SpatialEdge

From risk to real time insight

Bishwa Pandey
bishwa@nepcol.com
Founder
NepCol International LLC
www.nepcol.com

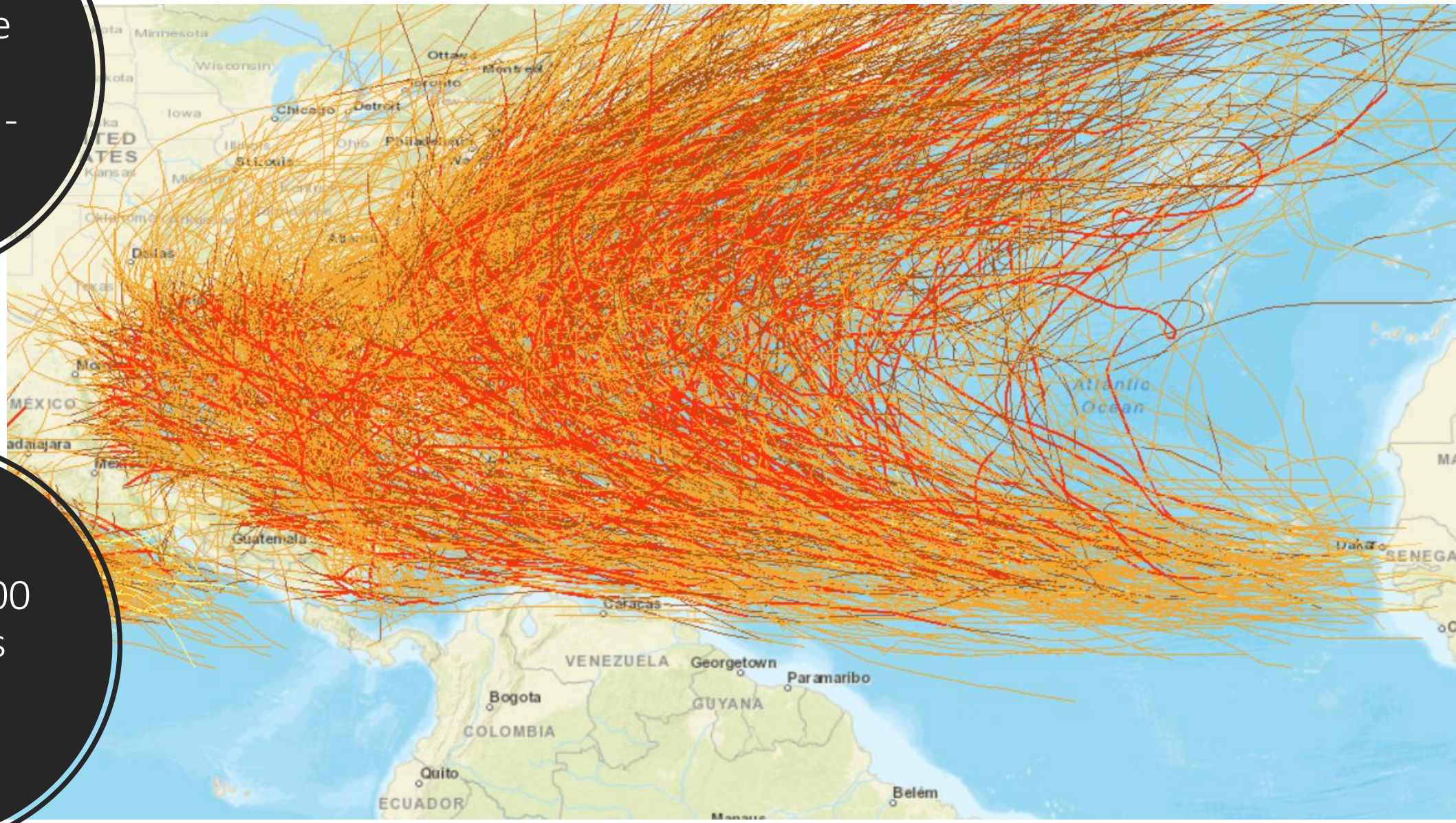
NepCol

Aftermath Hurricane Maria, 2017

Natural Disasters: 2007-2017

… how can we use technology to reduce this?

Tropical Storms in the Caribbean Basin – 1842 - 2010

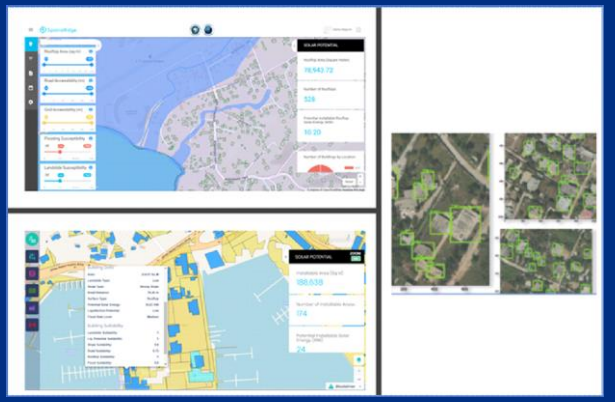


About 42,000 storms has formed

Natural Disaster Scenario – Current Problem

Not having clear understanding of:

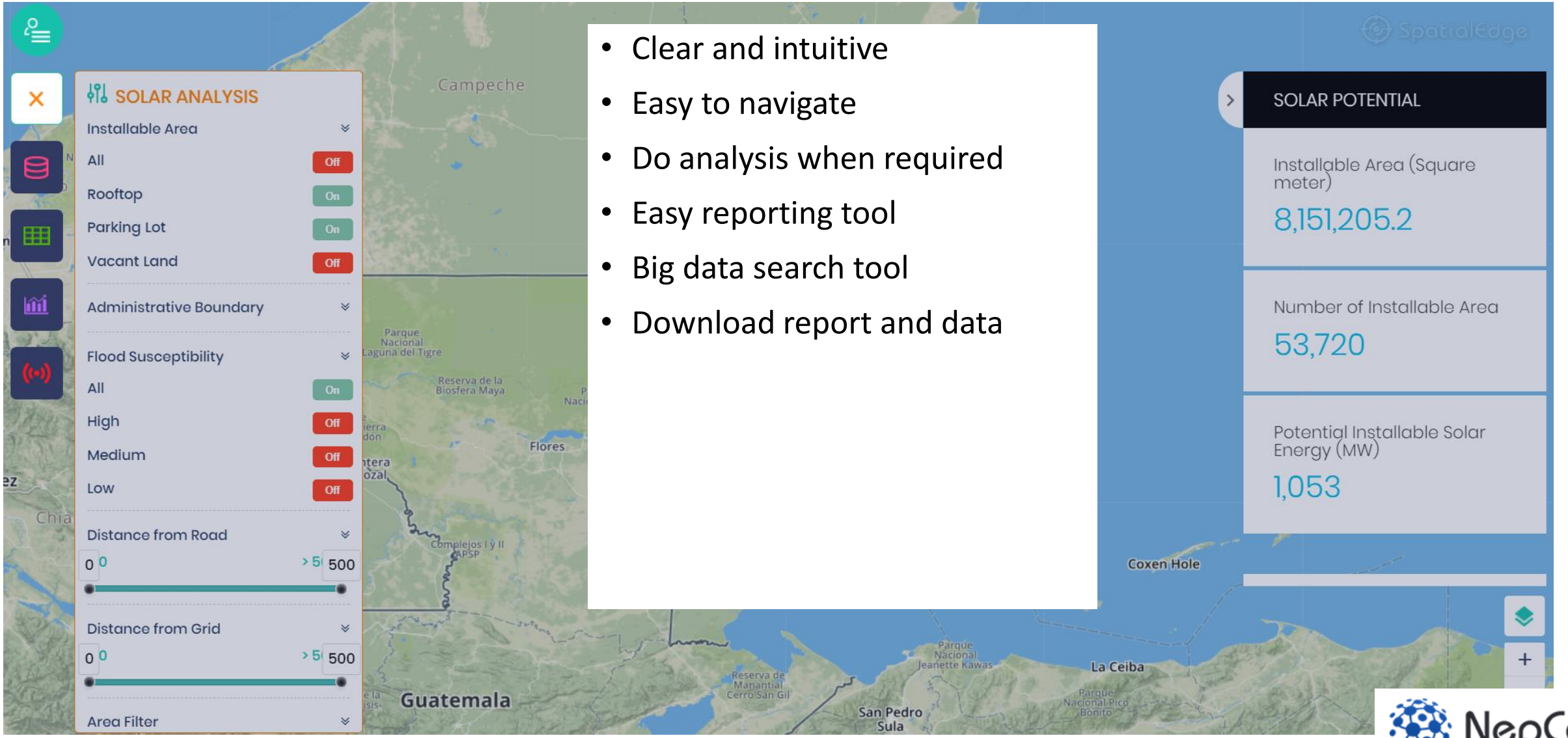
- **Potential damage and disruption**
- **Actual damage, loss and disruption after the event**
- **Insurance claim/Reconstruction cost**



