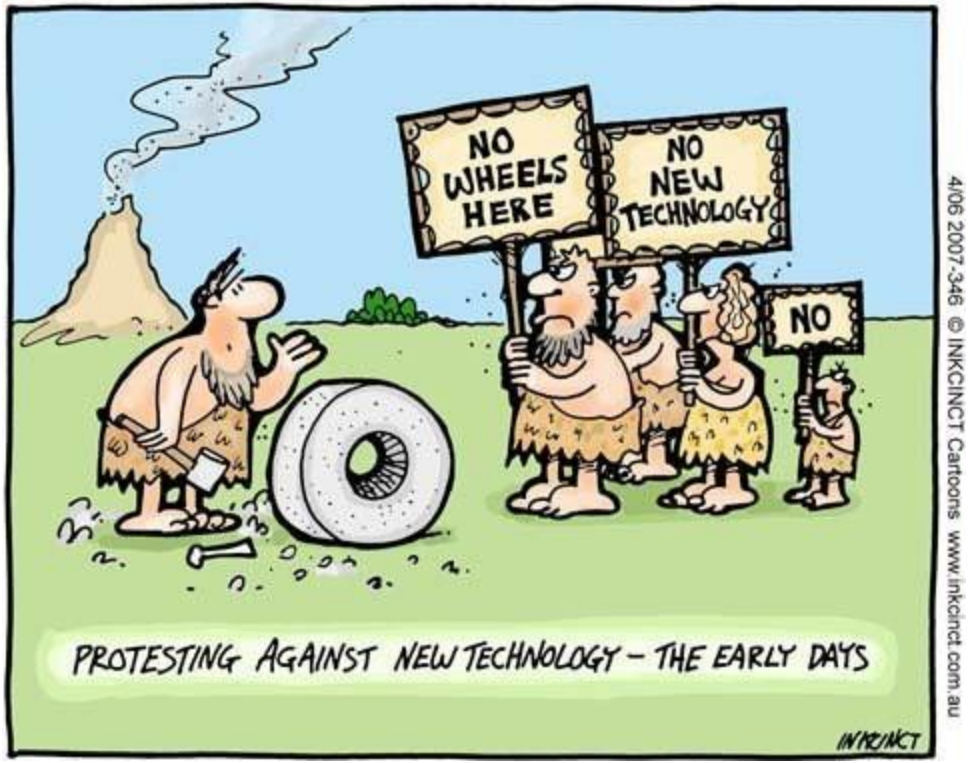
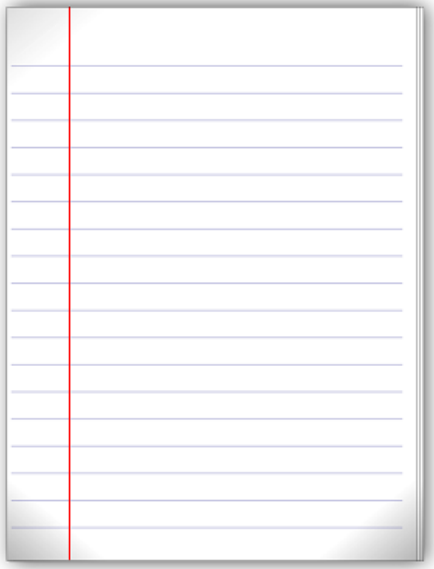
BIG DATA, ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

