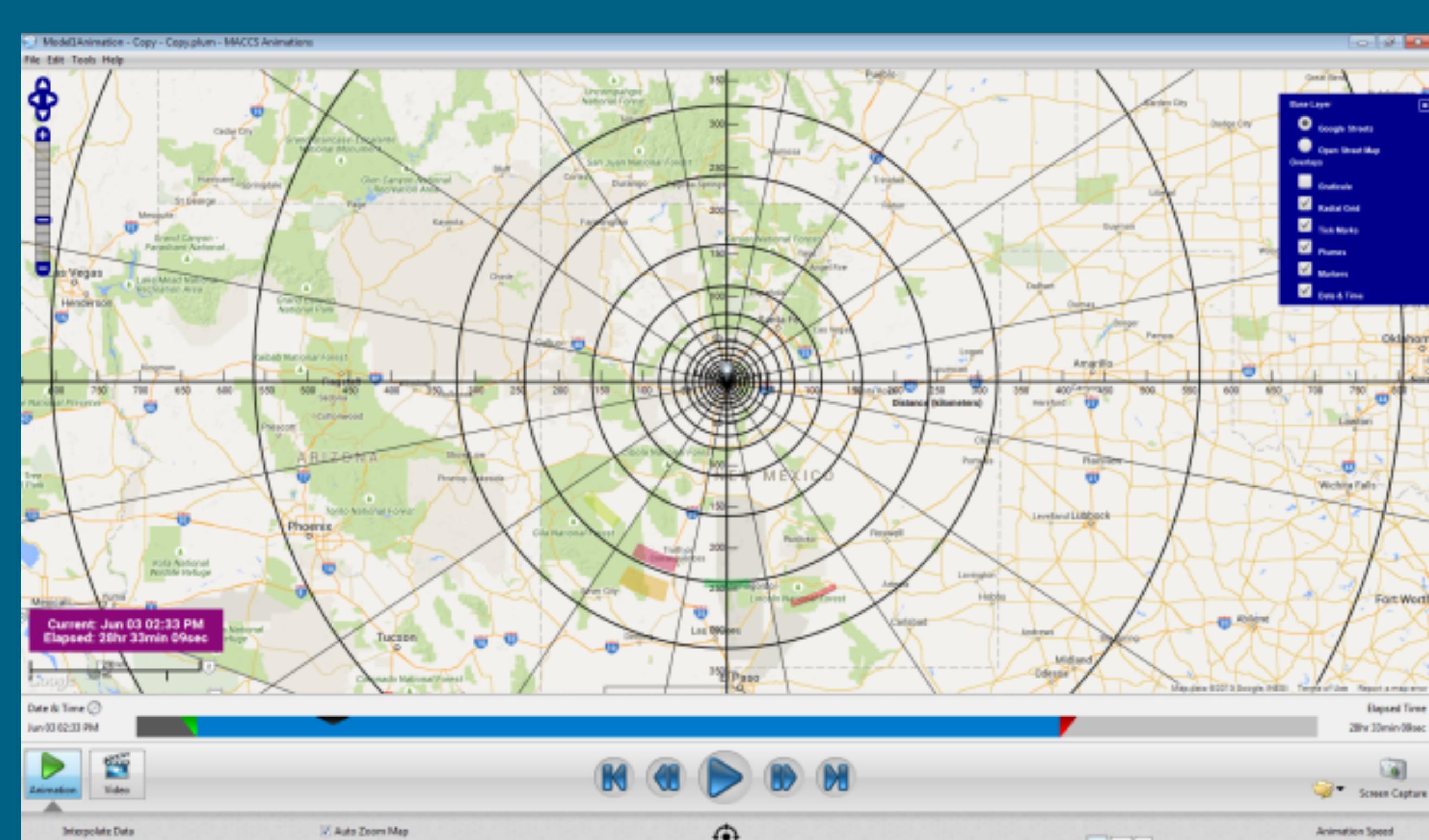
Radiation Plumes Rendered on Map



Animation Controls



Video Controls



Application Showing Radial Spatial Grid

Impact and Benefits:

The first version of MACCS Animations will be released shortly. MACCS Animations will help scientists visualize the movement of radiation plumes, and create videos to better facilitate emergency preparedness for potential accidents involving atmospheric releases of nuclear materials.