SpatialEdge provides:

Data, technology and platform for comprehensive Disaster Risk Information and analysis

SpatialEdge User Interface

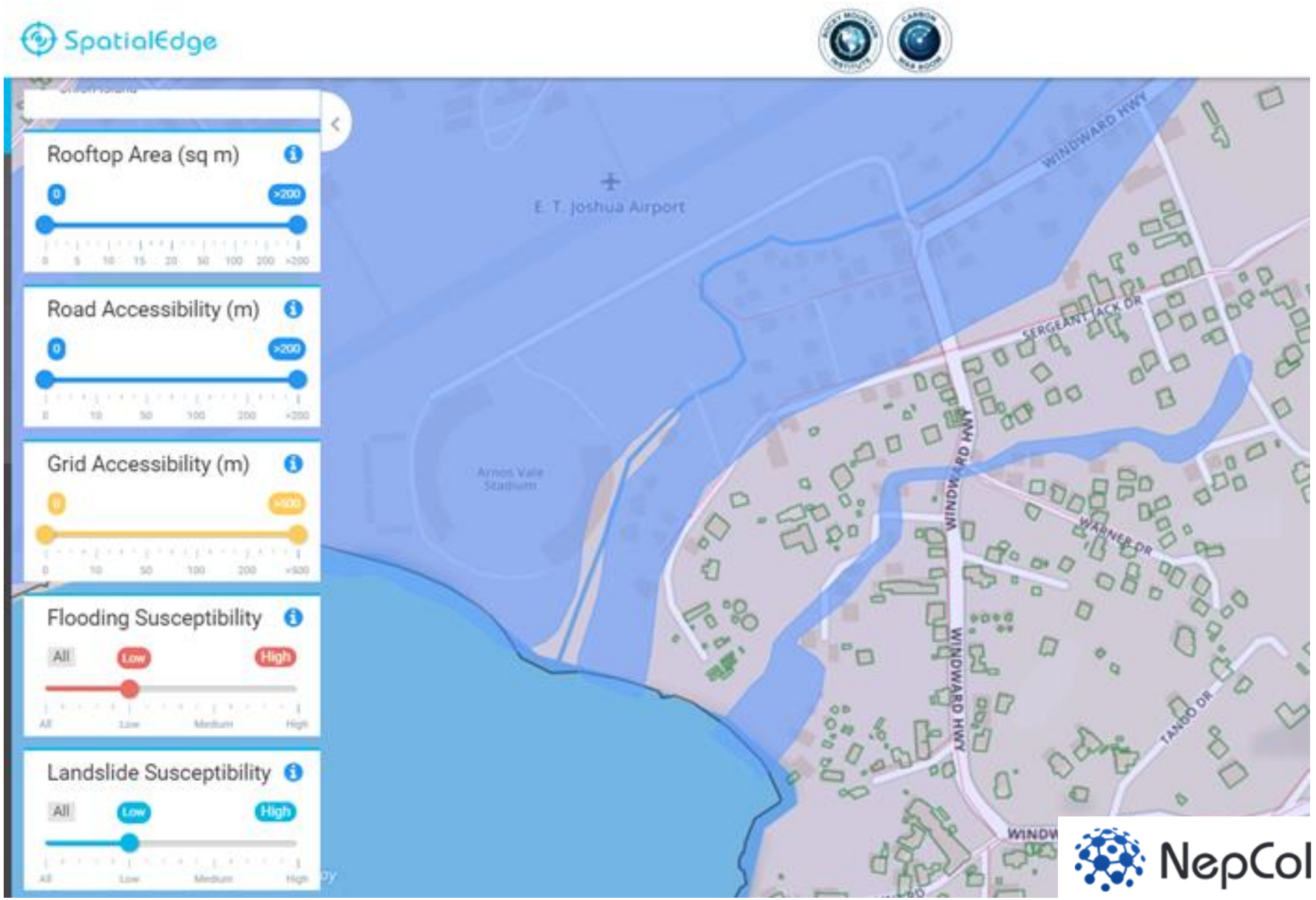


- Clear and intuitive
- Easy to navigate
- Do analysis when required
- Easy reporting tool
- Big data search tool
- Download report and data

NepCol

Intuitive User Interface

SpatialEdge showing susceptible flood area (in light blue) and rooftop in green outline. The application allows to filter out buildings with flood hazards, among others