Emerging Terminology - Emerging Capabilities

Technology - a history



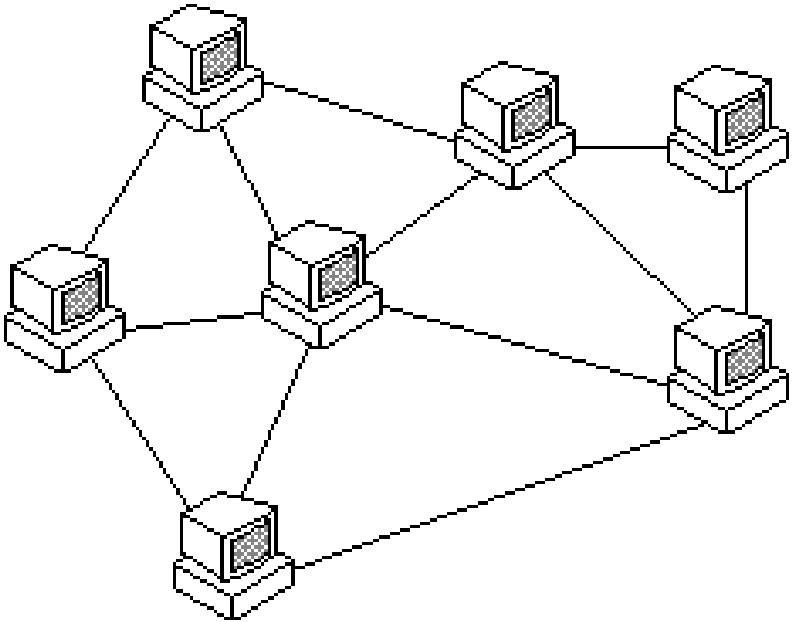
Technology - a history



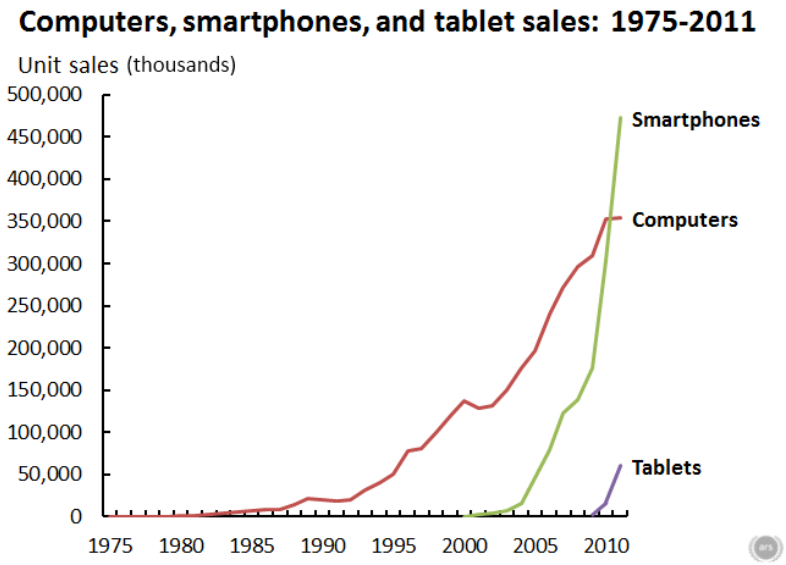
Technology - a history

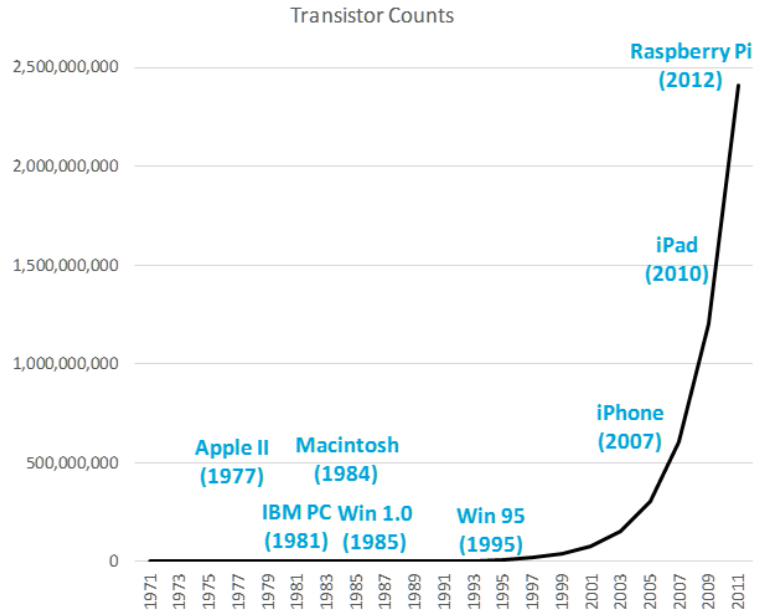
Technology - a history

Technology - a history

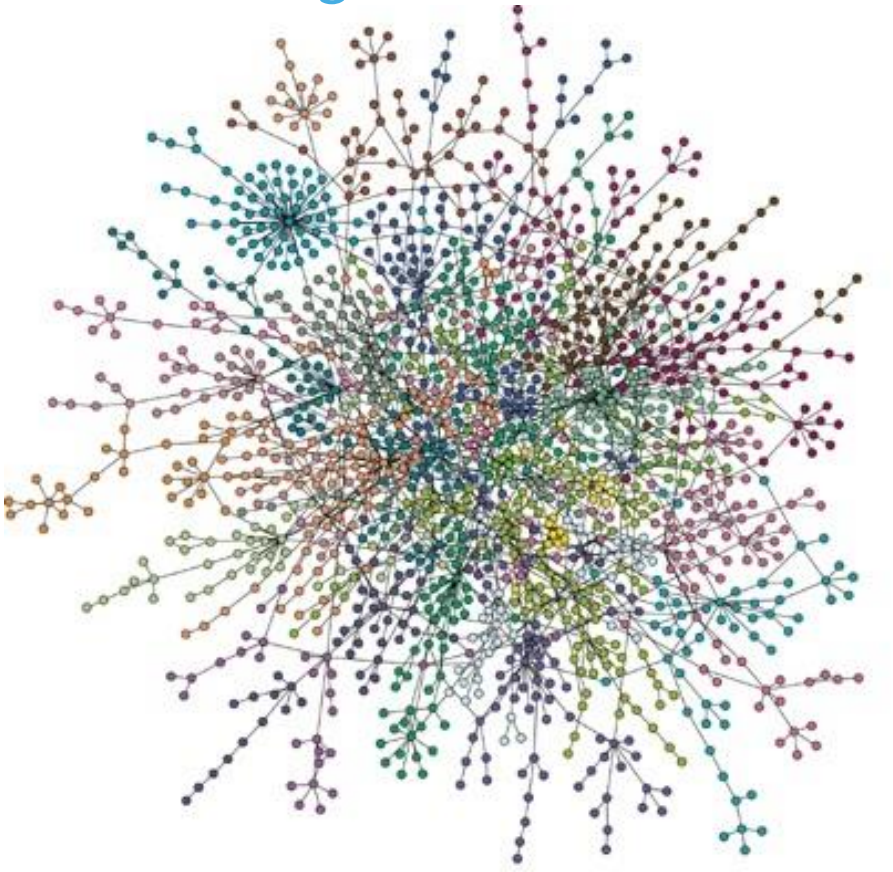


Technology - a history

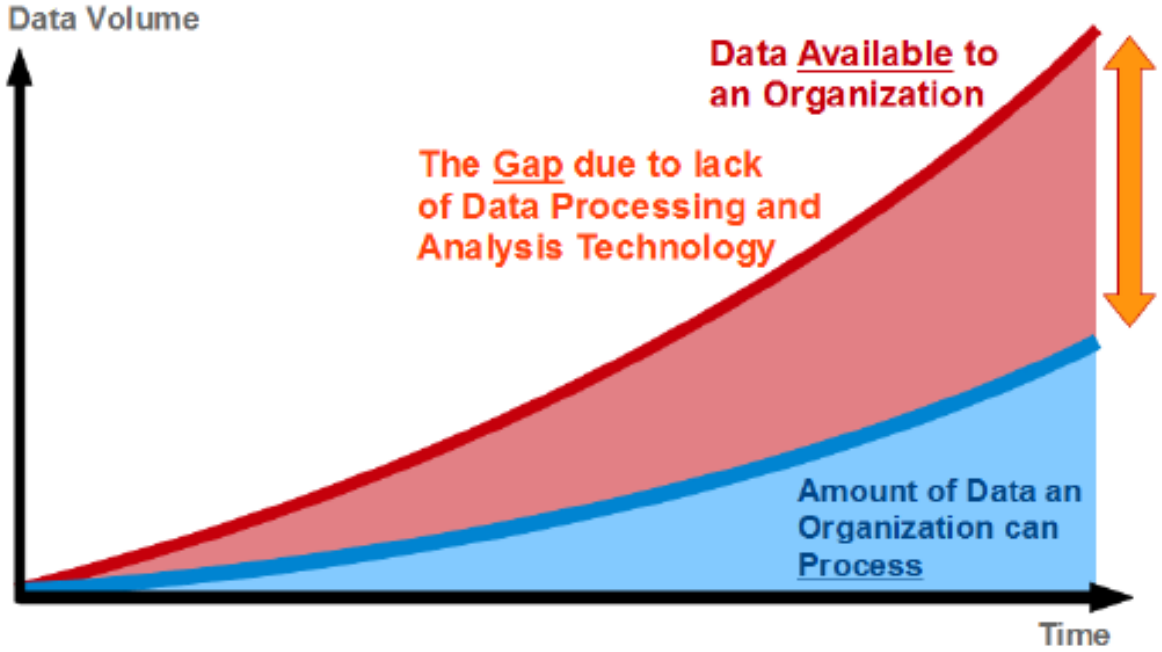




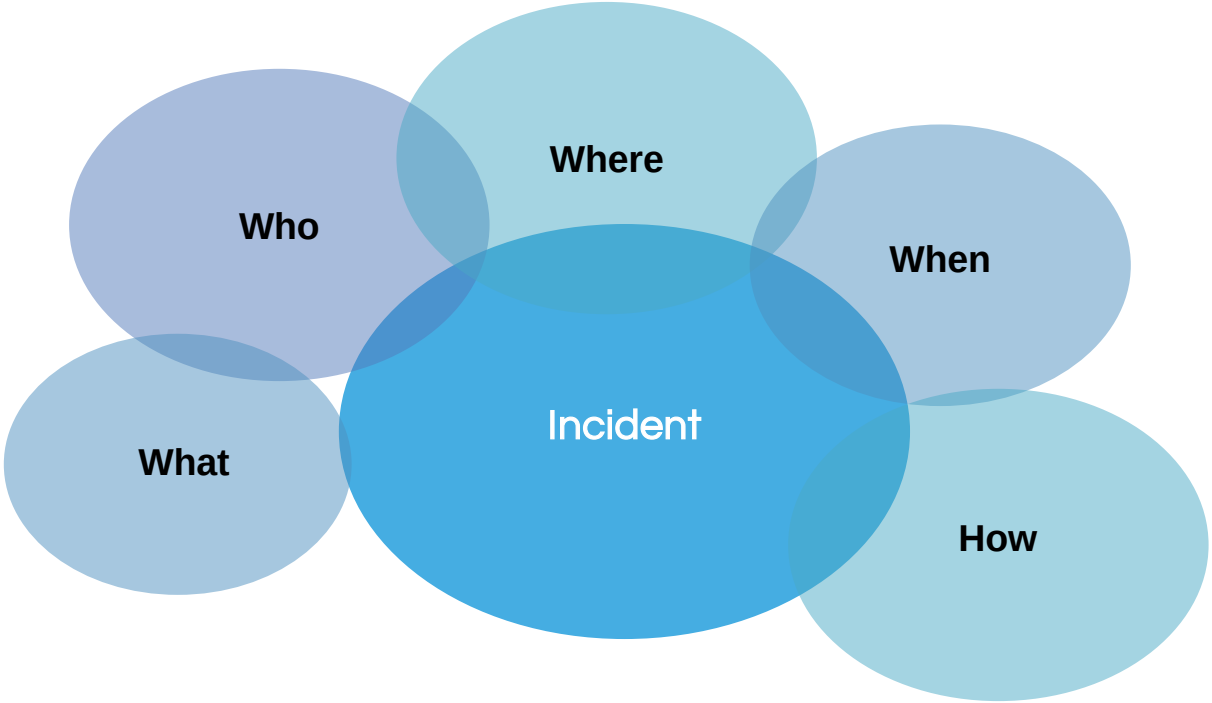
Technology - a history



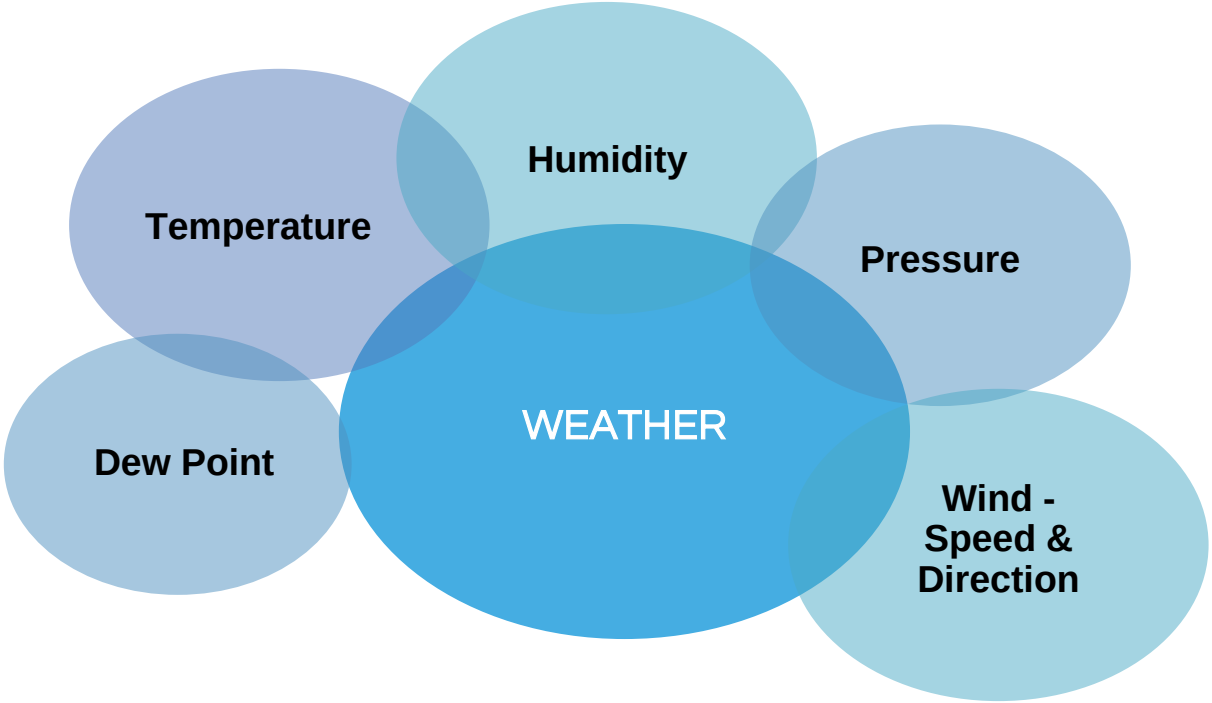
Technology - a history



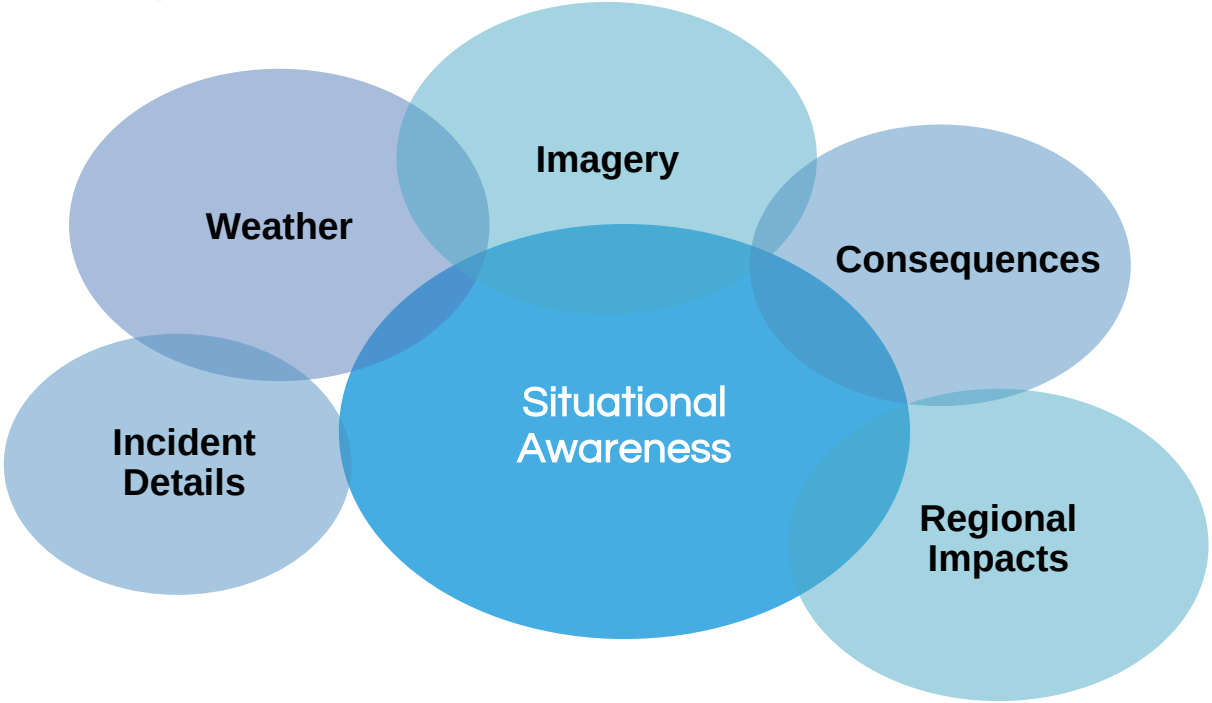
Data



Information



Analysis


Weather
Imagery
Consequences
Incident Details
Situational Awareness
Regional Impacts

You need to...

