

# Rapid Response Disaster Simulation Platform



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# 1995 Workshop in Beijing

**"Towards Harnessing  
the Communication  
Revolution: A Time for  
Global Disaster  
Network."**

VIII Pacific Science  
Congress

Co-sponsored by:

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World Seismic Safety Initiative

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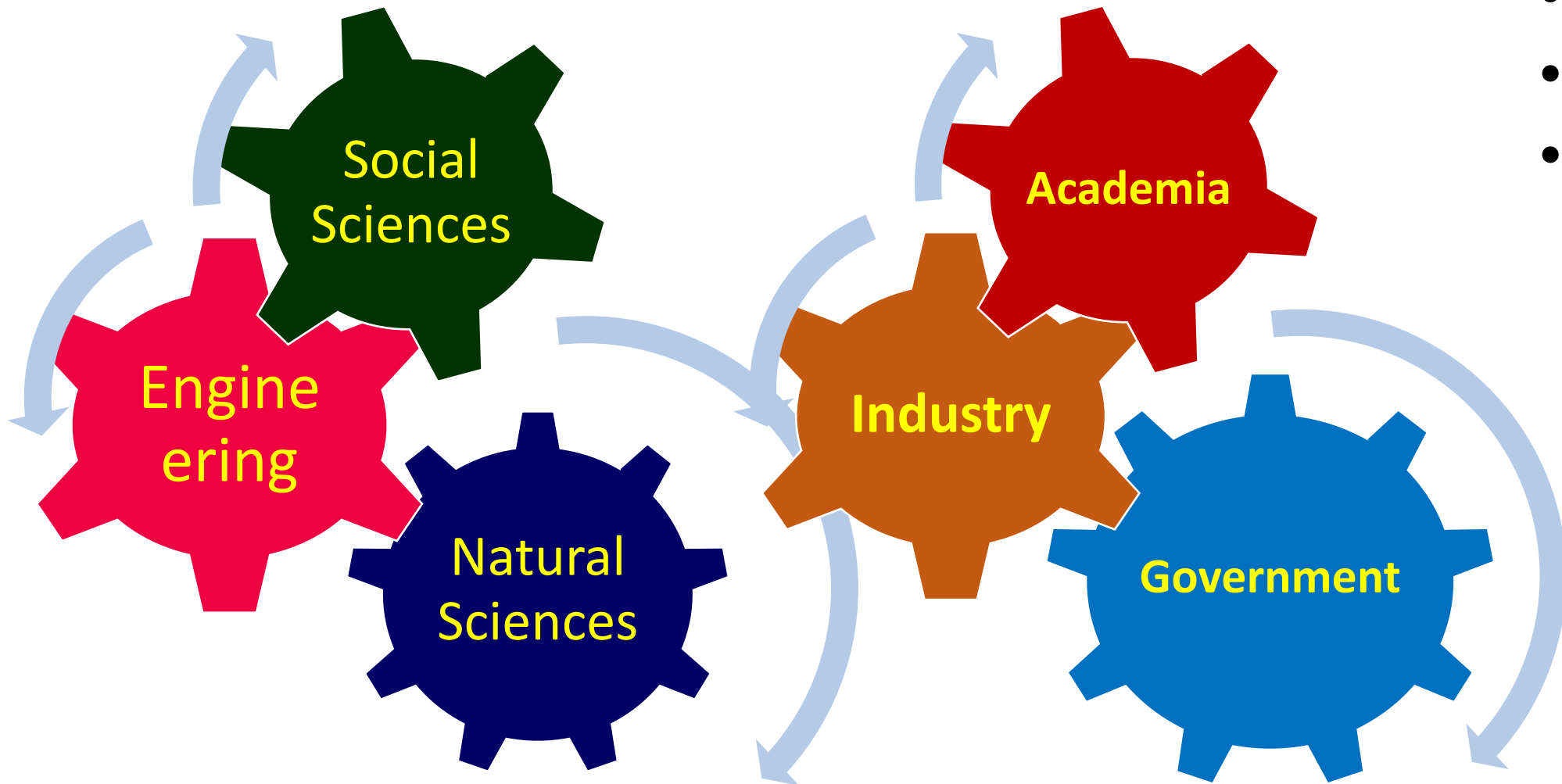
*Influencing* governments and key decision makers  
*Strengthening* risk reduction infrastructure  
*Encouraging* good seismic safety practices