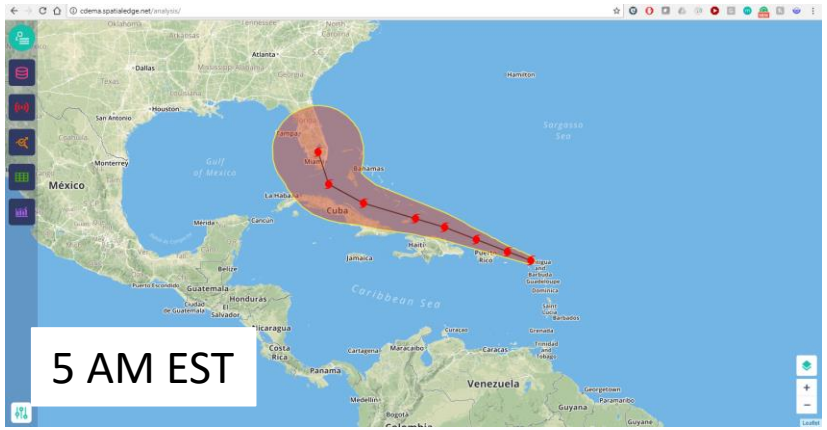


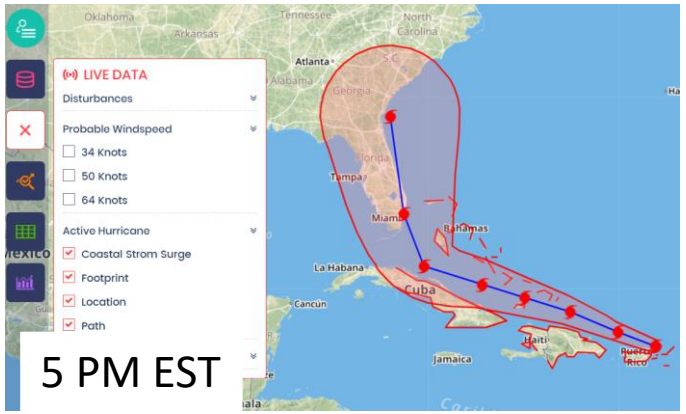
Hurricane Irma – Status – Sep 6/7, 2017

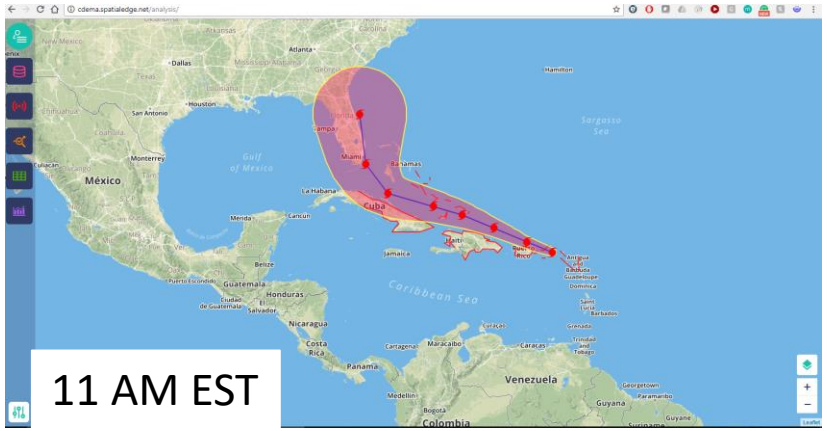
CDEMA has been using SpatialEdge platform to dynamically pull tropical storm hazard data from National Hurricane Center.

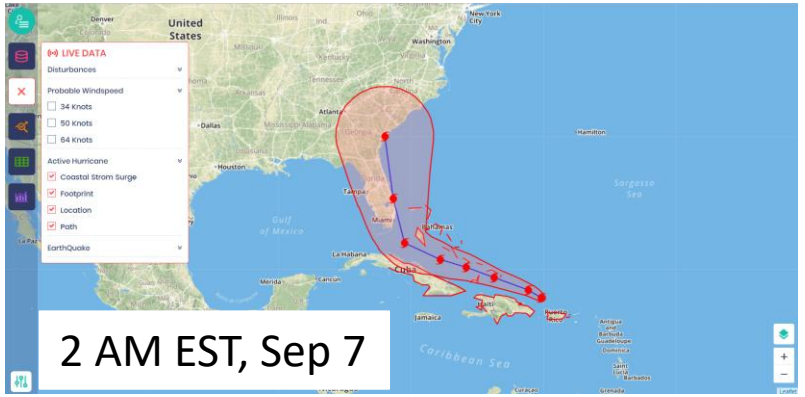
While there are a few applications that provides the visualization of this type, we are further upping the ante to use these dynamic data in evaluating impact on population and exposure, at real time.

As hurricane change its course, the analysis results are reflected at the dashboard in real time.



