A Virtual Environment for Resilient Infrastructure Modeling and Design

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requirements for meaningful critical infrastructure (CI) simulation and analysis

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  - it has to behave like a real system
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- sensitivity of real data
  - don't want to reveal vulnerabilities

inability to share realistic models and data is hampering R&D on resilient CI systems

- no benchmarks for comparison
  - standard data sets as model inputs
  - standard functional models
  - canonical examples of resilience or brittleness
  - algorithm performance
- each study is a one-time result
- can’t teach it

- possible solution: “fictitious, yet realistic”

www.chds.us/?dystopia/overview

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Dystopia: Where Bad Things Happen

A fictional world created for homeland defense and security educational exercises

Dystopia is a rich detailed fictional world that is continually being developed and extended with people and places for the purpose of supporting strategic planning and functional exercises and educational simulations for homeland defense and security. Dystopia currently contains two large urban populations; Cape Hazard is a major port and has a population of more than 287,000. Grim city is a smaller urban environment with approximately 32,000 people residing there. The two cities are separated by a regional boundary that can serve a county line, state line or national border, depending on the requirements of the scenario. The environment has a major international airport as well as two separate Department of Defense facilities - a fully functional army base located in Grim City and a National Guard training base located in Cape Hazard. Dystopia has a fully developed infrastructure that includes power, water, transportation, telcom and oil/gas assets to enable educational scenarios that address Critical Infrastructure issues and challenges. The port facility is built to cover 200 miles of open water to support maritime security and interdiction exercises.

Dystopia itself is a standalone product. It is a collection of geospecific and meta data that creates a robust, deep virtual environment in which exercises, games and scenarios can be created. This collection of data includes spatial information, 2D map products, and a database of metadata about the people and places located in this world. Dystopia, by itself, is not a game or exercise - instead, it provides a context for those types of learning activities. It must be embedded into an application or interface that contains game logic or exercise rules. It also can be used for tabletop or other live exercises that do not use software, but impose rules explicitly and use the electronic viewing and searching products of Dystopia for efficiency.