June, 1995, Beijing, China



# ADERSIM: Advanced Disaster, Emergency and Rapid-response Simulation



- Research
- Training
- Supporting Real Time Disaster Response

# ADERSIM Simulation Themes



Hazard and Incident simulations

Disaster Management Operations simulations

# ADERSIM: Selected Technologies

**Training and Rapid Response**



**Research and Simulation**



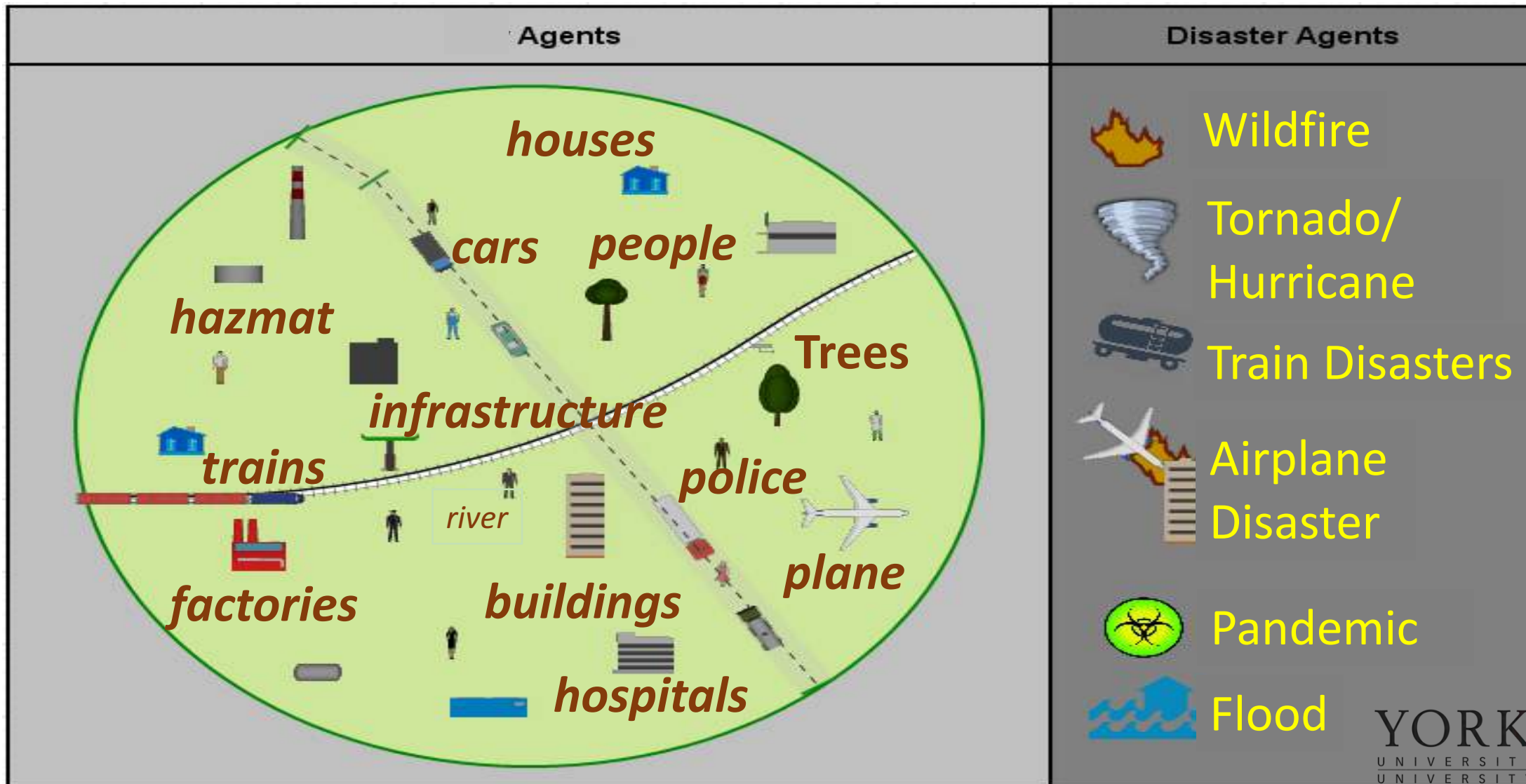
**Augmented Reality**



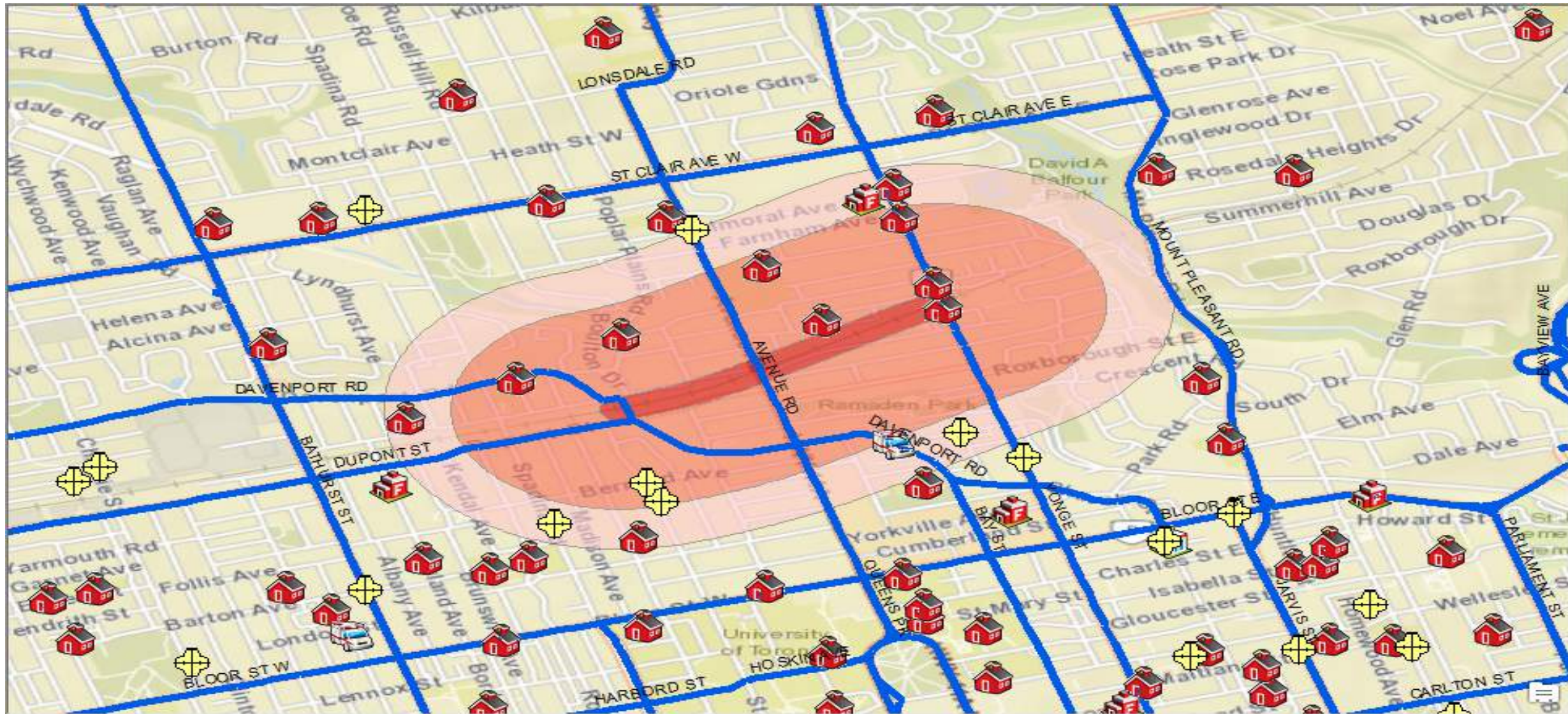