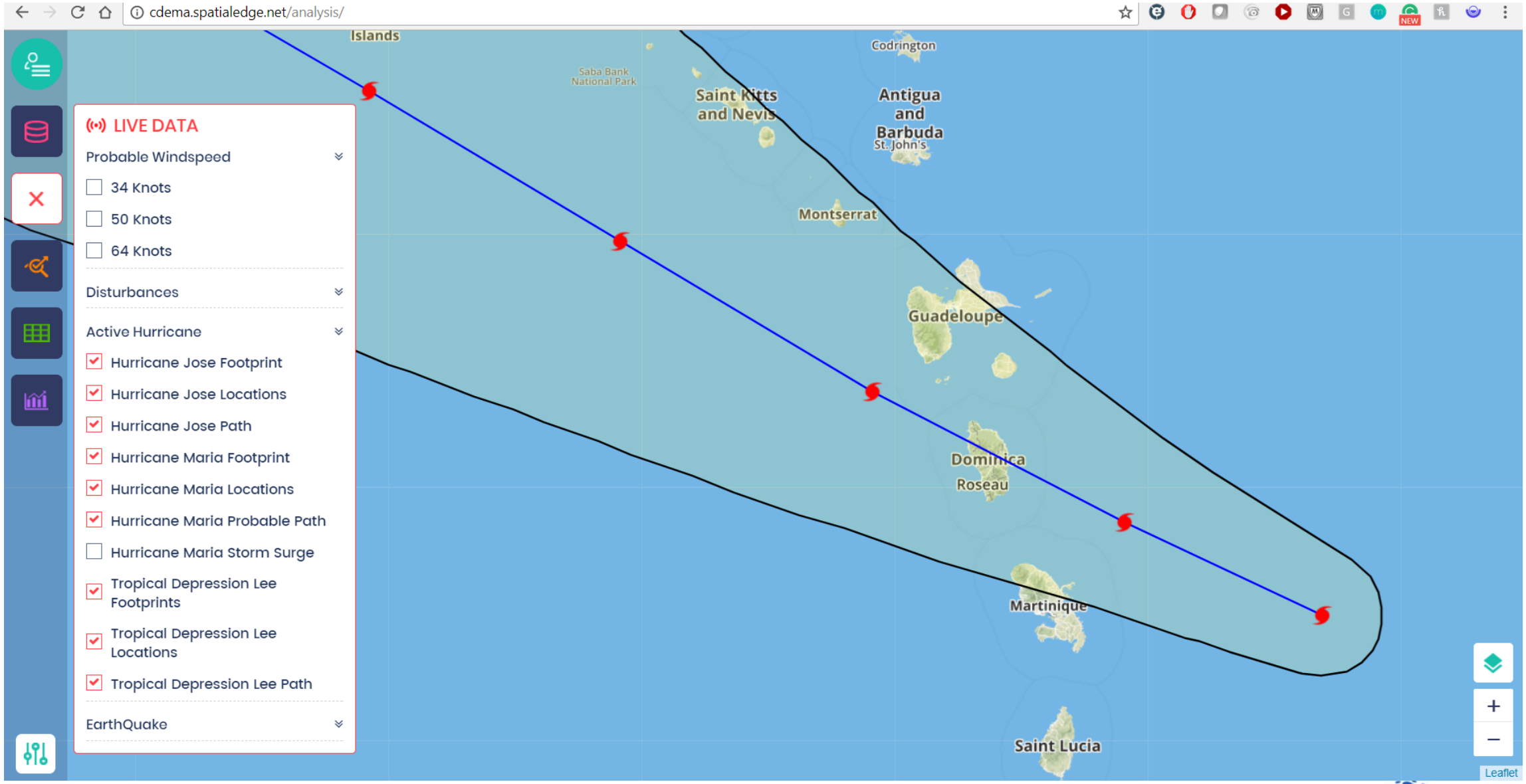






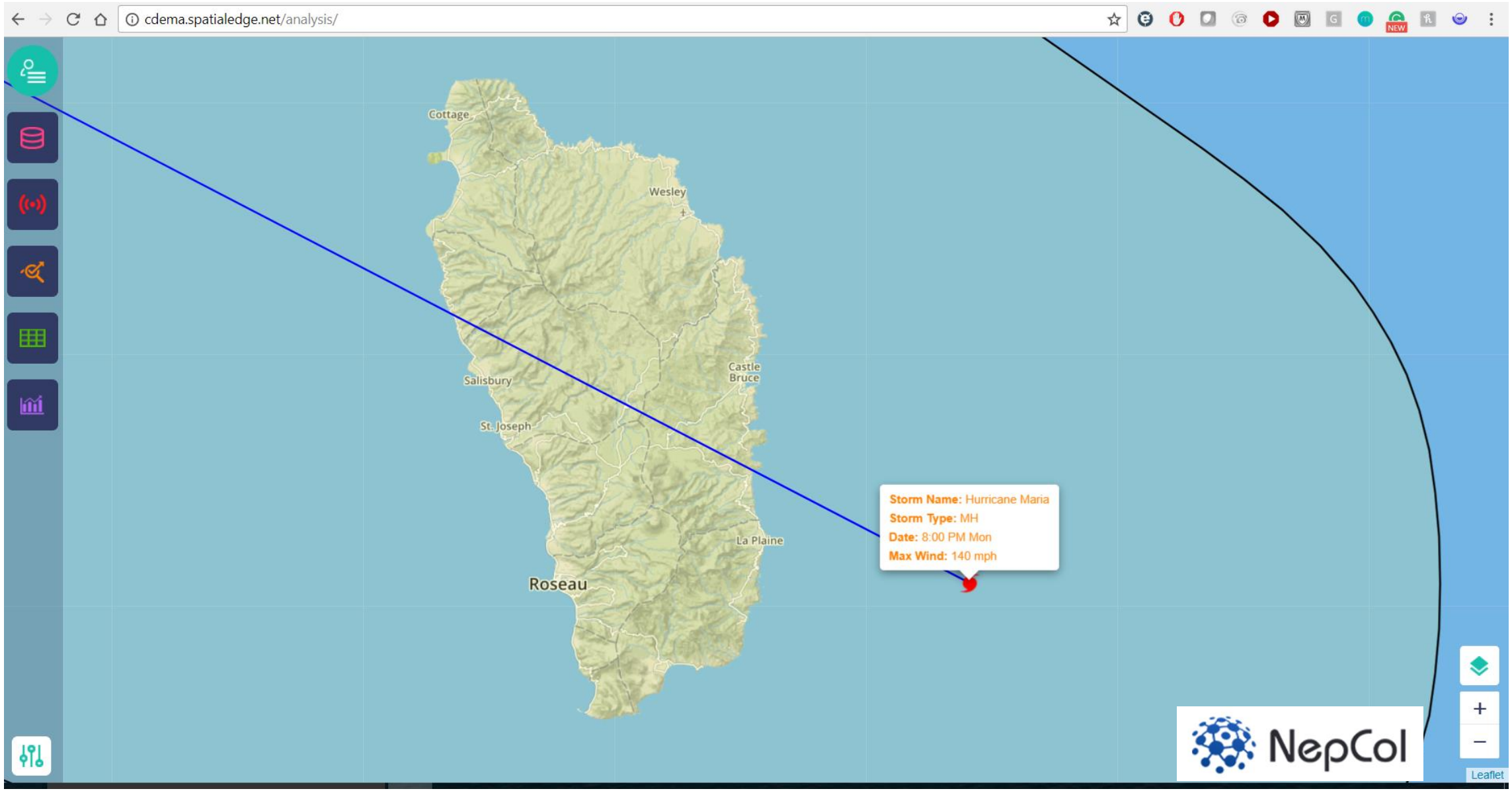
NepCol

Hurricane Maria: Sep 18, 2017, 5 AM EST

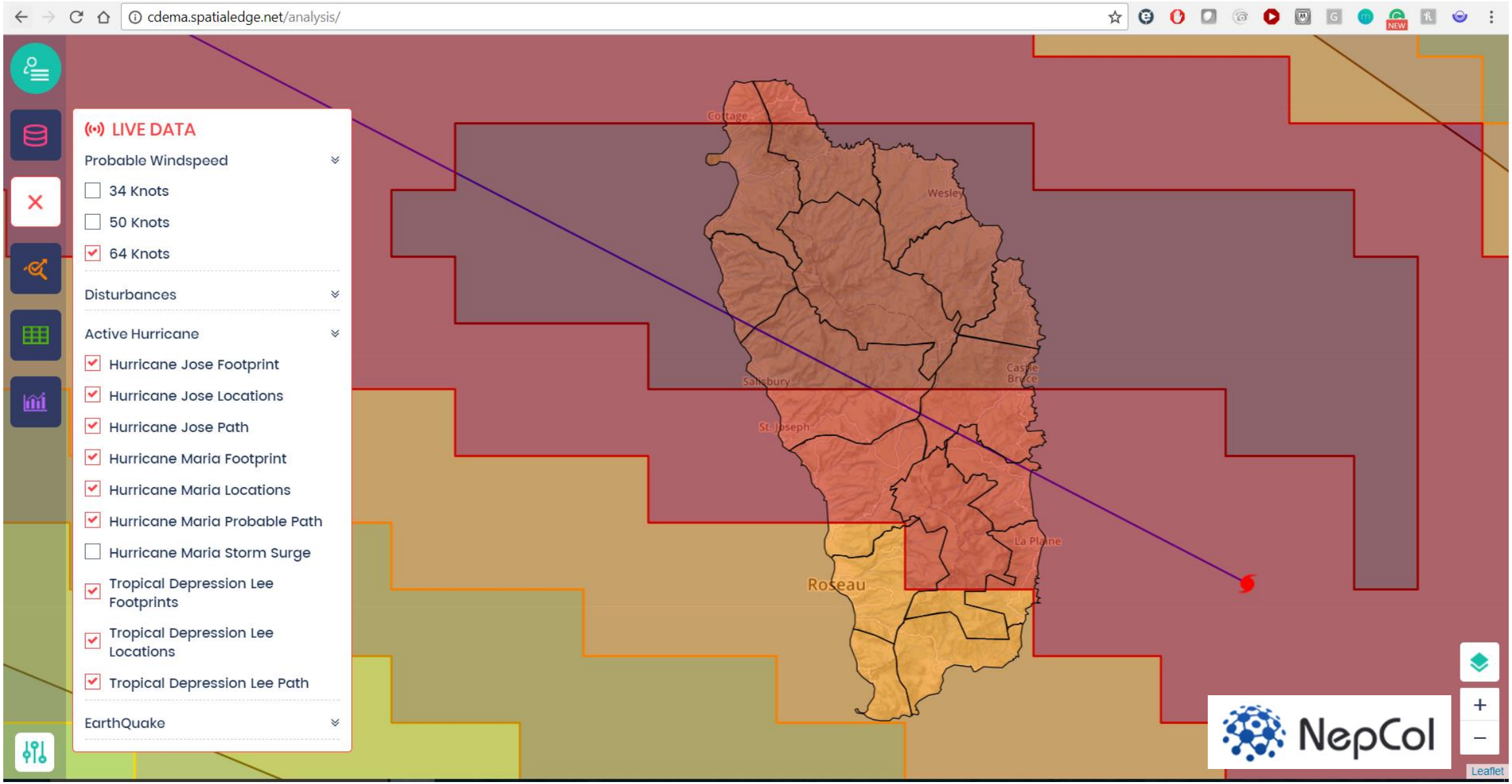


NepCol

Hurricane Maria: Sep 18, 2017, Cat 5, 8 PM EST,



Probable Windspeed



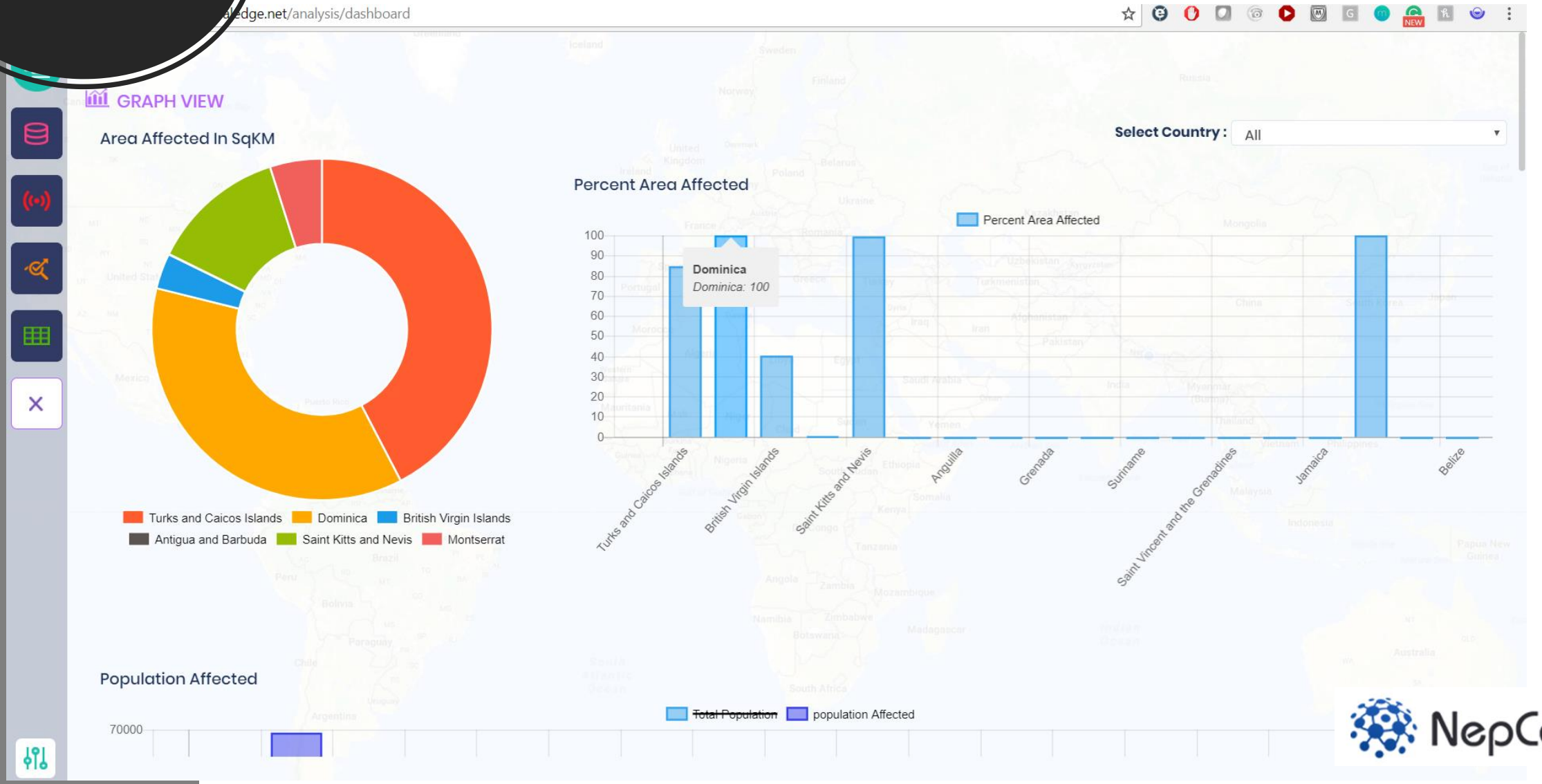
Analysis Result – Dominica Population

S.N.	Name	Total Area (SqKM)	Area Affected (SqKM)	Total Population	Affected Population	School Affected	Bridge Affected	Hospital Affected	Road Affected (KM)
1	Saint David Parish	133.59	133.59	6438	6438	0	0	0	1210
2	Saint George Parish	57.50	57.50	20219	20219	0	0	0	1643
3	Saint Patrick Parish	89.77	89.77	6912	6912	0	0	0	1012
4	Saint Mark Parish	10.53	10.53	1387	1387	0	0	0	205
5	Saint Luke Parish	8.55	8.55	1492	1492	0	0	0	149
6	Saint Andrew Parish	193.92	193.92	9494	9494	0	0	0	2441
7	Saint John Parish	57.71	57.71	5704	5704	0	0	0	1313
8	Saint Paul Parish	68.24	68.24	10274	10274	0	0	0	1243
9	Saint Joseph Parish	129.47	129.47	6013	6013	0	0	0	1712
10	Saint Peter Parish	34.06	34.06	1319	1319	0	0	0	418