WATCH LIVE SPECTRUM NEWS

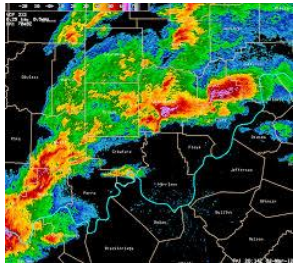
12 WBNG

7 abc WKBW

3 CNYcentral.com

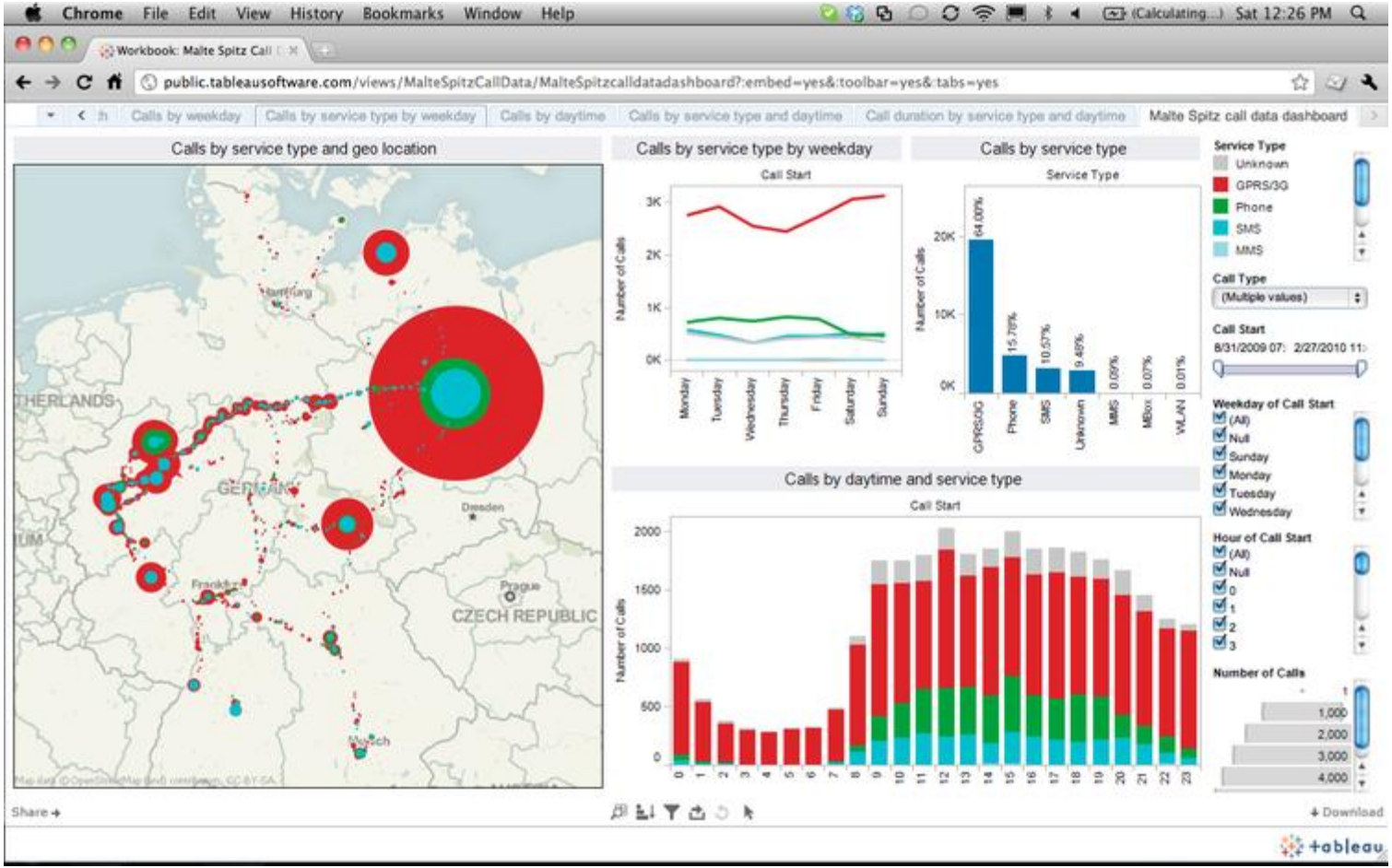
CNN

MSNBC



You need to...


ALASKAN AIR COMMAND
HEADQUARTERS
ELMENDORF AFB
NORAD
3252
3416
5417
1671
15
1886


Chrome File Edit View History Bookmarks Window Help
Workbook: Malte Spitz Call
public.tableausoftware.com/views/MalteSpitzCallData/MalteSpitzcalldatadashboard?:embed=yes&:toolbar=yes&:tabs=yes
Calls by weekday
Calls by service type by weekday
Calls by daytime
Calls by service type and daytime
Call duration by service type and daytime
Malte Spitz call data dashboard
Calls by service type and geo location
Calls by service type by weekday
Call Start
Number of Calls
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
Calls by service type
Service Type
64.00%
15.78%
10.57%
9.48%
0.09%
0.07%
0.01%
GPRS/3G
Phone
SMS
Unknown
MMS
MBox
WLAN
Calls by daytime and service type
Service Type
Unknown
GPRS/3G
Phone
SMS
MMS
Call Type
(Multiple values)
Call Start
8/31/2009 07: 2/27/2010 11:
Weekday of Call Start
(All)
Null
Sunday
Monday
Tuesday
Wednesday
Hour of Call Start
(All)
Null
Number of Calls
1,000
2,000
3,000
4,000
Share
Download
+ableau

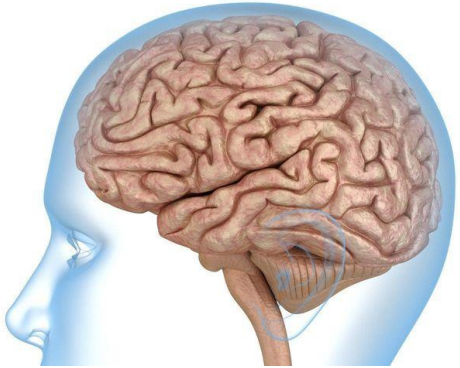
The Magical Number Seven, Plus or Minus Two

7 “chunks” of information

4 - 8 identifiable alternatives

Efficacy factors:

- **Intelligence & Education**
- **Experience**
- **Biases**
- **Age**
- **Stimuli**
- **Stress**
- **Lack of sleep**
- **Hydration & nutrition**



You're Invited! Charles & Emma Darwin

Pros:

Being with Emma

Children

Companionship

Charms of music

Charming female chit-chat

Assistance in the home

Cons:

Terrible loss of time

Lack of freedom to travel at will

Burden of visiting her relatives

Expense and stress of children

Less money to spend on books

Marry - Marry - Marry Q.E.D.

quod erat demonstrandum

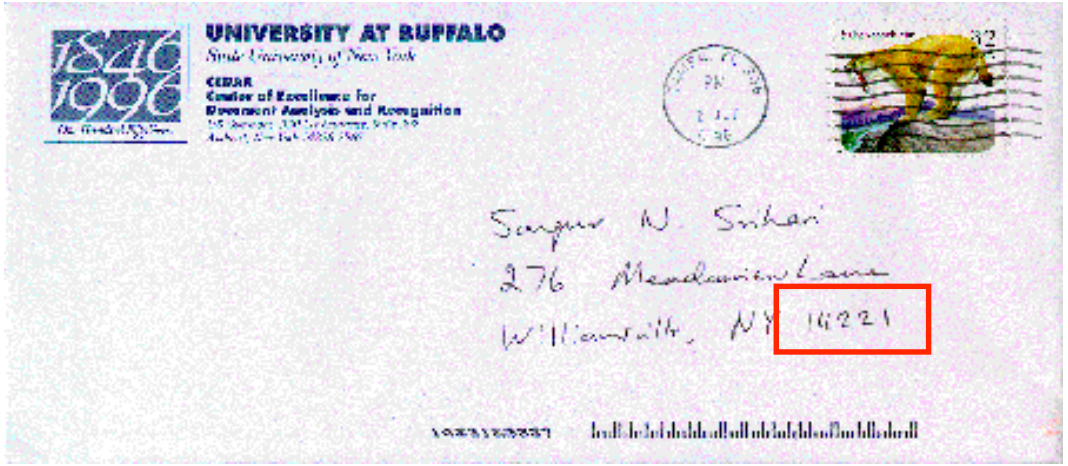
Artificial Intelligence

AI & ML - boring academic definitions...