**GIS and Spatial Modelling**



# ADERSIM Primary Simulation Method: Agent-Based Simulation

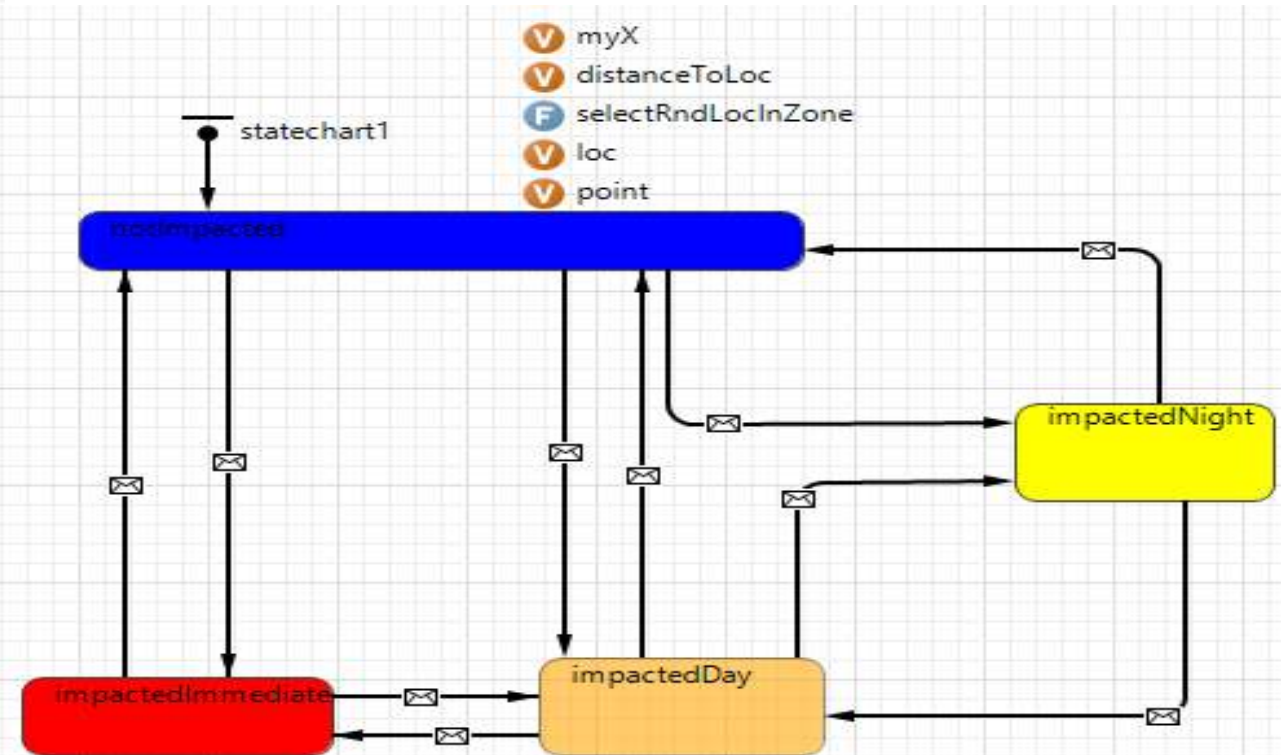
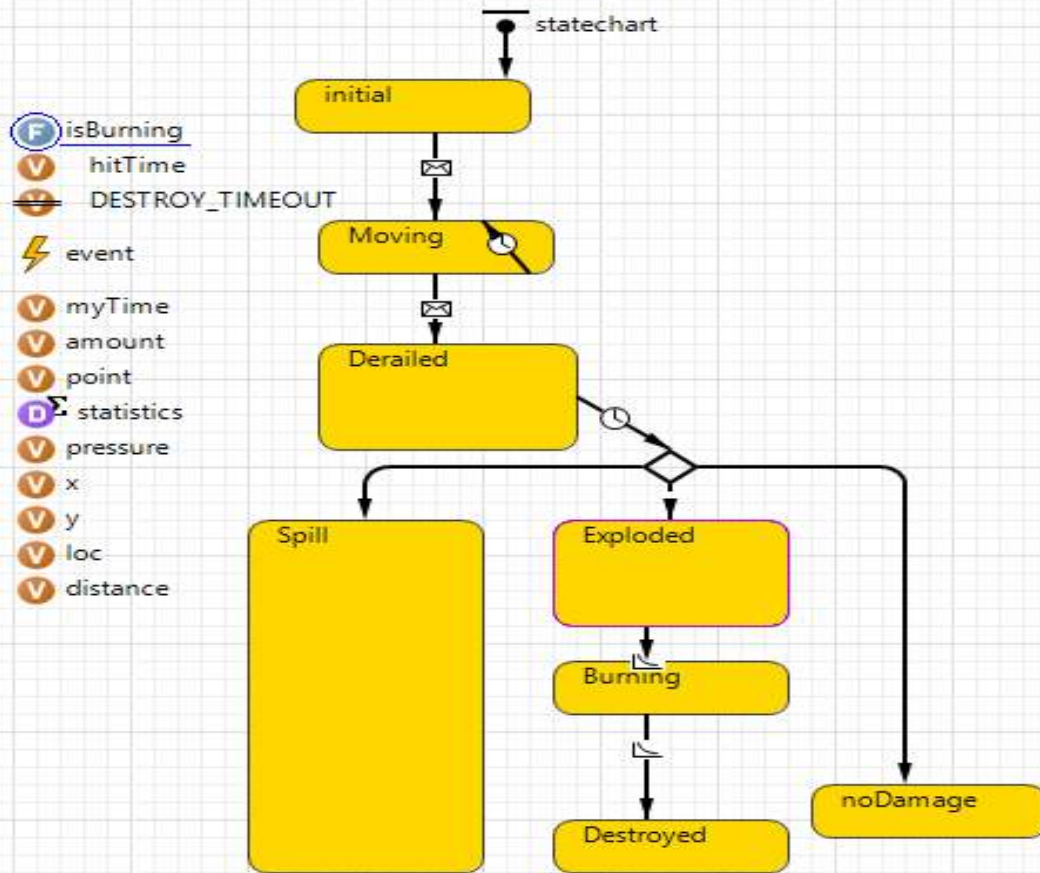


# GIS-Based Agent-Based Disaster Simulations



United Nations International Conference on Space-based Technologies for Disaster Risk Reduction  
“Enhancing Disaster Preparedness for Effective Emergency Response” 24 to 26 October 2018, Beijing, China