Data on School, Bridge and Hospital not yet uploaded in the application

NepCol

Analysis Result

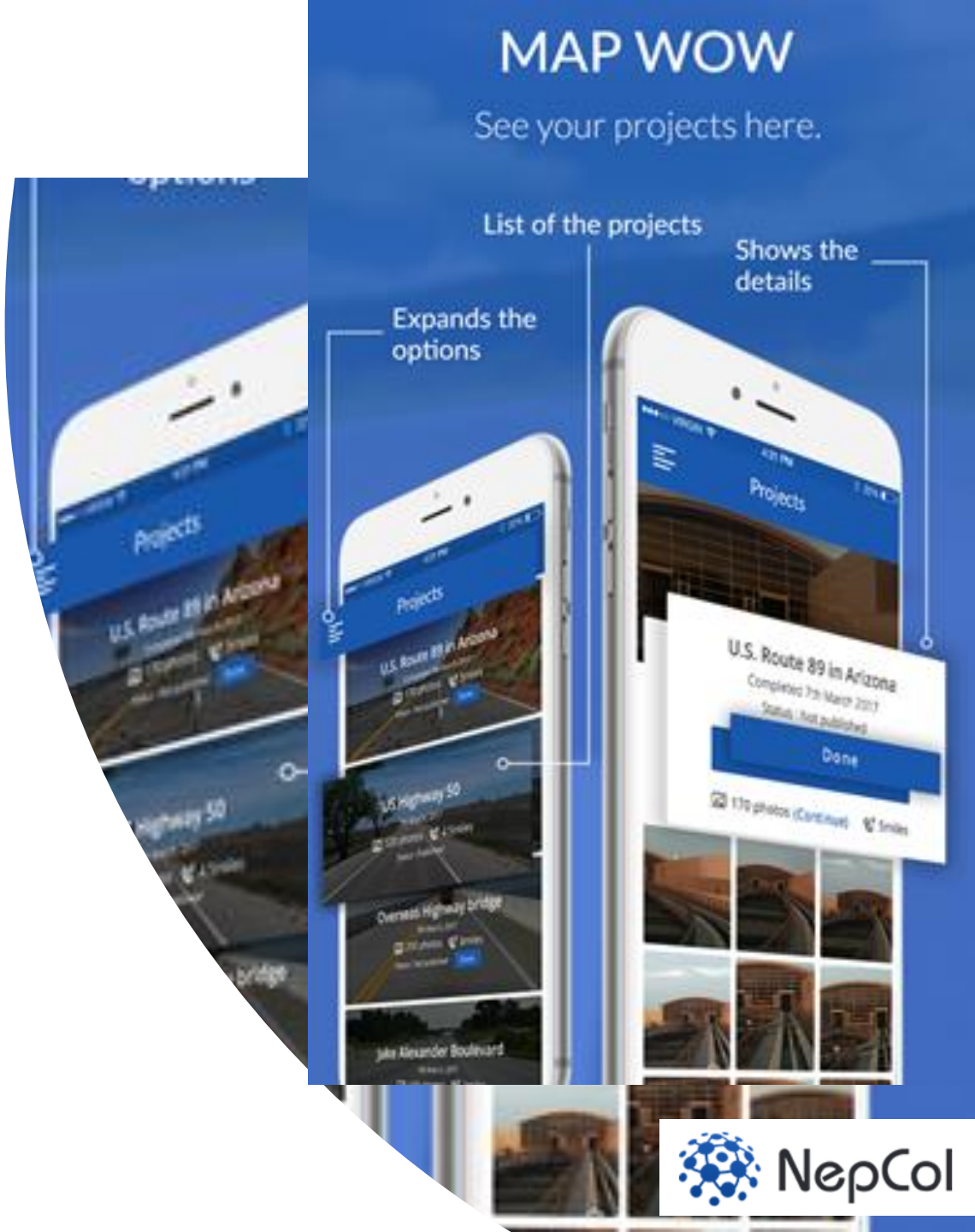


NepCol

Mapping assets and vulnerability

SpatialEdge helps to map the assets and derive vulnerability

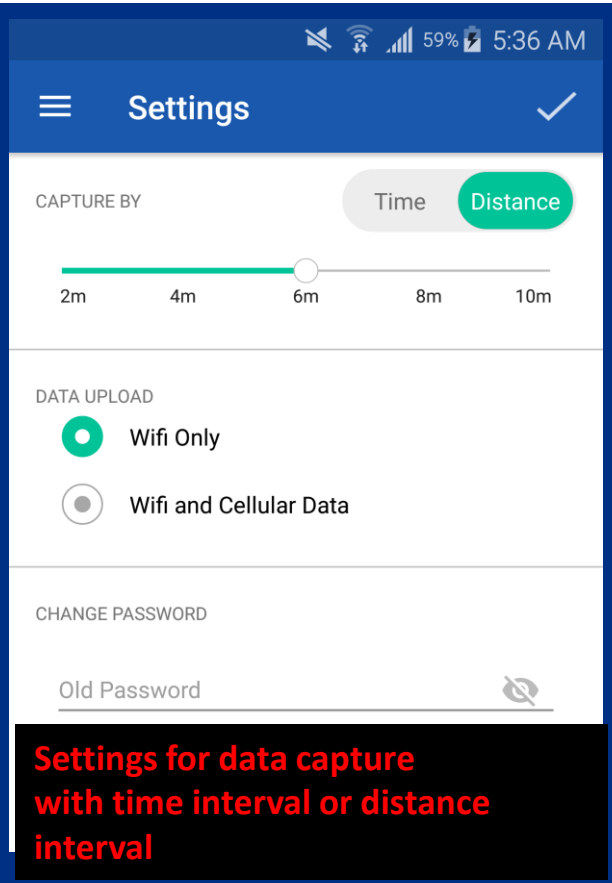
The mobile app, called MapWoW!, uses the smartphone platform to automatically map the assets from a moving vehicle (car, boat or a small aircraft)



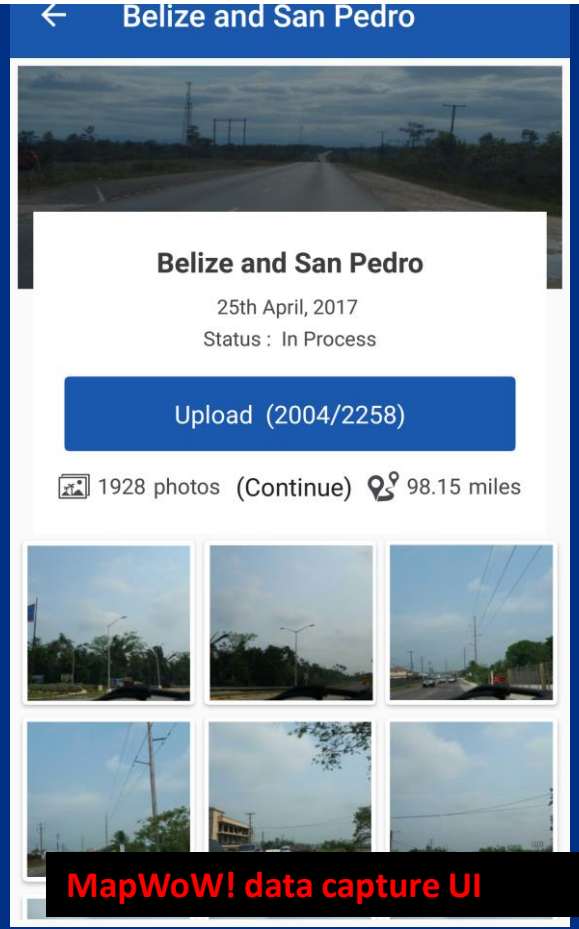
SpatialEdge for Data Collection

MapWoW! is mobile data collection solution for SpatialEdge that can help to collect georeferenced photos of the assets.