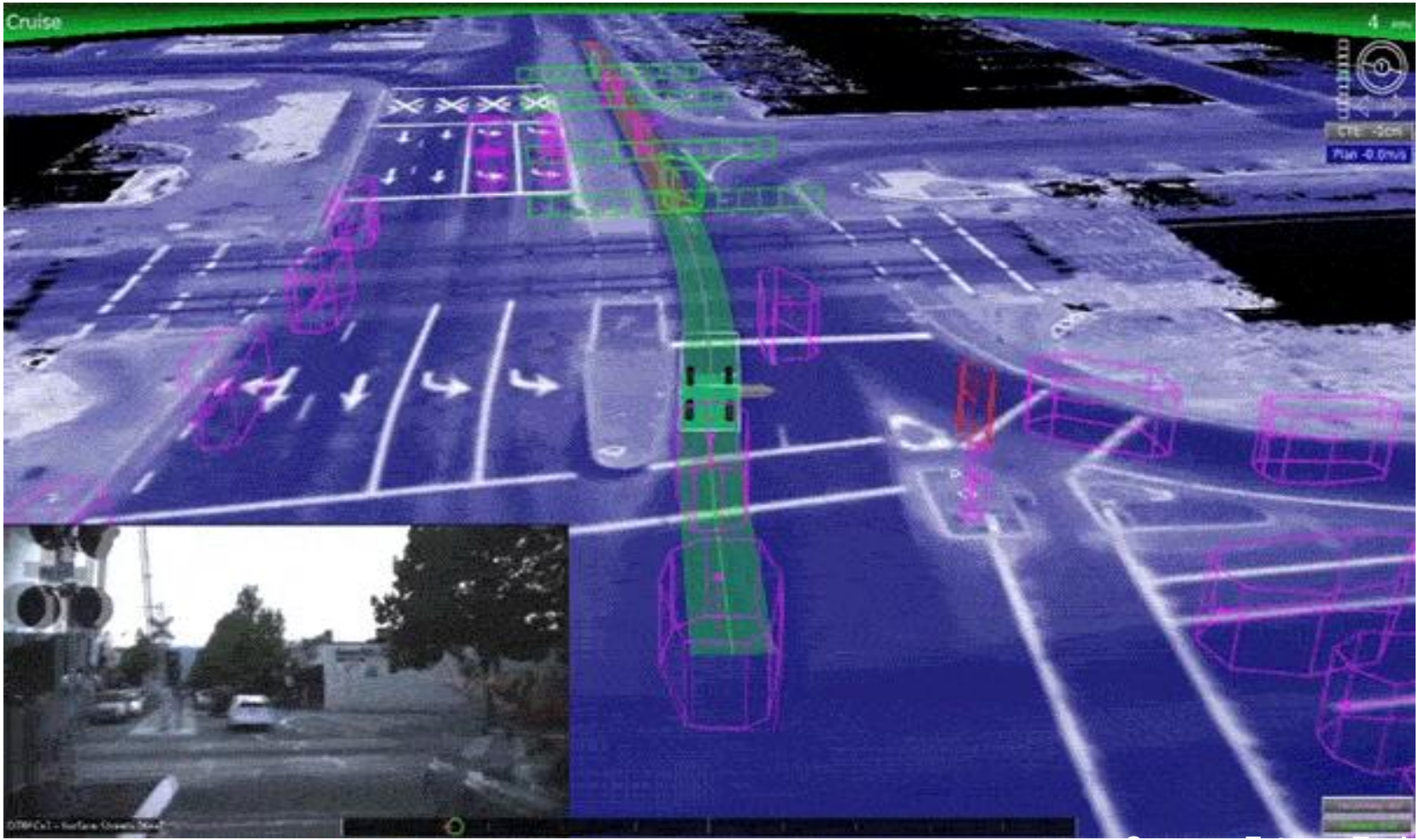
Artificial intelligence harnesses large amounts of data and combines them with efficient algorithms and powerful computers to create models that have a lot of ***predictive*** power.

A well-trained model can sort through large amounts of complex data and ***find hidden patterns and interdependencies***.

The artificial intelligence engine uses scientific principles and probabilistic models to draw ***the most logical conclusion*** based on past information it has learned from and the current set of data it is looking at.


1846
1996
UNIVERSITY AT BUFFALO
State University of New York
CEDAR
Center of Excellence for
Document Analysis and Recognition
Sargur N. Srihari
276 Mendelwin Lane
Williamsville, NY 14221


9:41 AM
100%
What can I help you with?

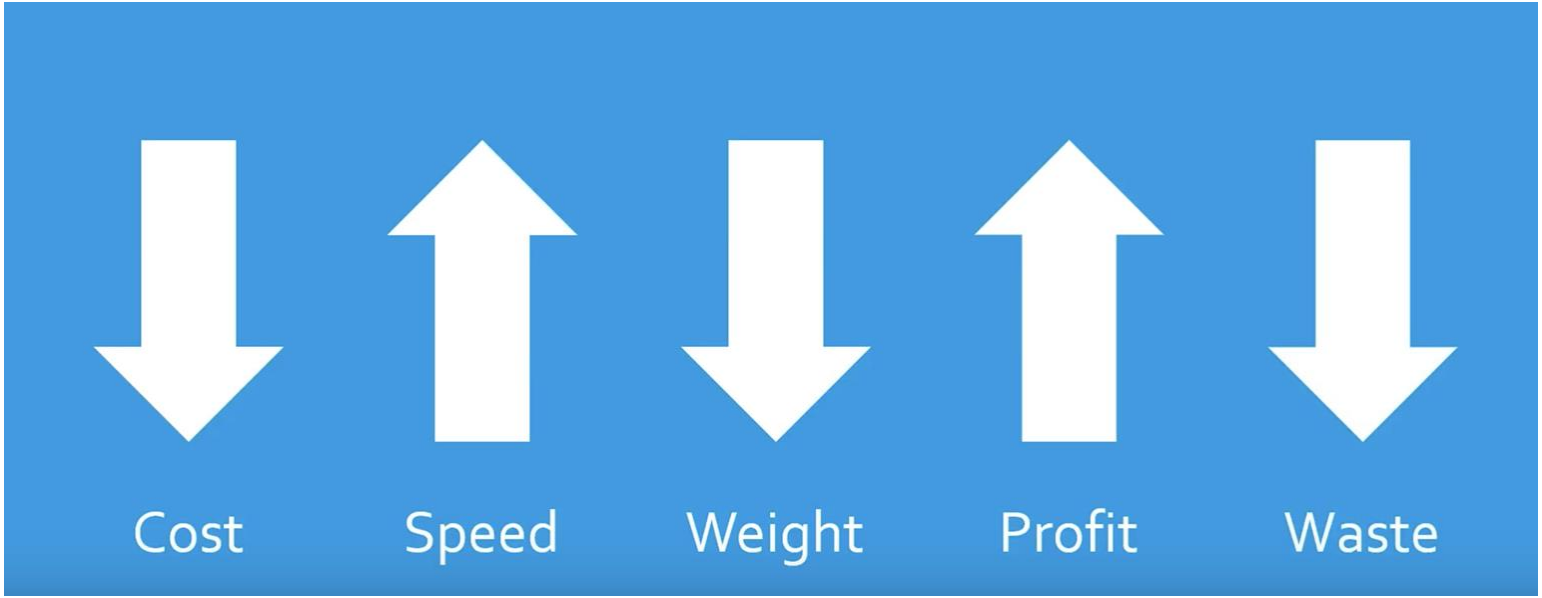


Source - ExtremeTech, Google car

Source - Voyage, Google car

OBJECTIVE FUNCTION

The value you are trying to optimize



Decision Variables

The values the function can optimize

$$f(x)$$

$$f(x, x_1)$$

$$f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_{8...})$$

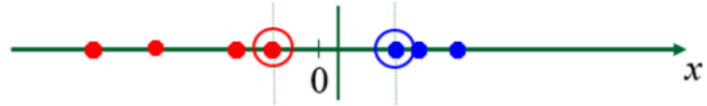
Teaching R2D2 to walk and talk…

Supervised Learning

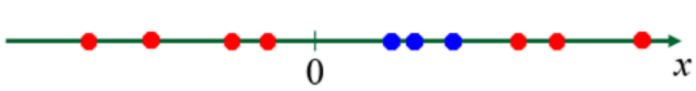
Unsupervised Learning

FIND A DECISION BOUNDARY

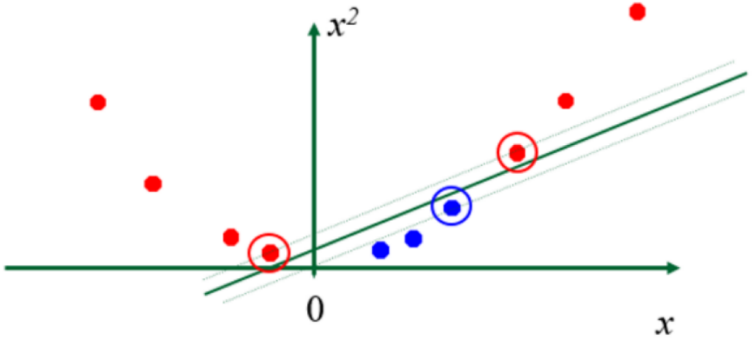
Unsupervised clustering



1D (separable)

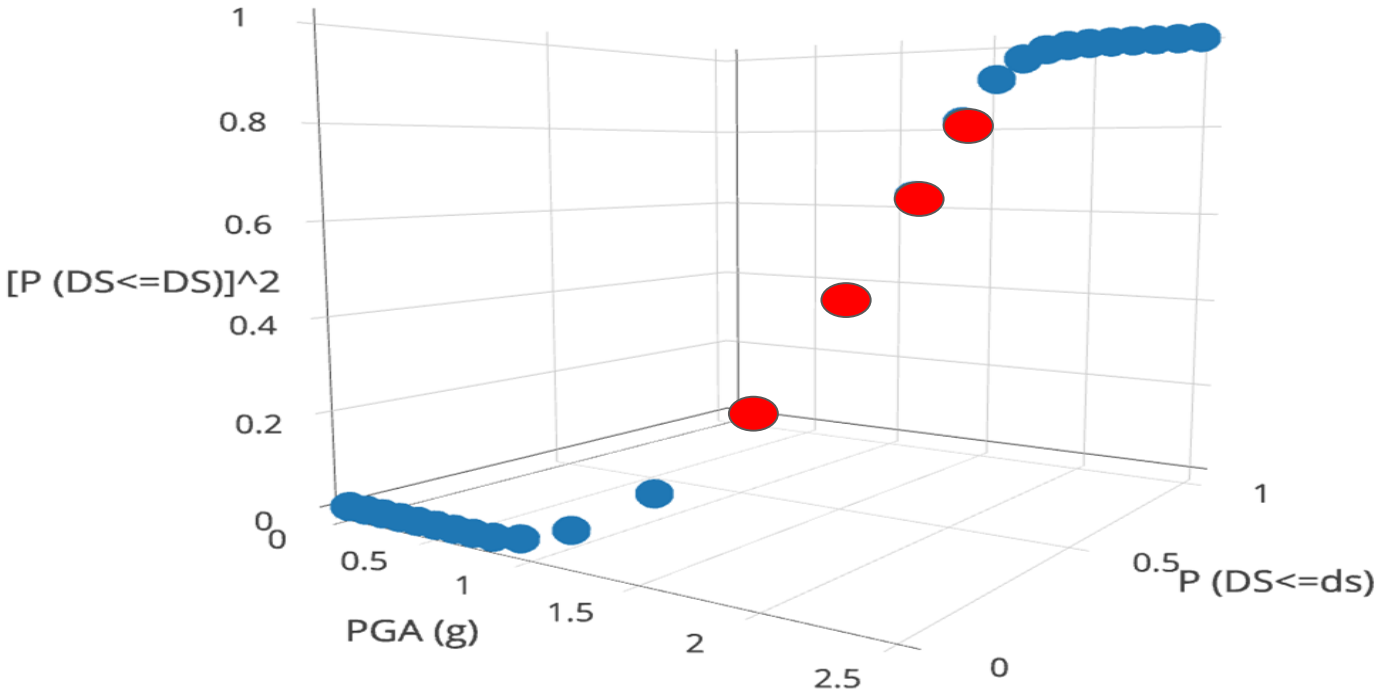


1D (non separable)