# Agents' Behaviors Behaviour



Train Agent Behavior

Person agent Behavior





# Tornado Simulation

Train Derailment - AnyLogic

Home Layers Scenarios Parameters Simulations Outputs Street View Camera View Tools

Tornado Train Derailment Plane Crash Fire Pandemic Evacuation

- Select the touch down point on the map  
Add point
- Select the ending point  
Add point Clear Points
- Load tornado agent  
 Tornado 1
- Define parameters  
Tornado Scale (Fjita) 0 4 5  
Tornado Width 0 800 1,000
- Select layers to be considered in the simulation

Layers	Number of Agents
<input checked="" type="checkbox"/> Population	3,845
<input type="checkbox"/> Shopping Malls	0
<input checked="" type="checkbox"/> Schools	588
<input type="checkbox"/> Police	0
<input checked="" type="checkbox"/> Fire stations	84
<input type="checkbox"/> Ambulance	0
<input type="checkbox"/> Hospitals	0
<input type="checkbox"/> Trees	0
<input type="checkbox"/> Traffic Lights	0
<input type="checkbox"/> Cameras	0
<input type="checkbox"/> Airports	0

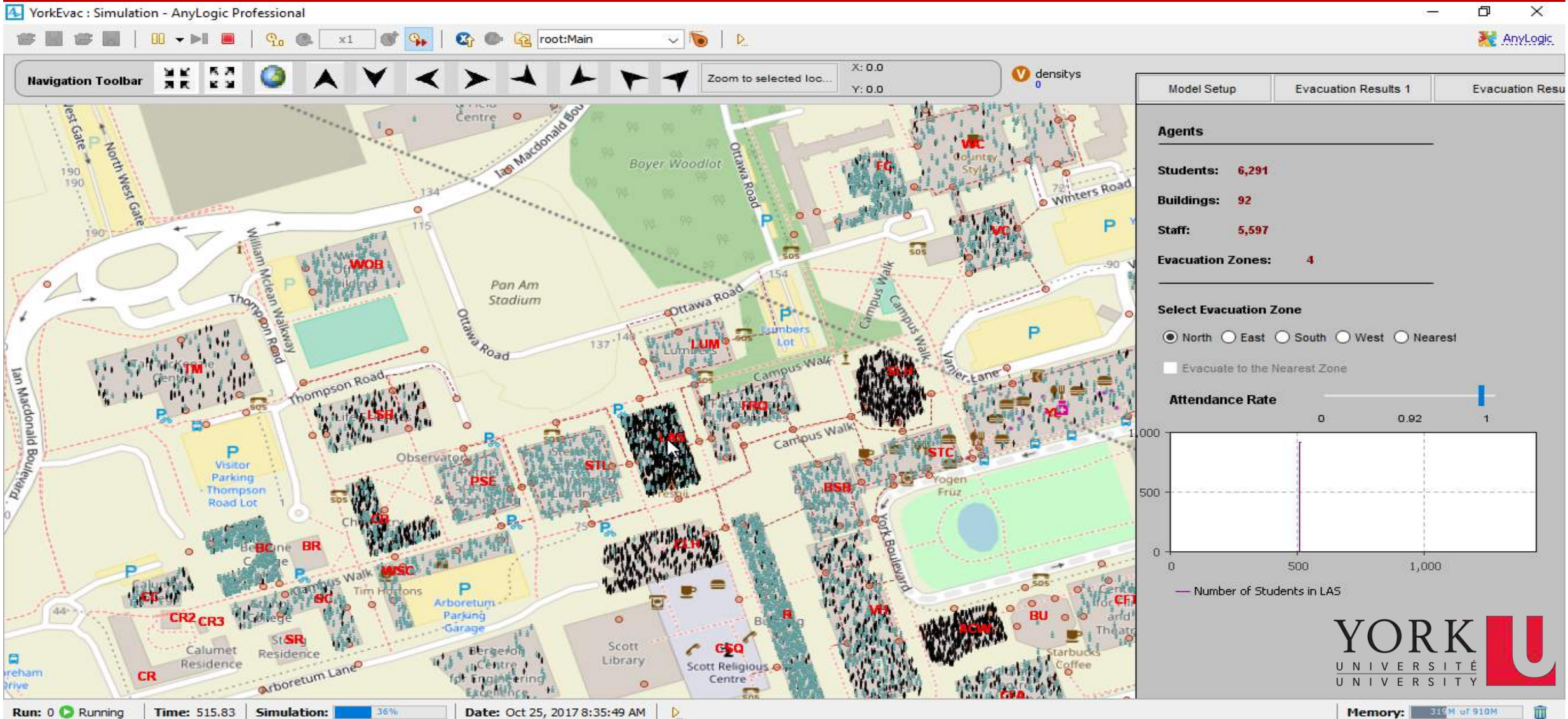
6. Run the scenario  
Run

7. View graphs

YORK UNIVERSITY

Run: 0 Paused Time: 50.00 Simulation: Stop time not set EPS: 0 Memory: 106M of 910M 8.2 sec