App working on moving vehicle



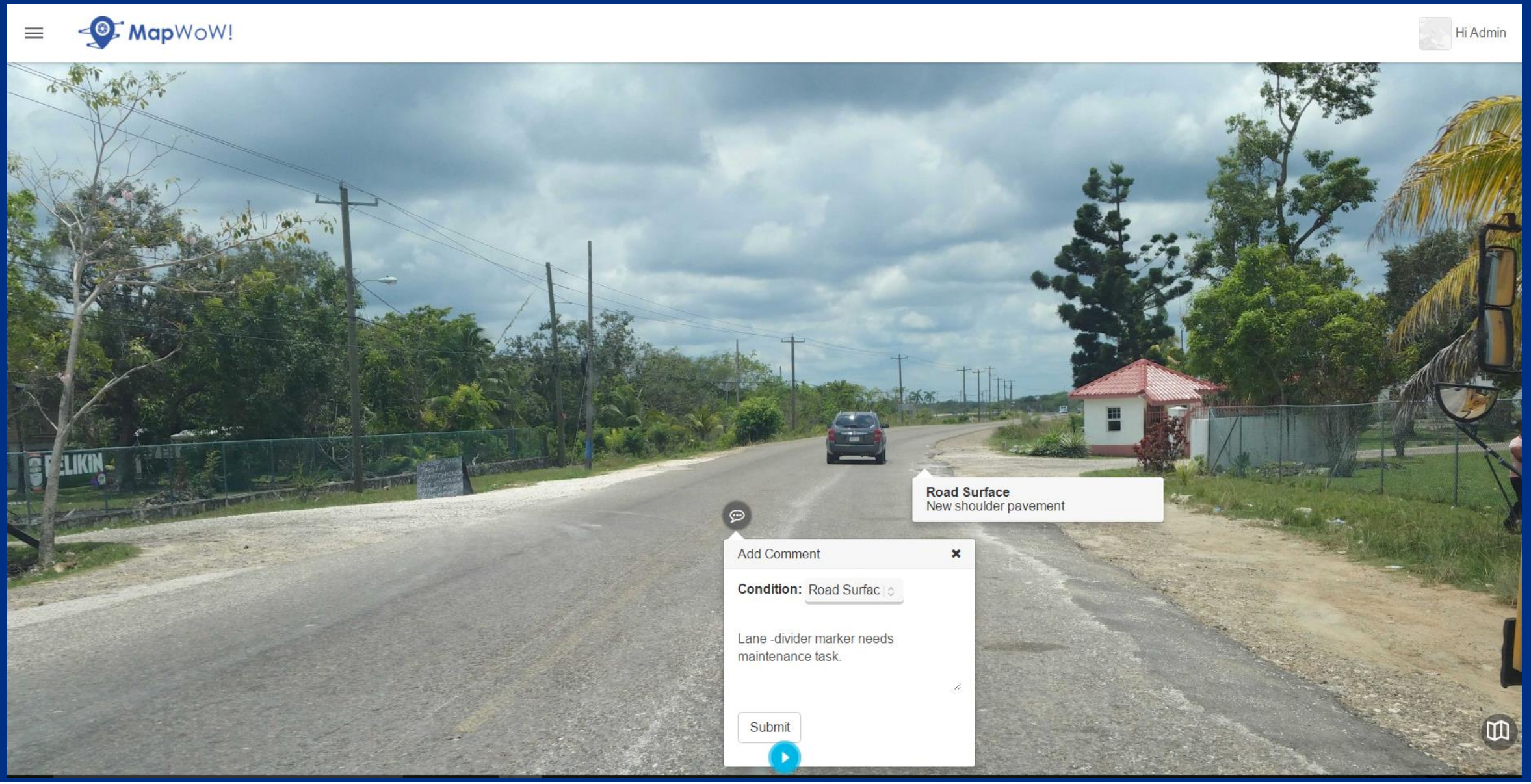
Settings for data capture with time interval or distance interval



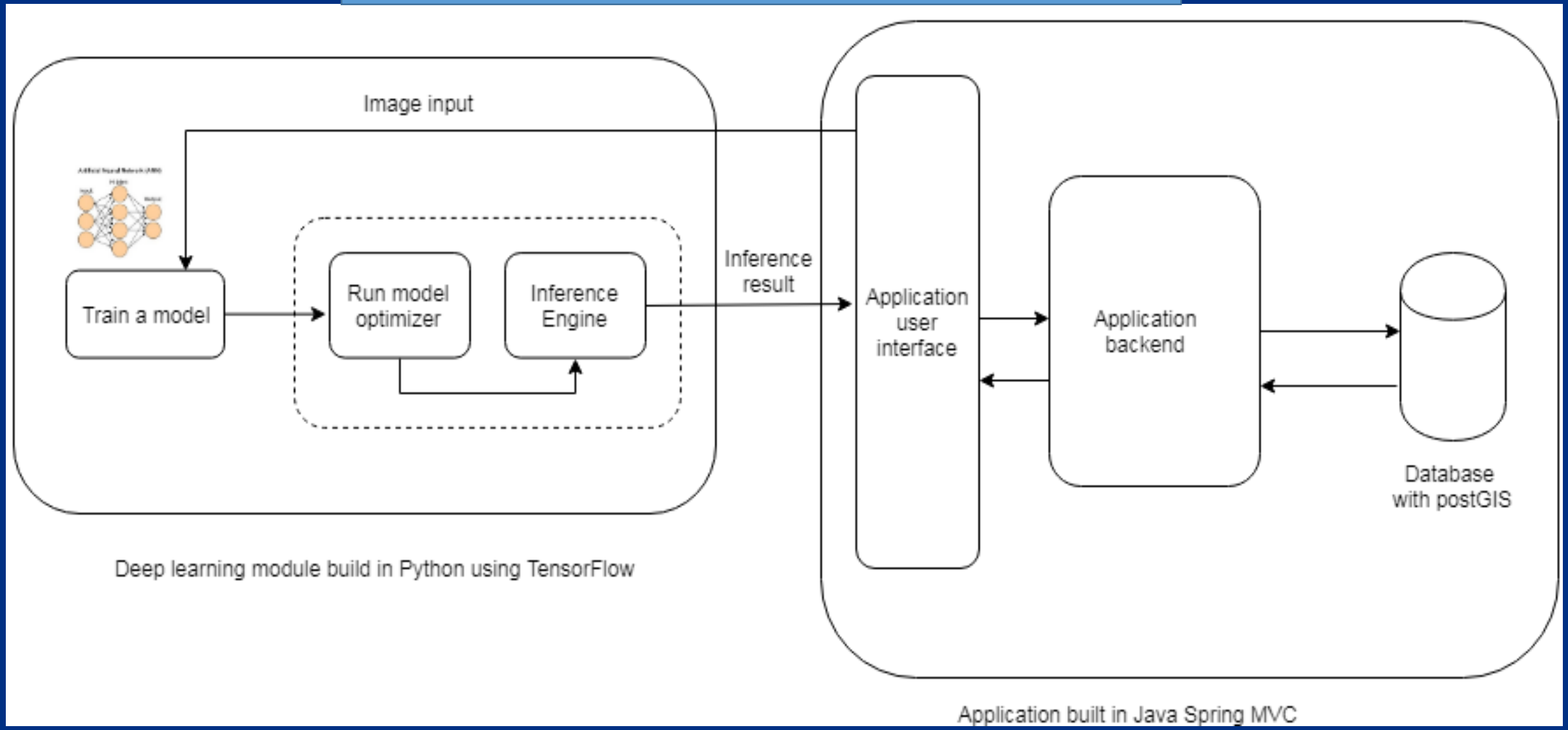
MapWoW! data capture UI

Haiti - Road Asset Vulnerability Monitoring for Climate Resilience

SpatialEdge for Data Collection



Extracting data using machine learning using TensorFlow



SpatialEdge for Data Collection

- State of the art model which can classify imagery automatically recognizing the known pattern (houses)