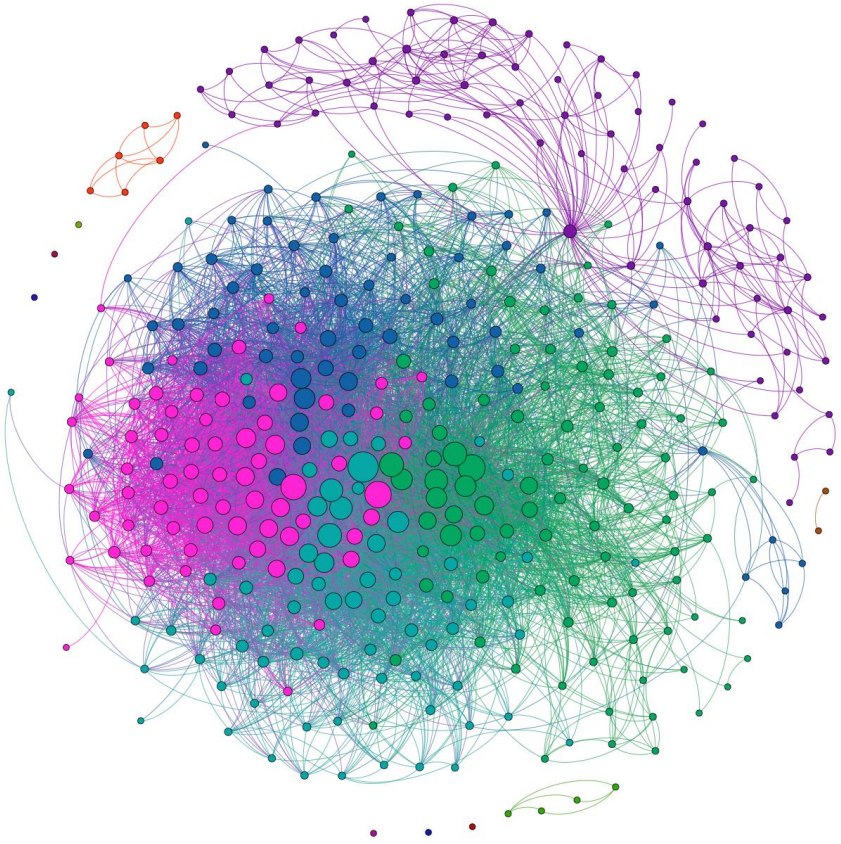


2D (separable)

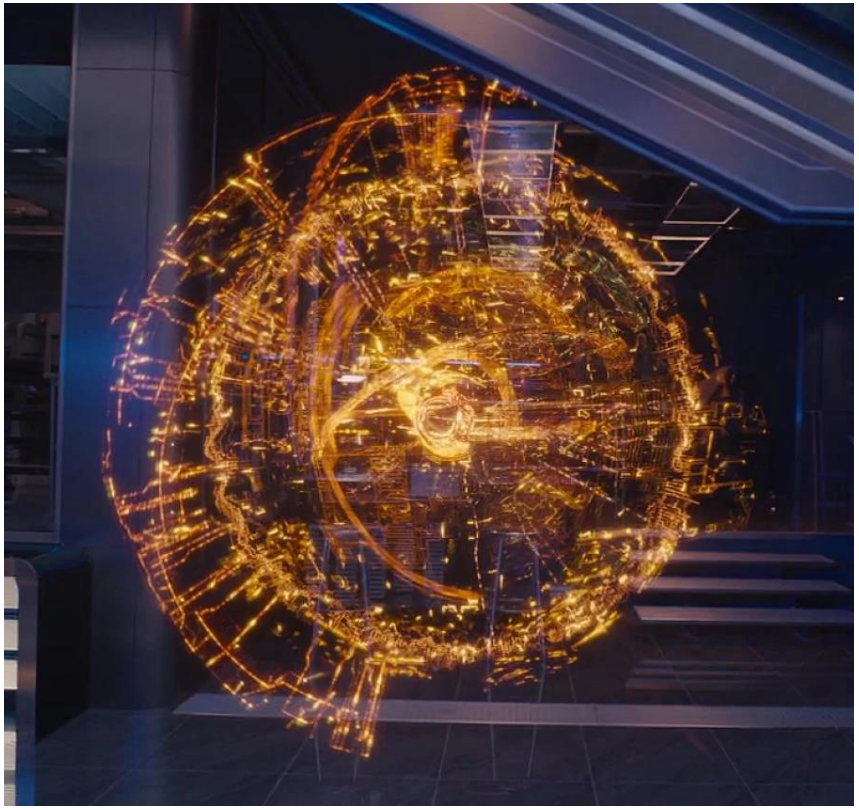
From 2D to 100+ dimensions

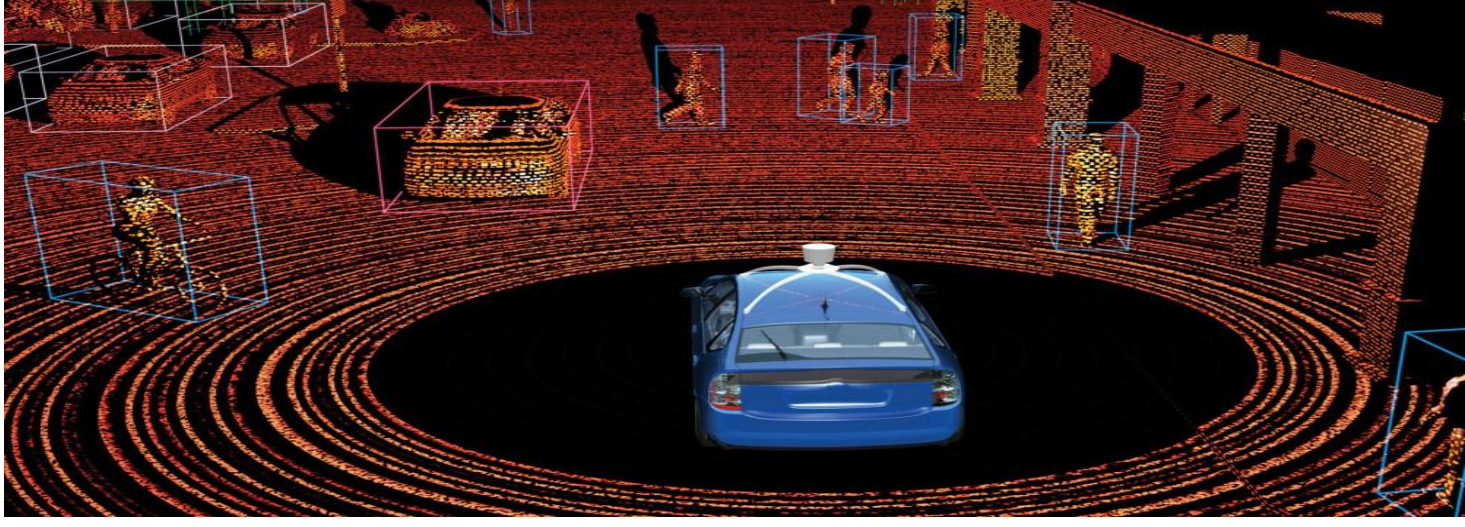


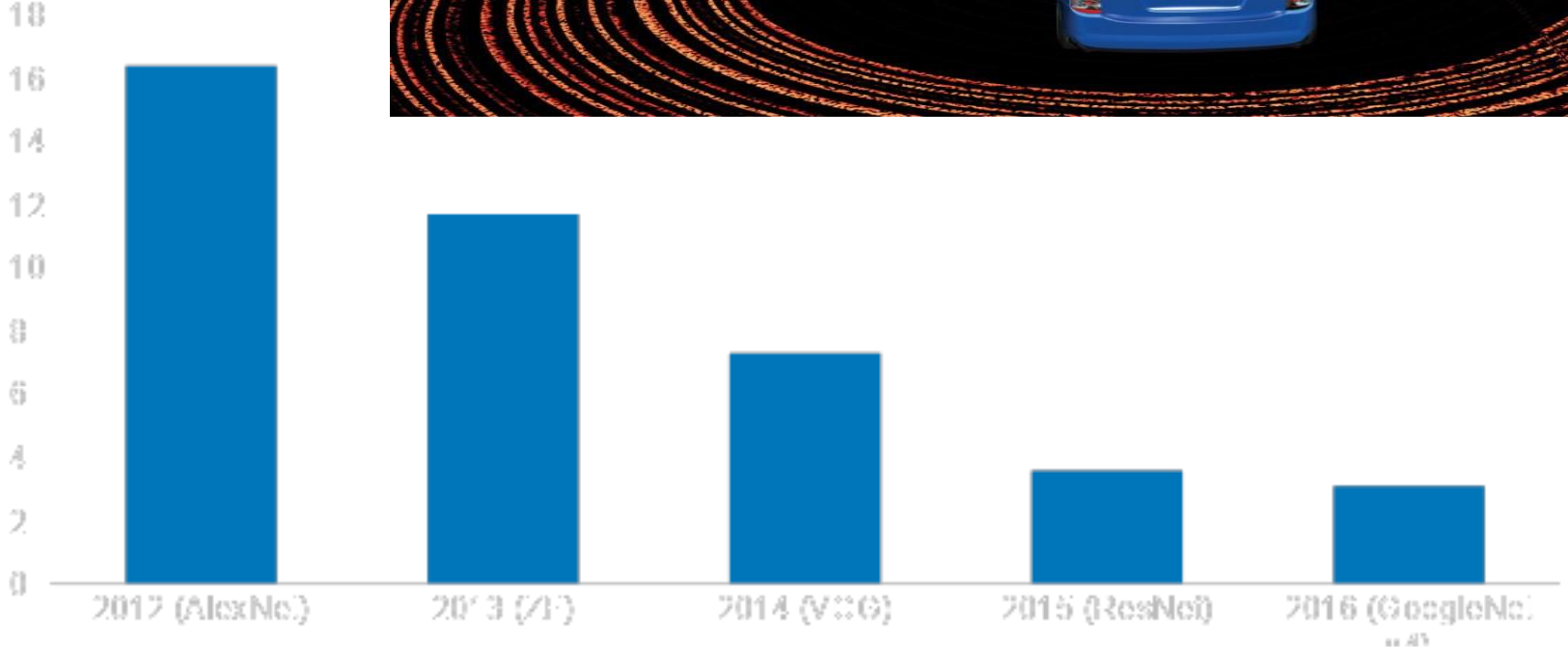
Higher dimensions required for multiple features