Searchable map of Dystopia features and infrastructure

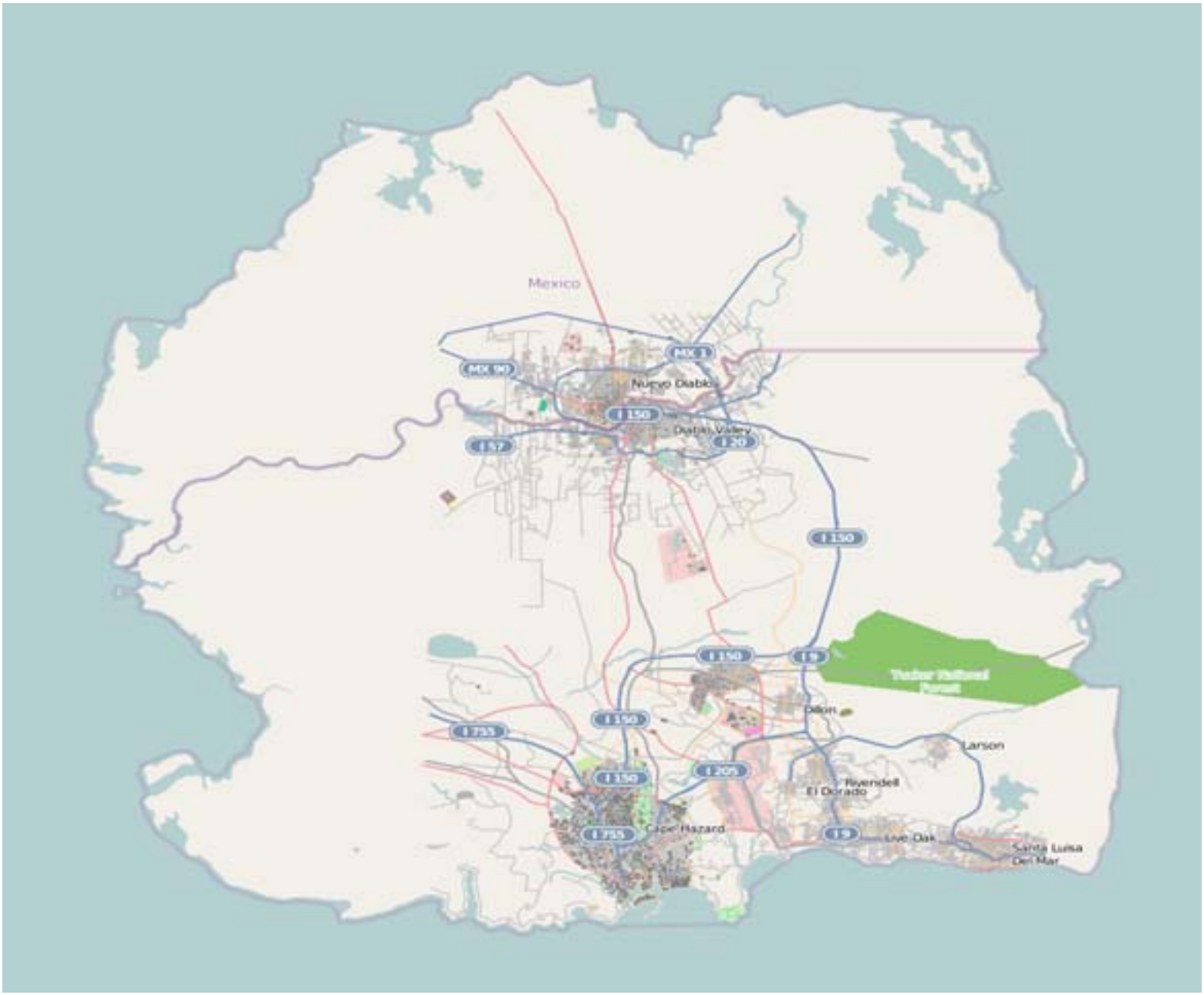

Printable map case


Demographics and descriptions of Cape Hazard and Grim City


Character biographies for state and local government officials


A history of Cape Hazard

FEMA


Mexico
MX 1
MX 90
Nuevo Diablo
I 150
Diablo Valley
I 80
I 87
I 150
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I 5
Tudor Hollow Forest
Dillon
I 150
I 755
Larson
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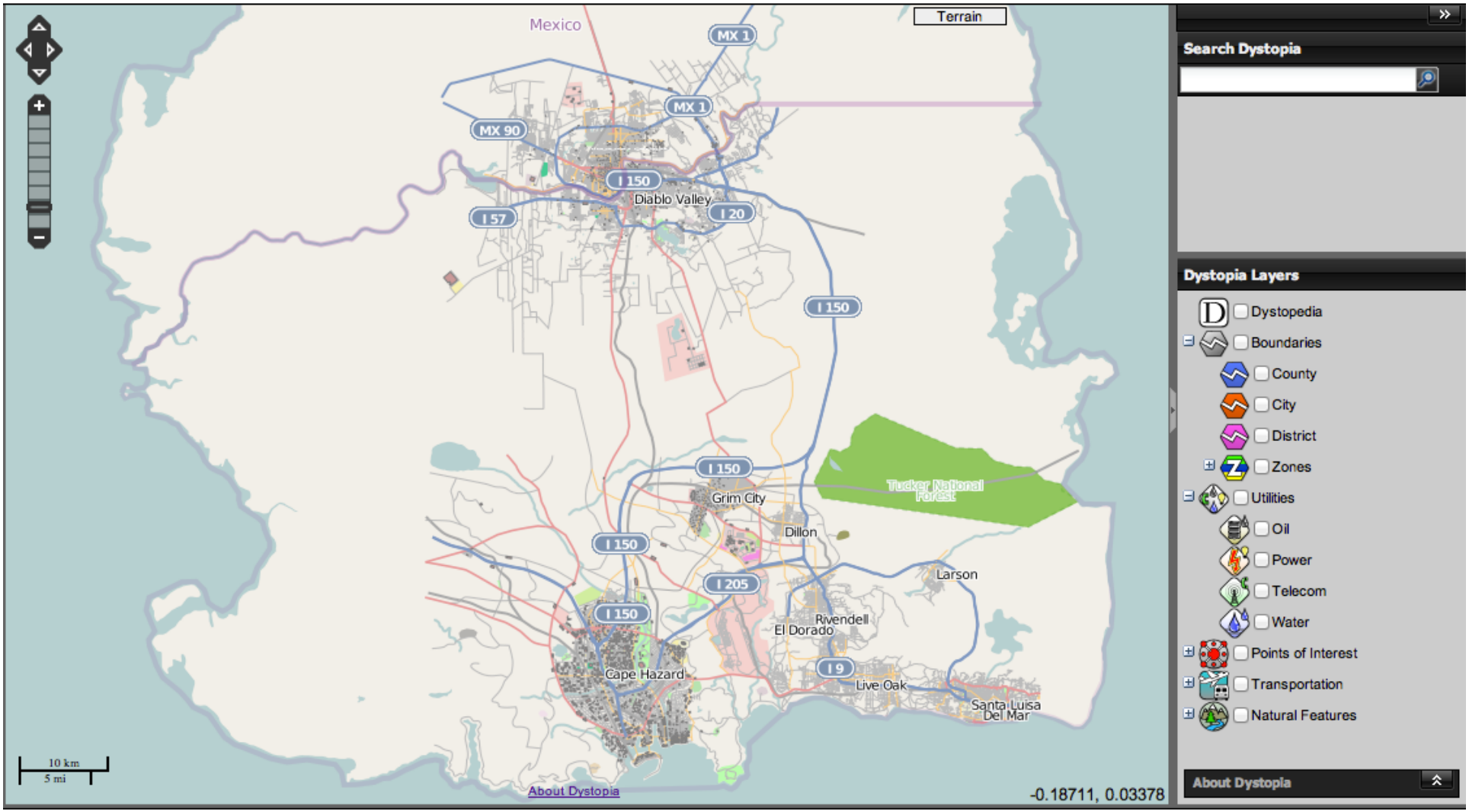
I 205
Ryendell
El Dorado
Cape Hazard
I 755
I 5
Live Oak
Santa Luisa
Del Mar