Disaster Risk Score of assets

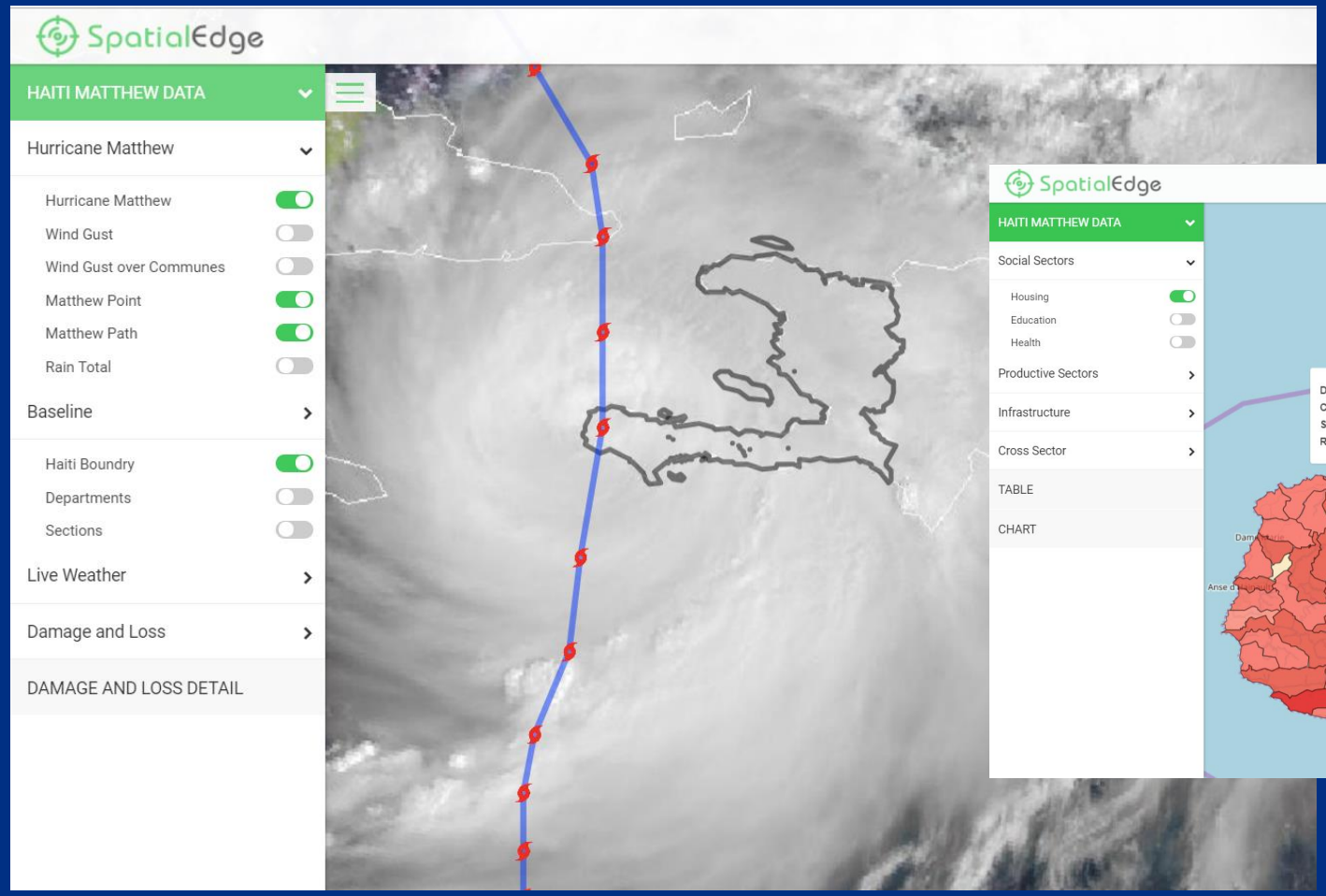
Proprietary algorithm to assign unique disaster risk score to all assets

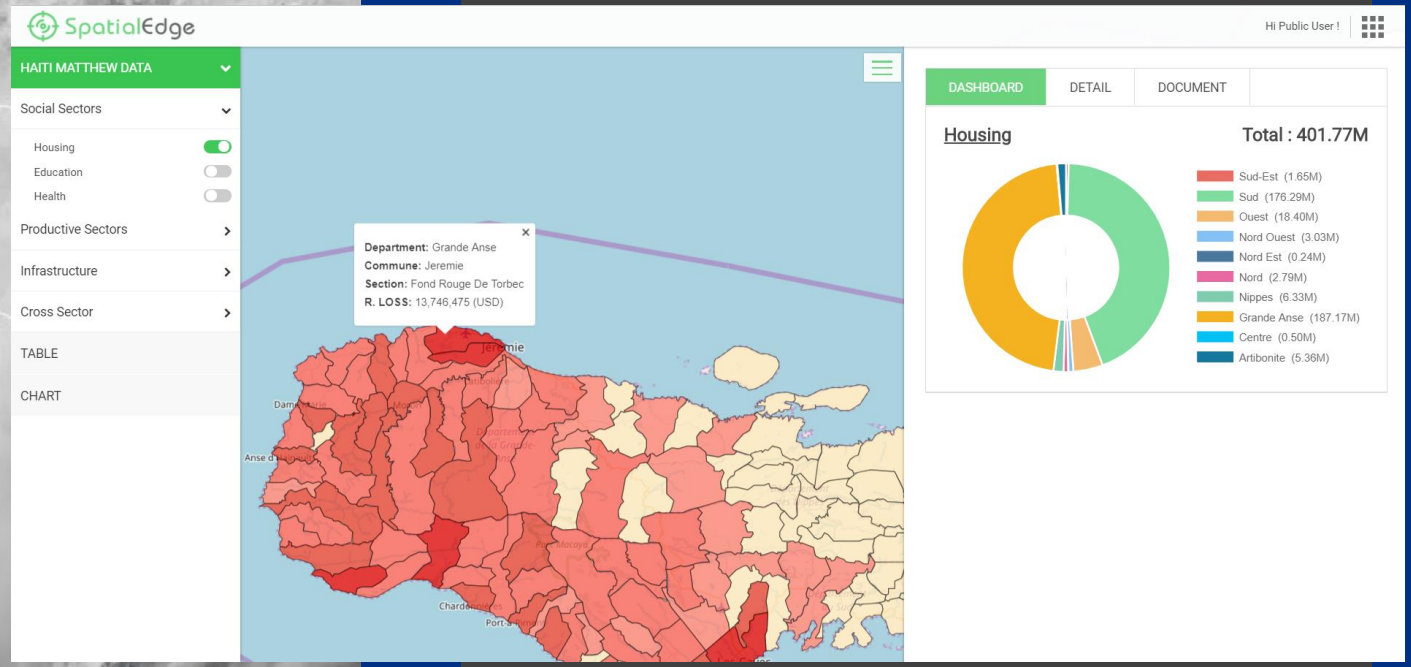
Integration of live and static hazard data

Hurricane
Earthquake
Flood
Tornado
Drought
Wildfire
Landslide/Mudslide

Big data analytics

Run time analytics of likely damage





The World Bank

Damage and loss assessment aftermath Hurricane Matthew, 2016

Damage and loss are increasing in the Caribbean as frequency and magnitude of weather events are increasing.

High concentration of economic activities in the coastal area

Our Clients

Institutional Clients

- The World Bank
- Asian Development Bank
- Caribbean Disaster Management Agency
- Rocky Mountain Institute
- Inter-American Development Bank
- Private businesses

Bishwa Pandey

More than 20 years working
in managing natural disasters

bishwa@nepcol.com

NepCol

Team of 25 developers, data scientists and product manager

Offices in:

Washington DC Metro Area

Bogota, Colombia

Kathmandu, Nepal