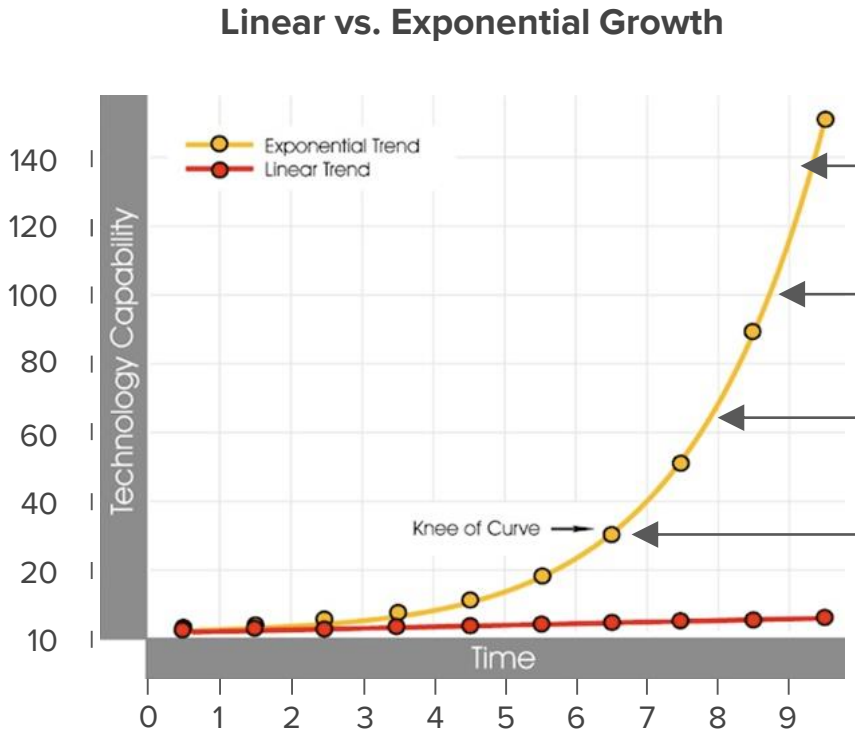
Higher dimensions required for multiple features






18
16
14
12
10
8
6
4
2
0
2017 (AlexNet)
2013 (ZF)
2014 (VGG)
2015 (ResNet)
2016 (GoogleNet)

AI & ML - Rapid Change

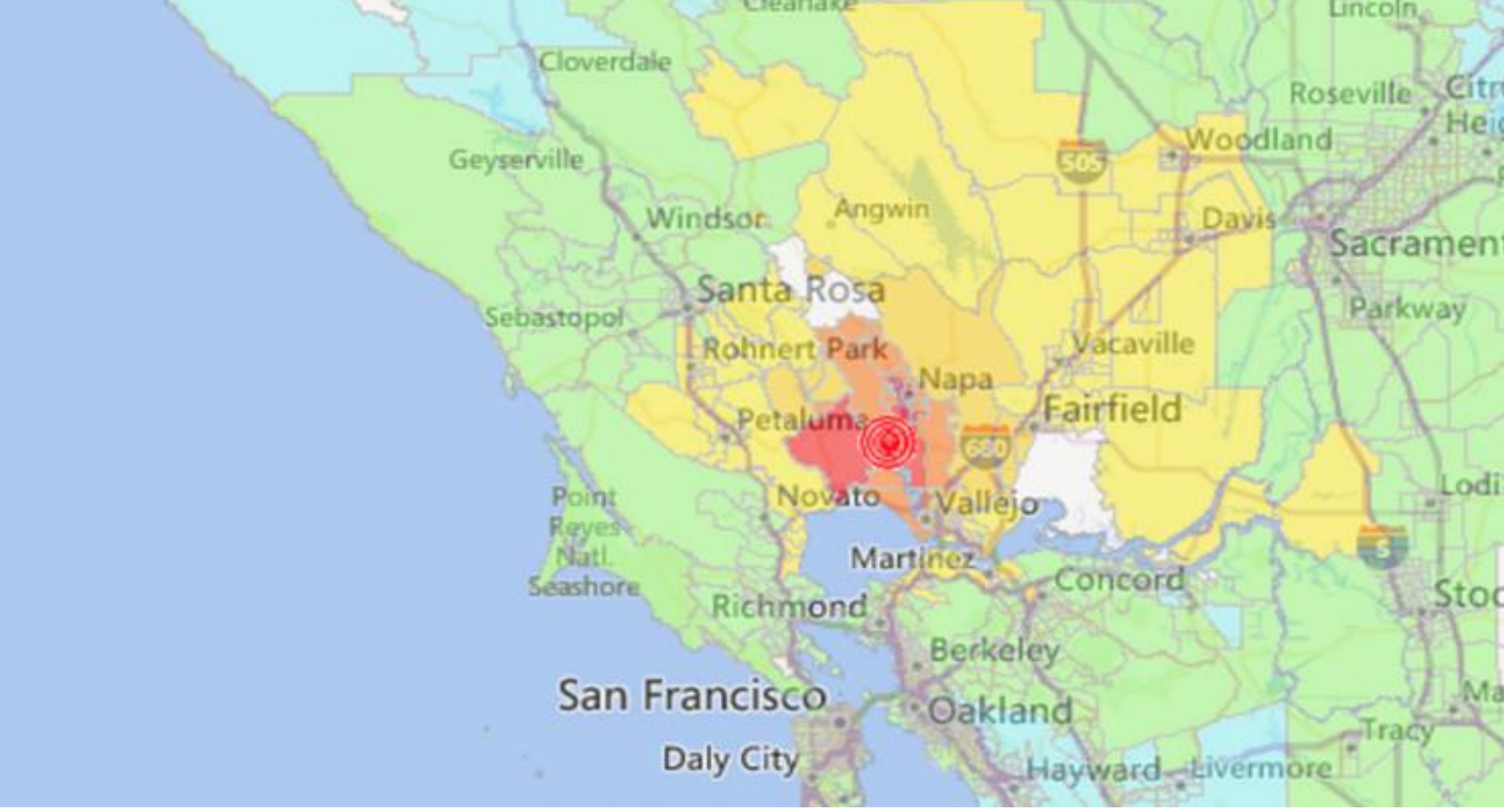


Improved Mitigation, Preparedness & Recovery

Response prioritization

Immediate Disaster Damage Prediction

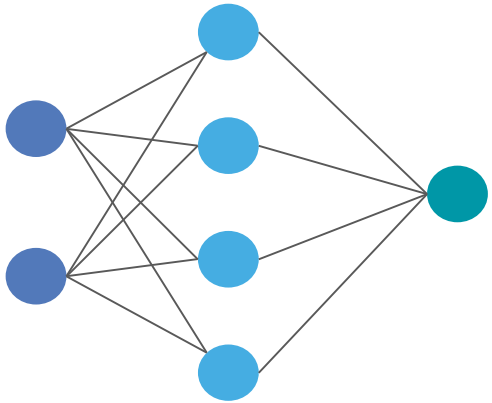
Human Augmented A.I. & Machine Learning


Cloverdale
Geyserville
Windsor
Angwin
Santa Rosa
Sebastopol
Rohnert Park
Napa
Petaluma
Novato
Vallejo
Point Reyes Natl. Seashore
Martinez
Concord
Richmond
Berkeley
San Francisco
Oakland
Daly City
Hayward
Livermore
Tracy
Woodland
Davis
Roseville
Lincoln
Vacaville
Fairfield
Parkway
Lodi
505
680
3

Historical disaster data

Built environment data

Natural environment data



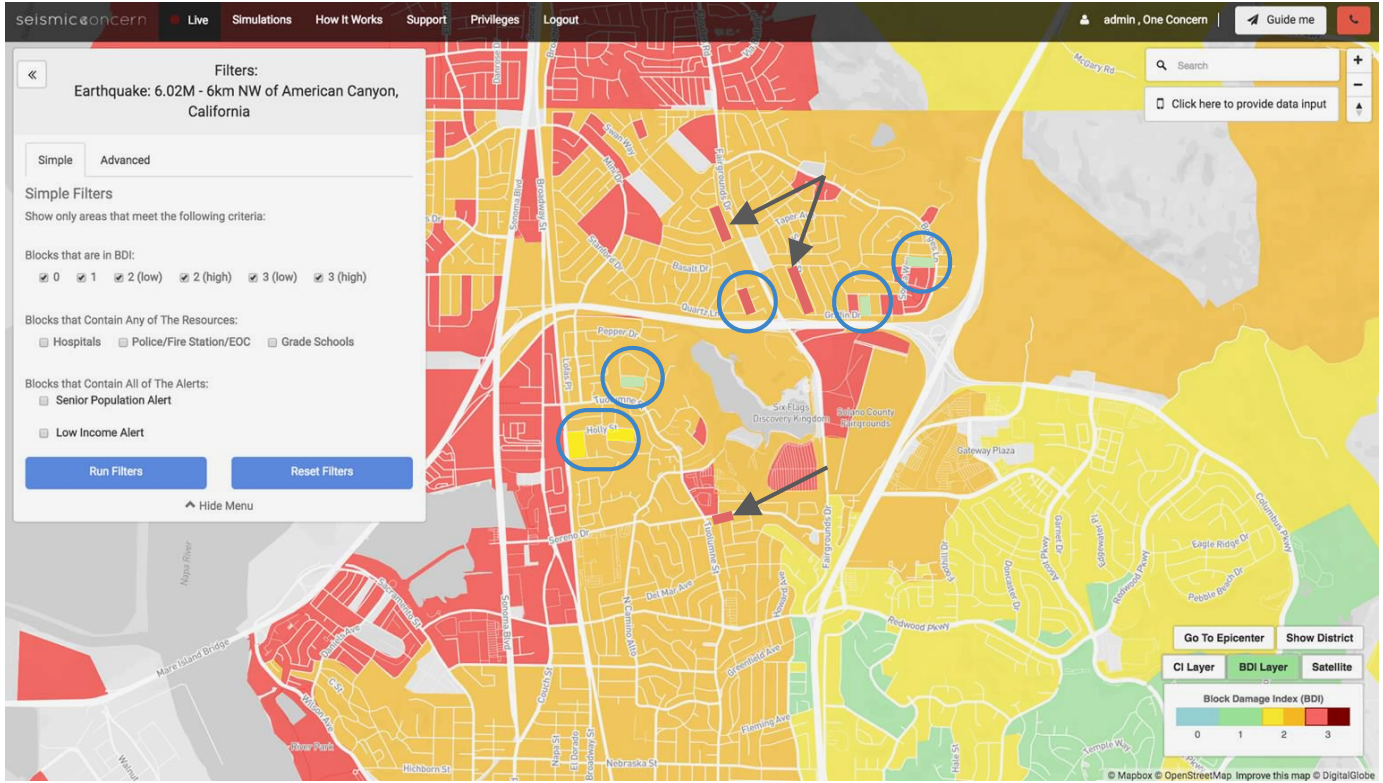
Prediction outcomes are action-oriented and vary over time