# Mass Evacuation Simulation

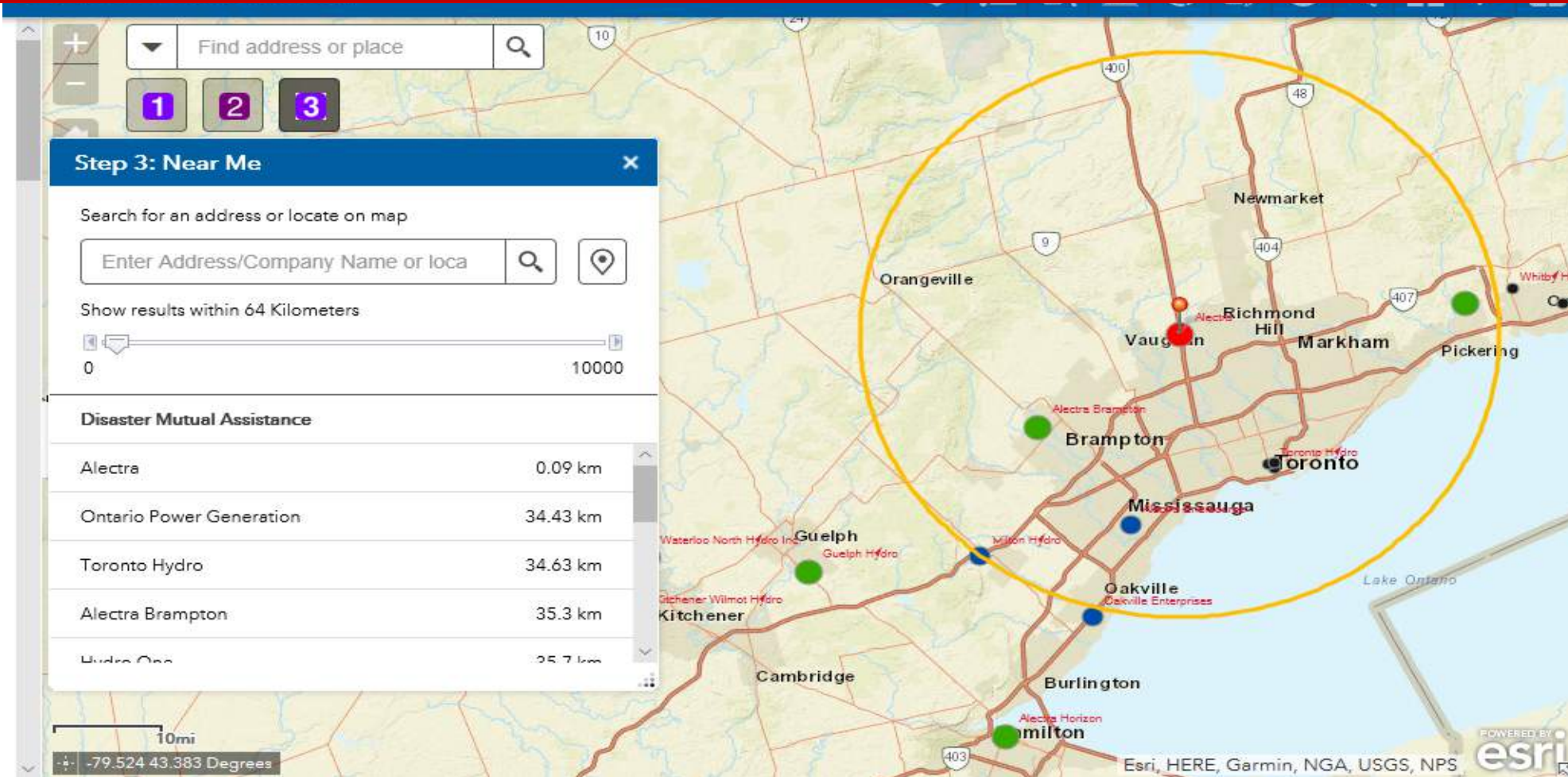


# Disaster Mutual Assistance Simulation Electricity

Reducing the power outage restoration period

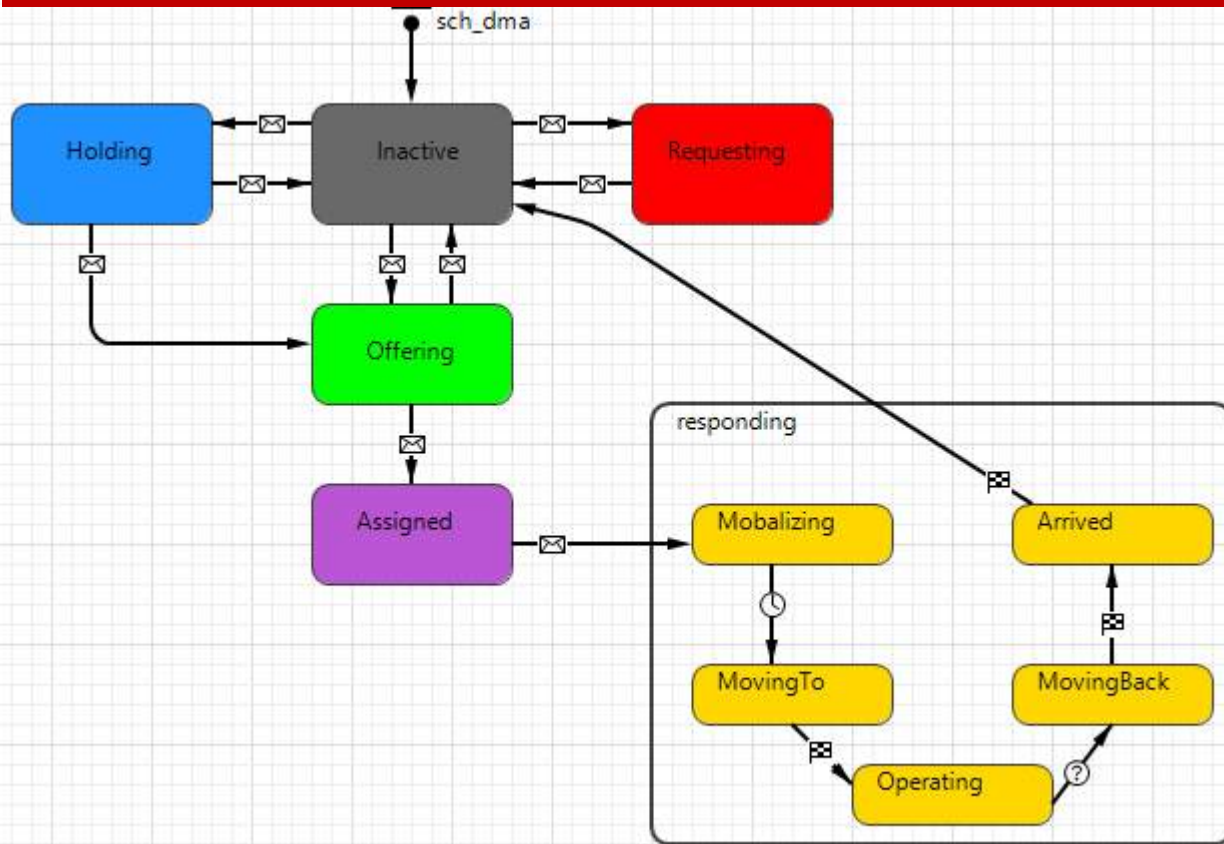