Mexico
Terrain
MX 1
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Diablo Valley
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I 20
I 150
I 150
Grim City
Tucker National Forest
Dillon
I 150
I 205
Larson
I 150
Rivendell
El Dorado
I 9
Cape Hazard
Live Oak
Santa Luisa
Del Mar
10 km
5 mi
About Dystopia
-0.18711, 0.03378
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Oil
Power
Telecom
Water
Points of Interest
Transportation
Natural Features
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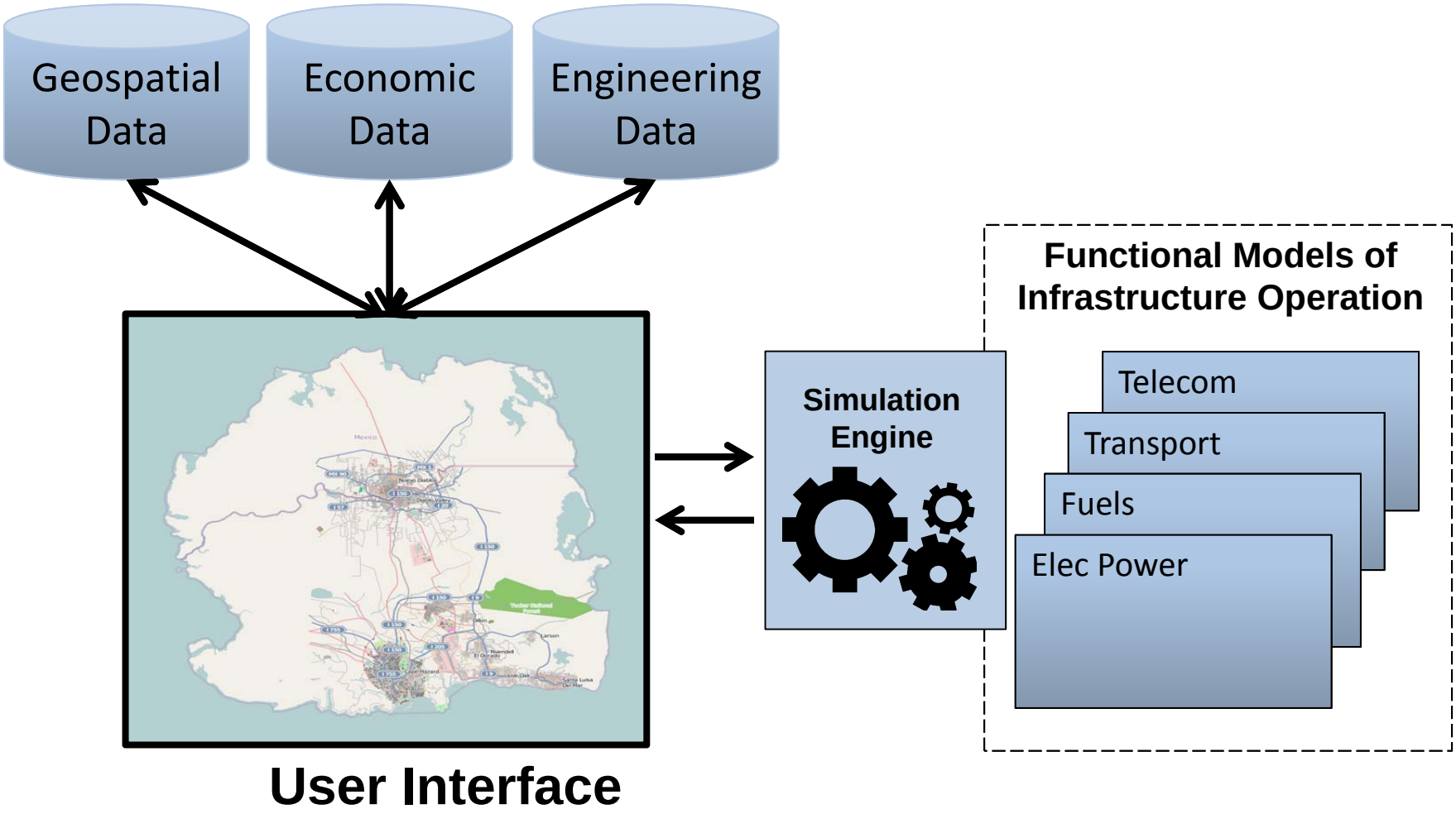