Save lives: Predict high damage states to save lives in first minutes of a disaster

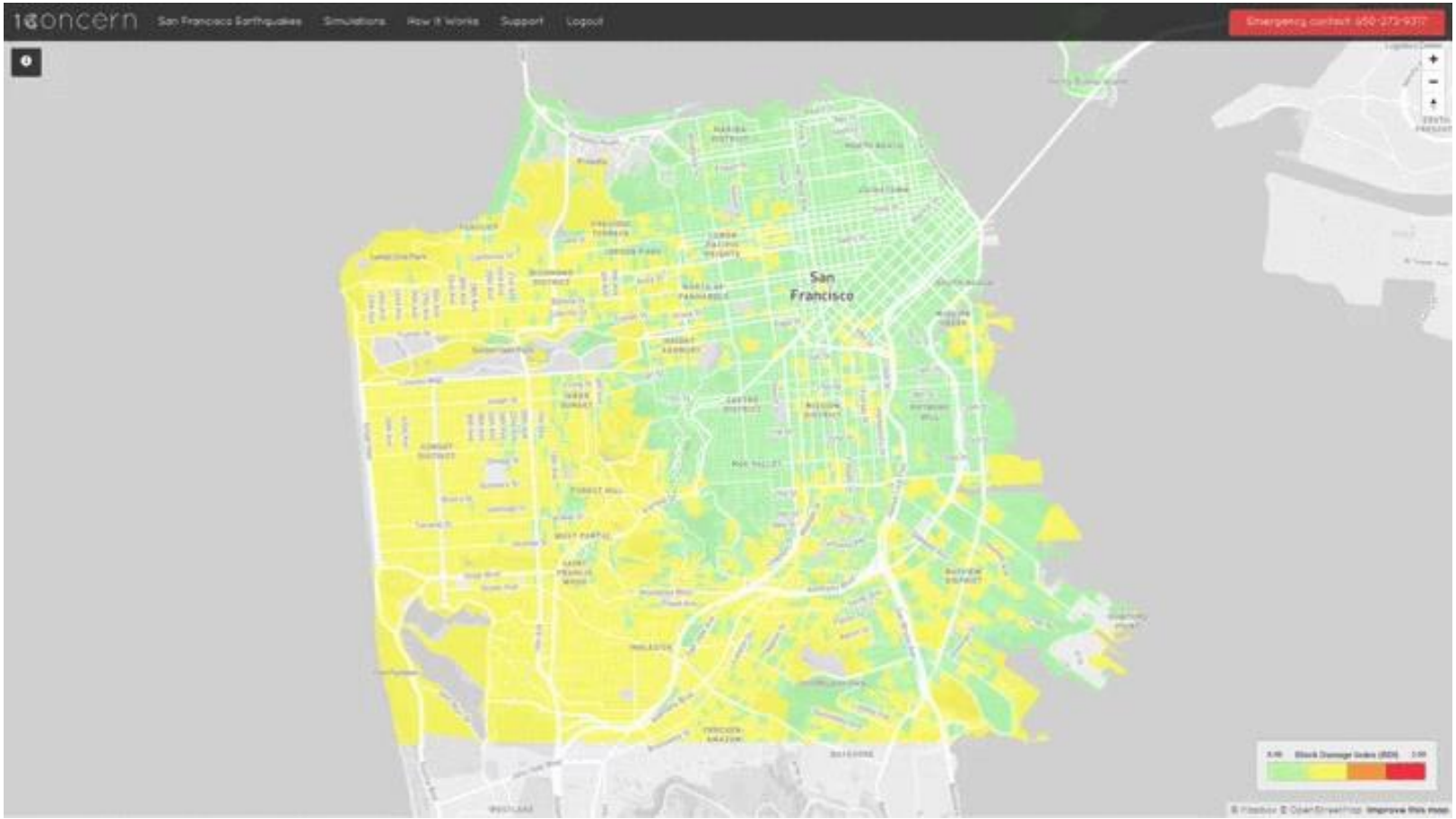
Identify safe zones: Predict low damage states for emergency personnel to utilize

Earthquake

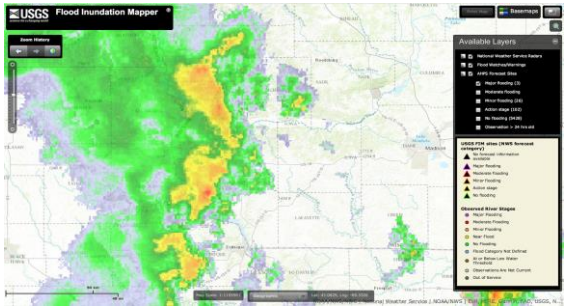
85% → 93%



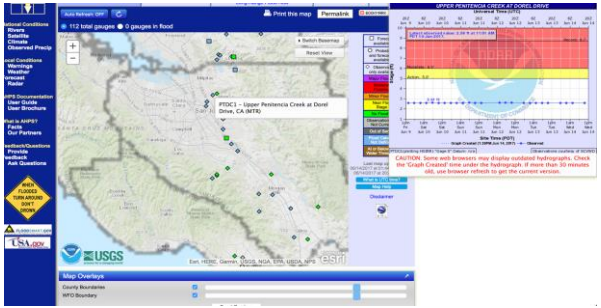
San Francisco seismic vulnerability report using 80+ simulations.