# DISASTER MUTUAL AID SIMULATION : ARCGIS ONLINE COMPONENT



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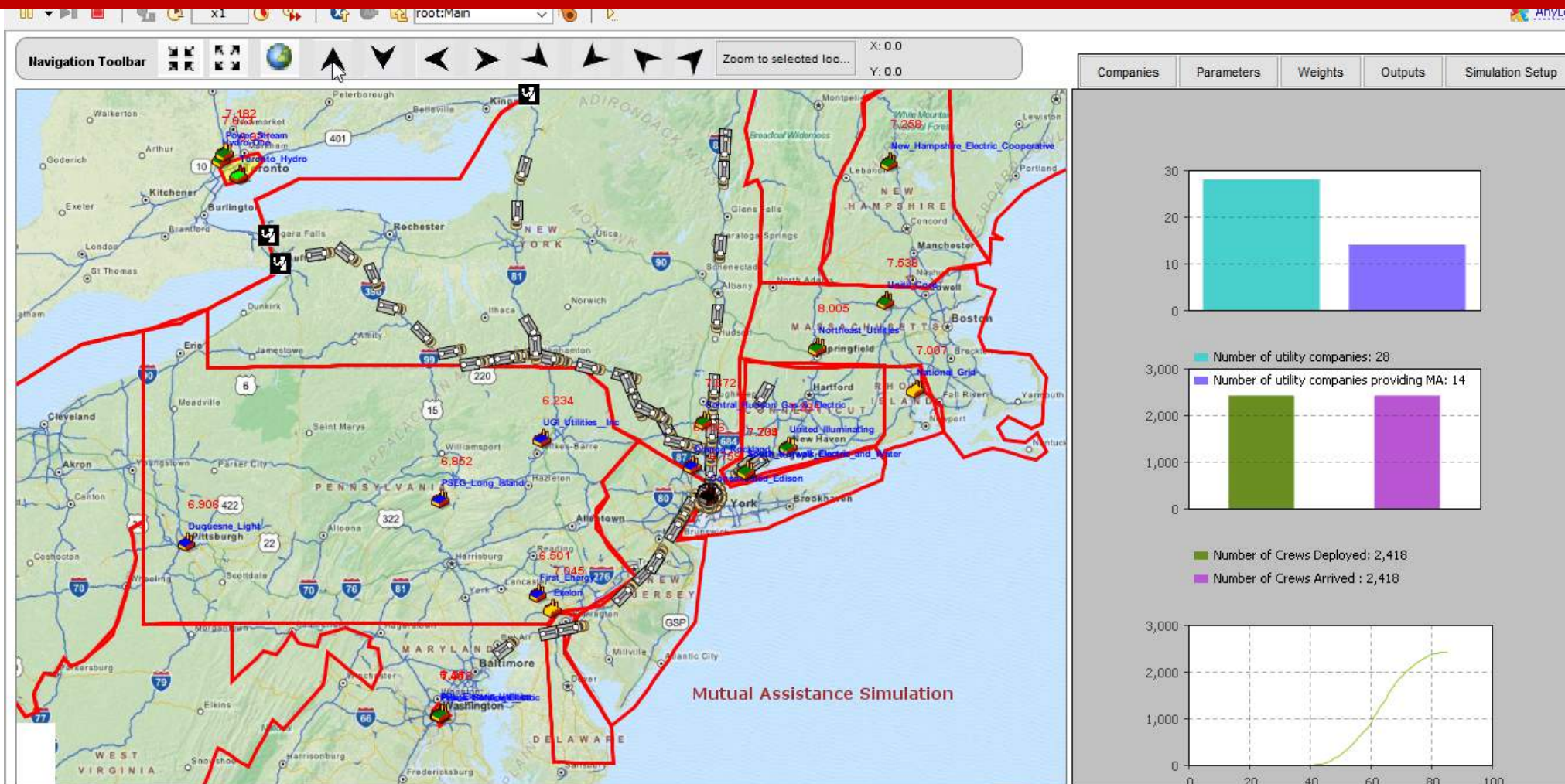
# DISASTER MUTUAL AID SIMULATION : AGENT-BASED SIMULATION COMPONENT