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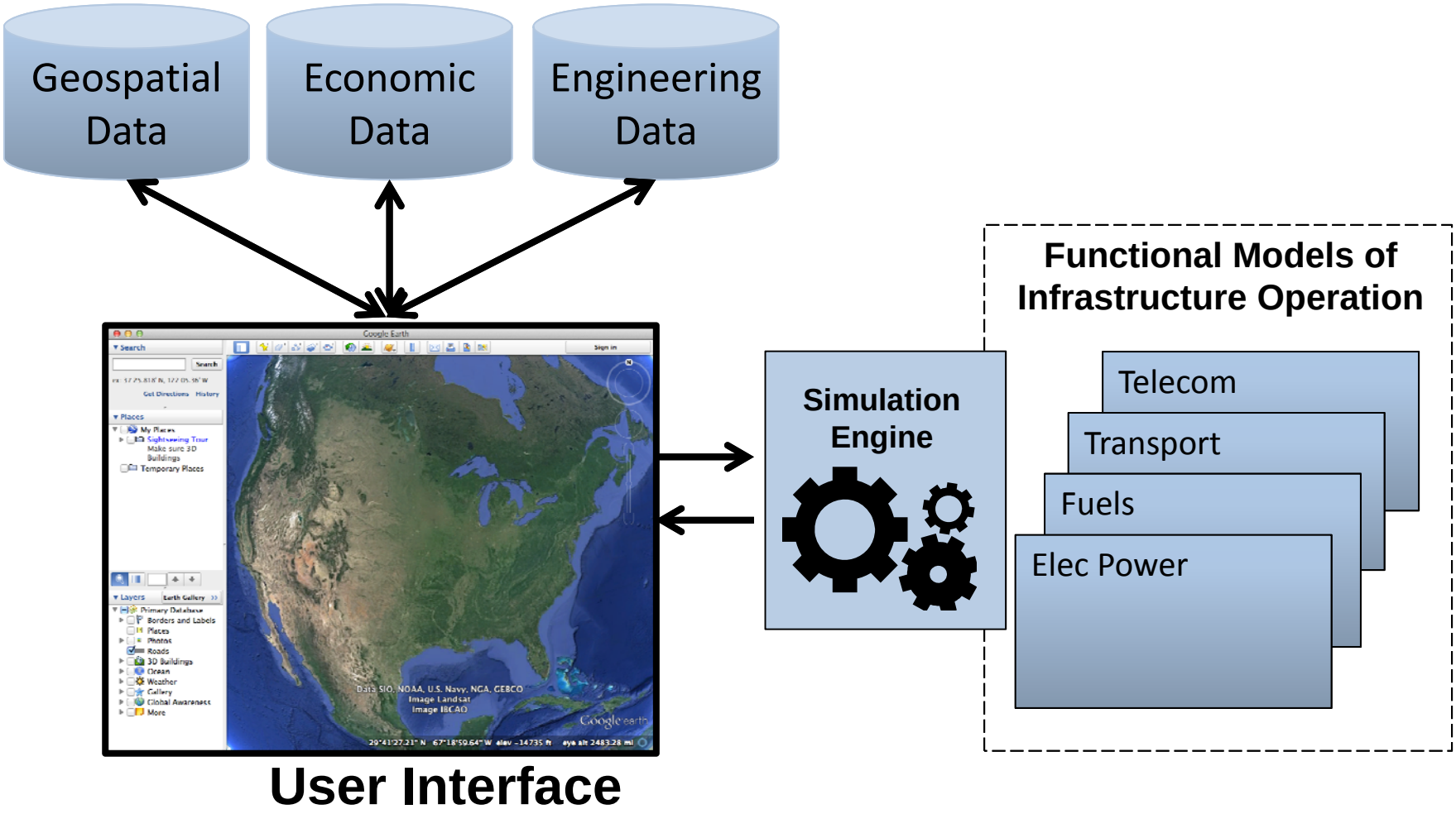

a virtual environment for critical infrastructure simulation and analysis

- modeling and analysis
  - what-ifs: system response to disruptive events
  - cascading behaviors
  - system design
  - benchmarking
- training and exercises
- education and outreach

- NOT: real-time situational awareness

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- "open source" but among a trusted consortium of participants

- can't be business-as-usual in selling R&D to the government

if you are interested in participating in this project, please contact me

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lot's to work out:

- technical standards
  - representation of data
  - interfaces
- working relationships
- resources