Mutual Aid Simulation

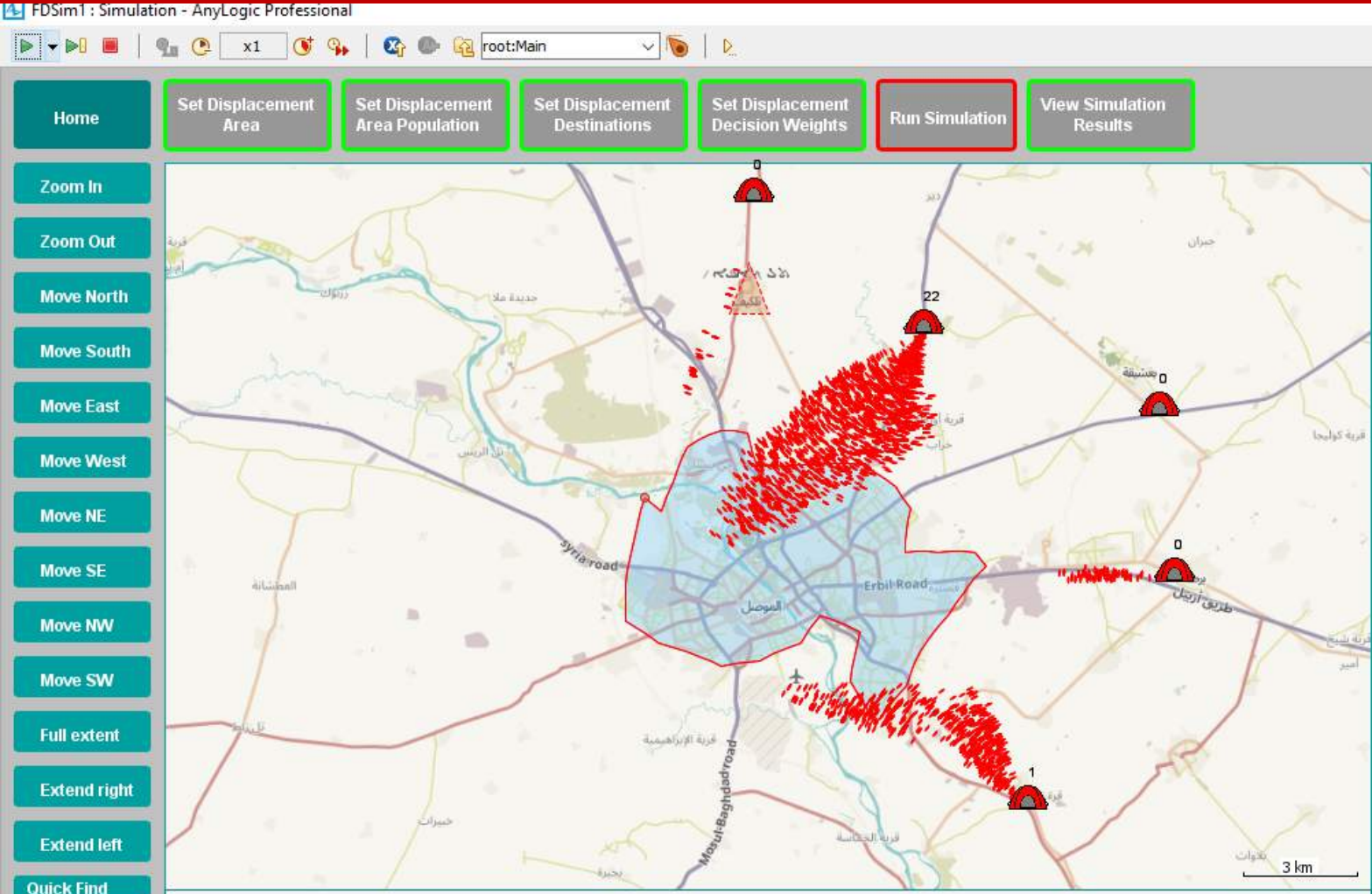


# DISASTER MUTUAL AID SIMULATION : AGENT-BASED SIMULATION COMPONENT



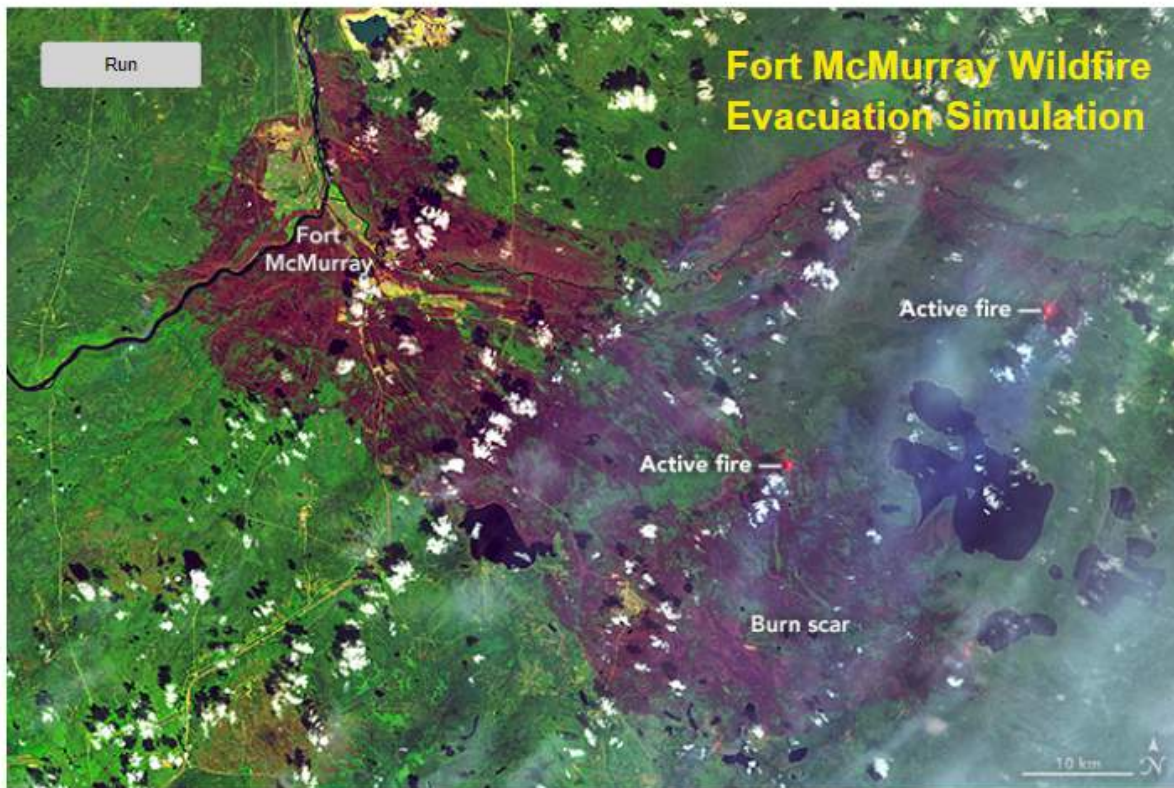
# Complex Emergencies: Forced displacement Simulation

## Humanitarian Response



# Wildfire Evacuation Simulation

Fort McMurray Evacuation: Simulation - AnyLogic Professional

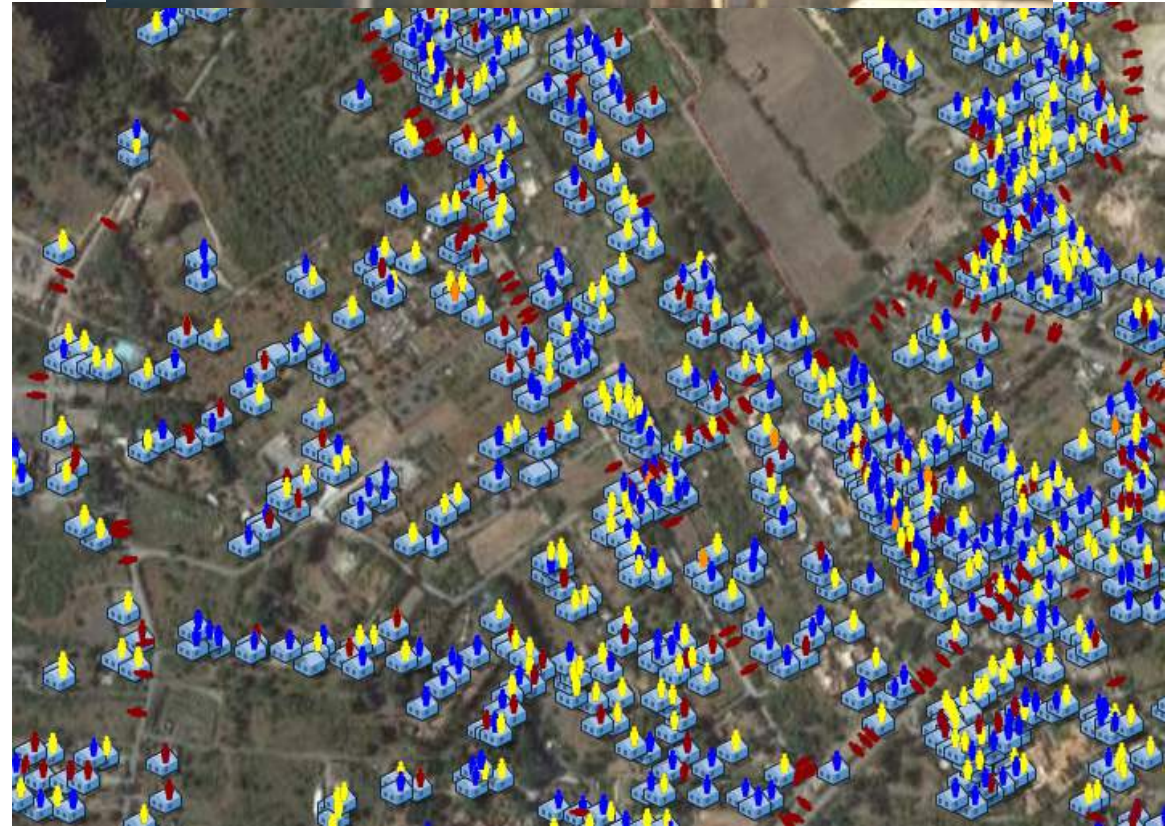
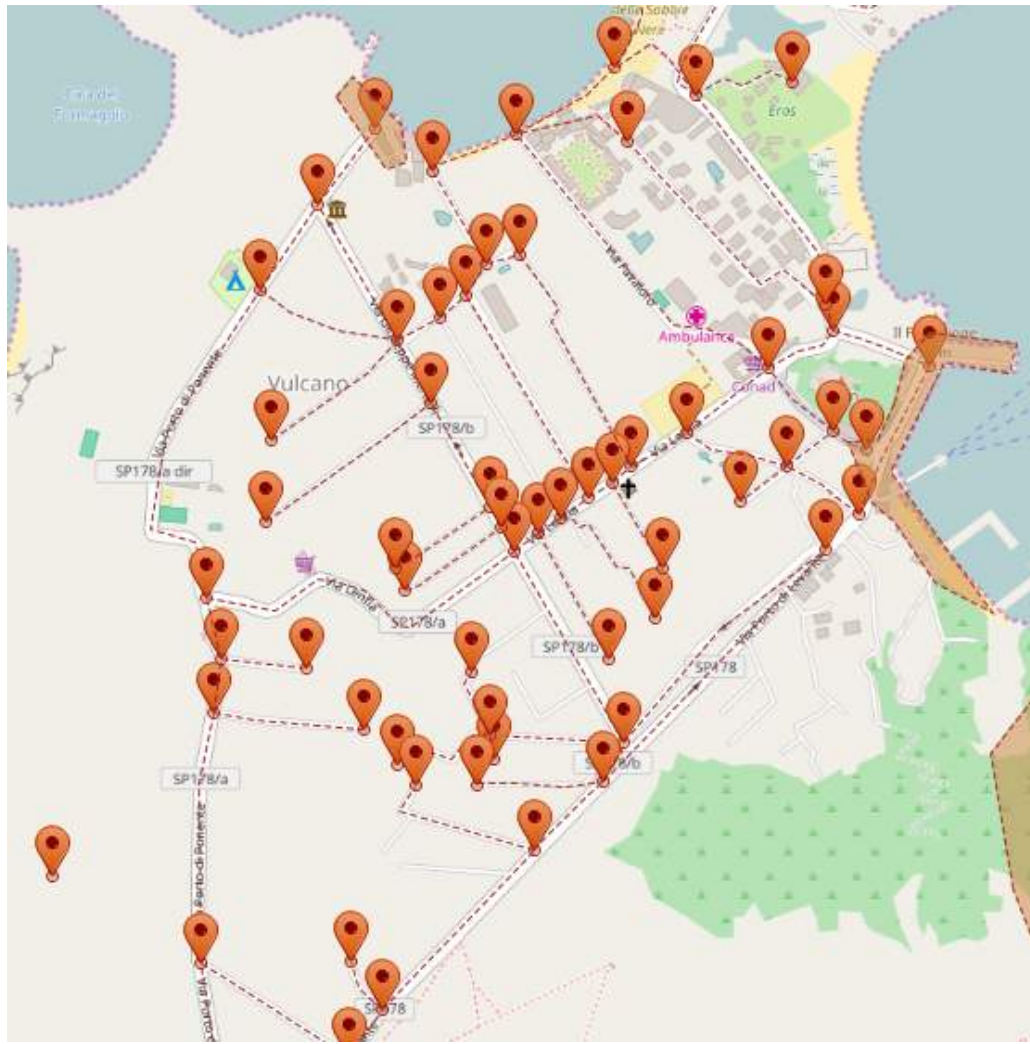


Fort McMurray  
Wildfire  
Evacuation  
Simulation





# Volcano Evacuation Simulation: Vulcano Italy



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# Plane Crash Simulation

## SanFranciscoAirportCrash - Transportation & Logistics



828 runs

LIKE: 1

DISLIKE: 0

Added by [Ali Asgary](#)

Application area: Disaster Management, Disaster Simulation, Transportation Disaster,

Simulation method: Agent Based

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▶ **Run** the model

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### Bass Diffusion

DRambau

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### Callaway Train Crash Simulation

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### July 6, 2013, Train Disaster Simulation

Lac Megantic Train Derailment

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### Moore Tornado Simulation

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