Current Flood Tools

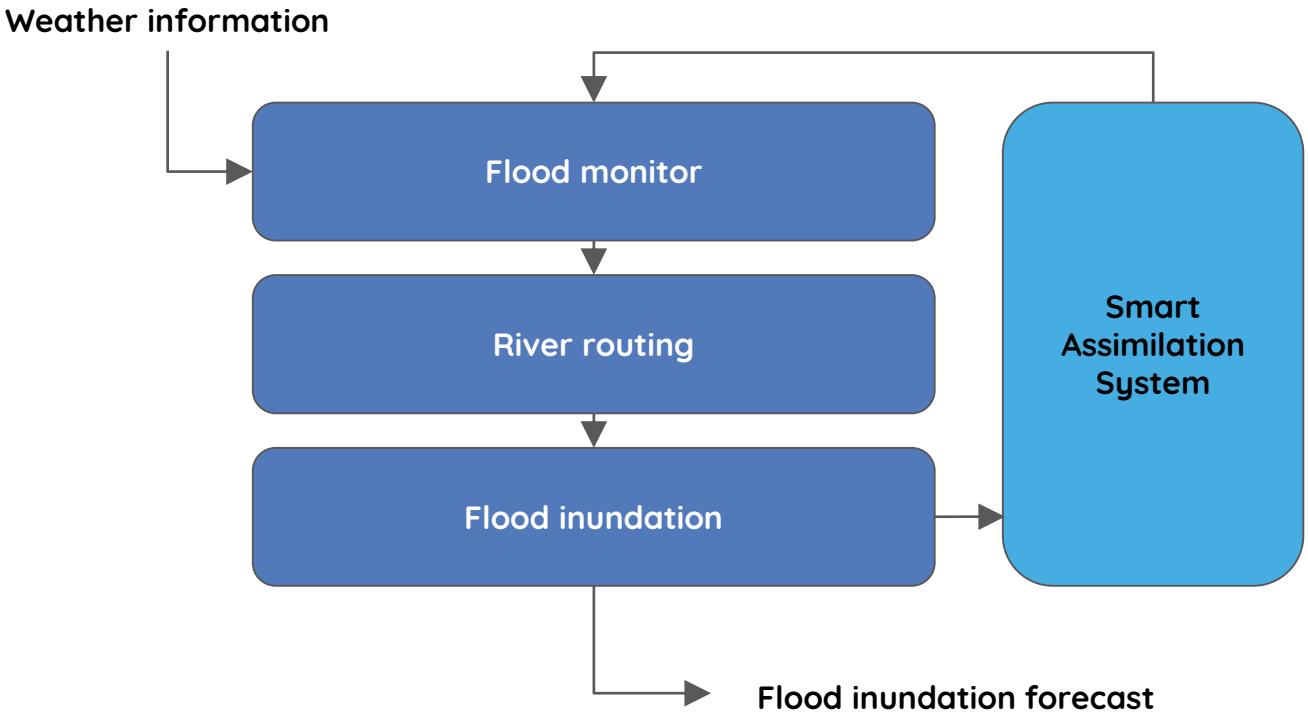


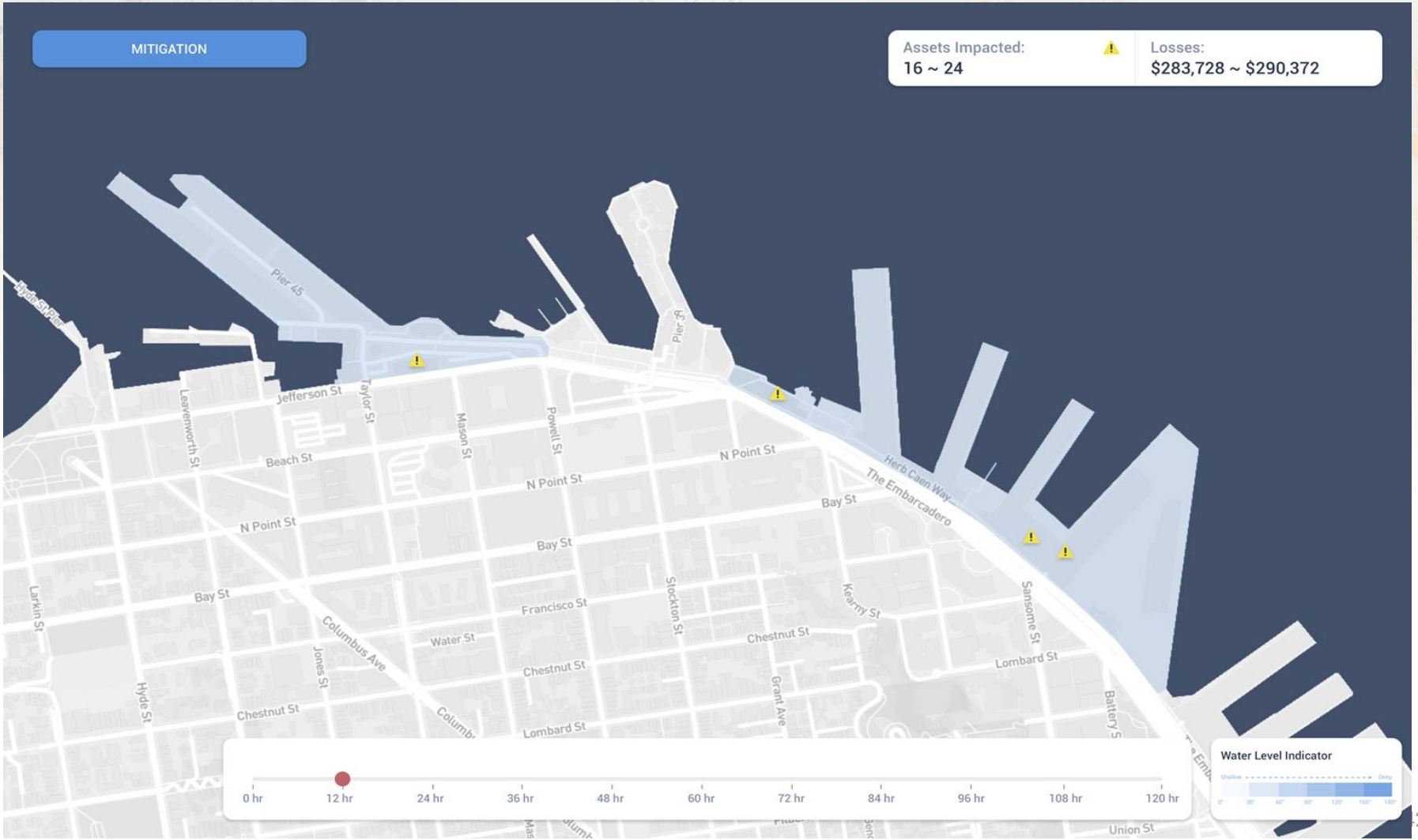
Weather mapper

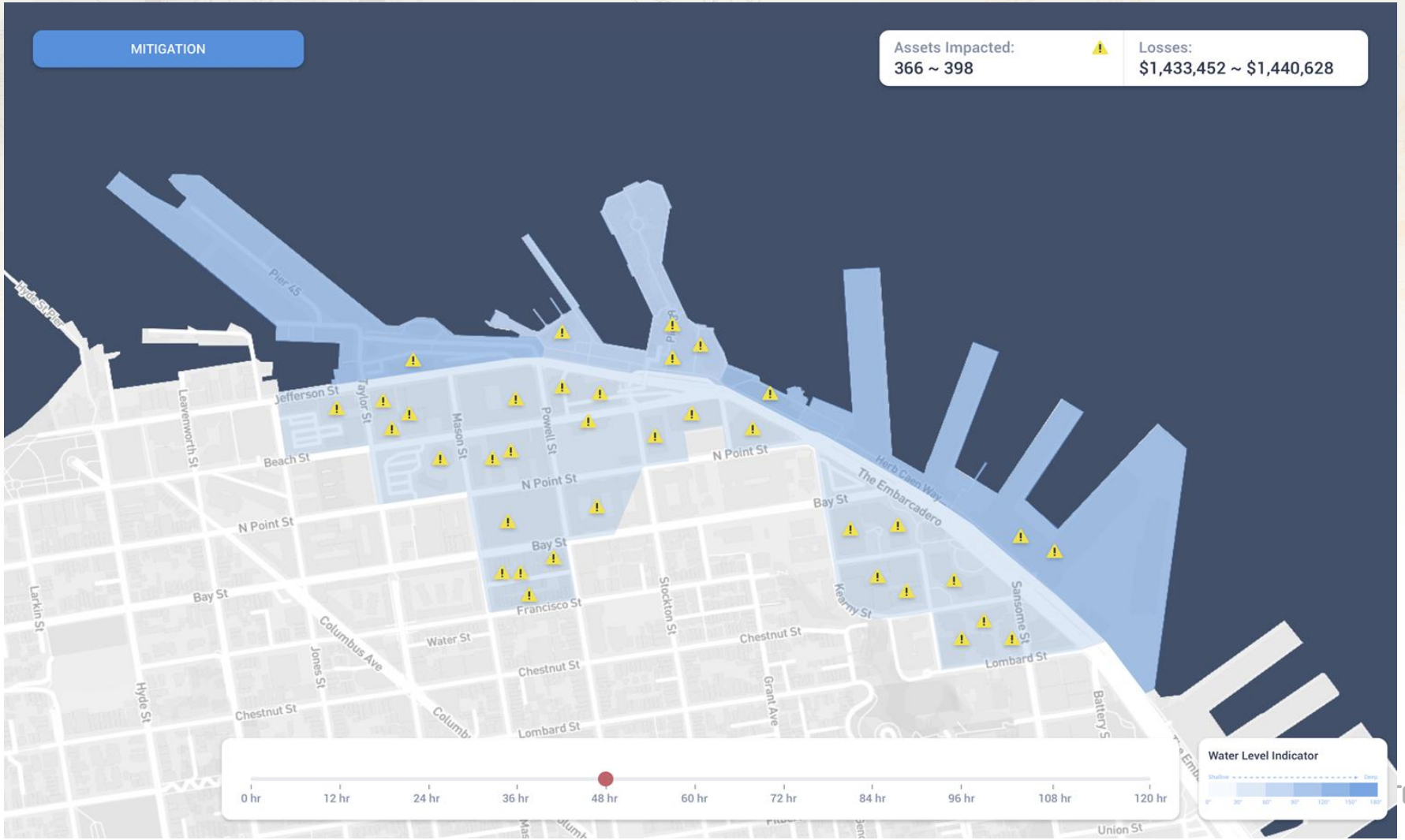


River stages at limited gauge stations

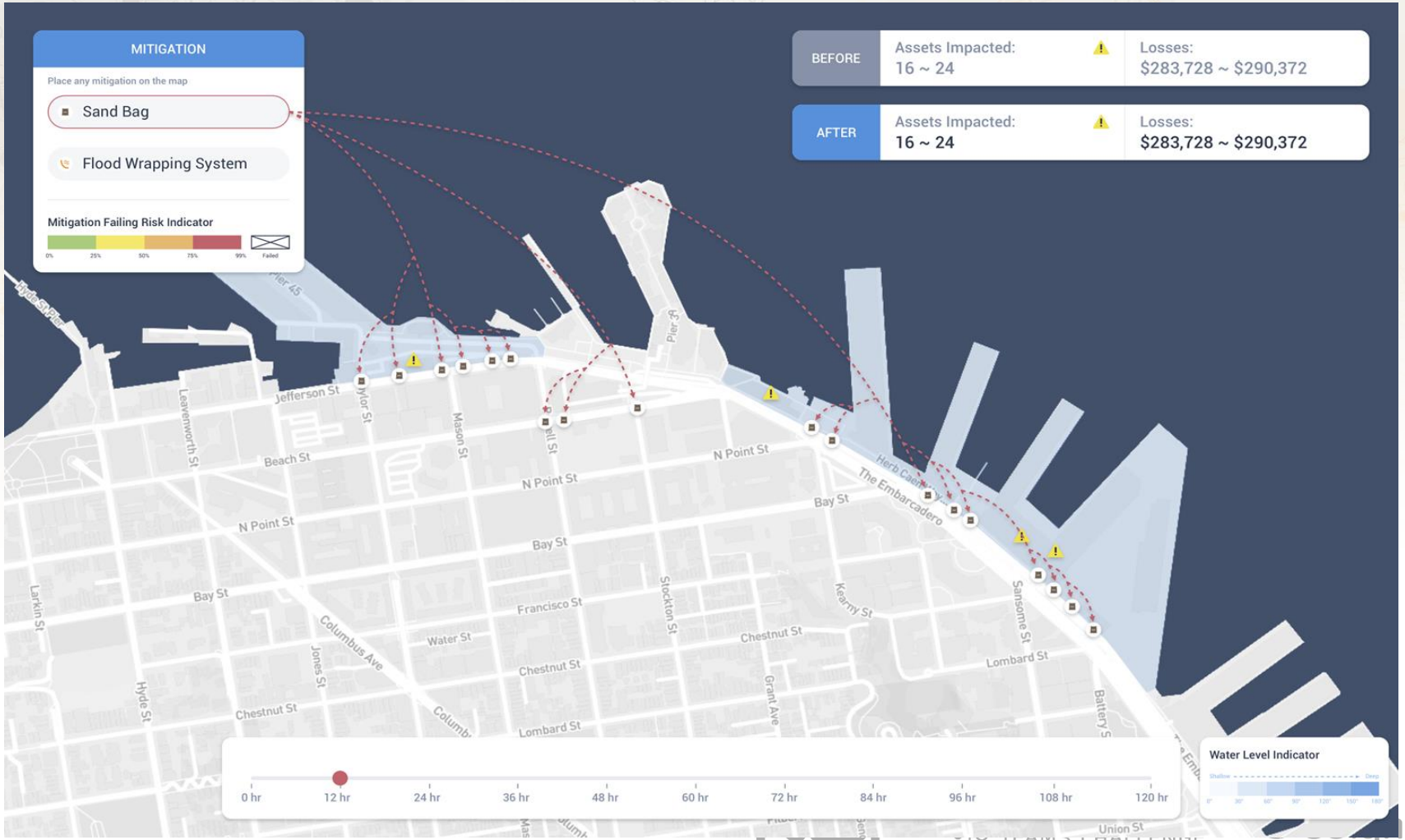
FEMA flood maps

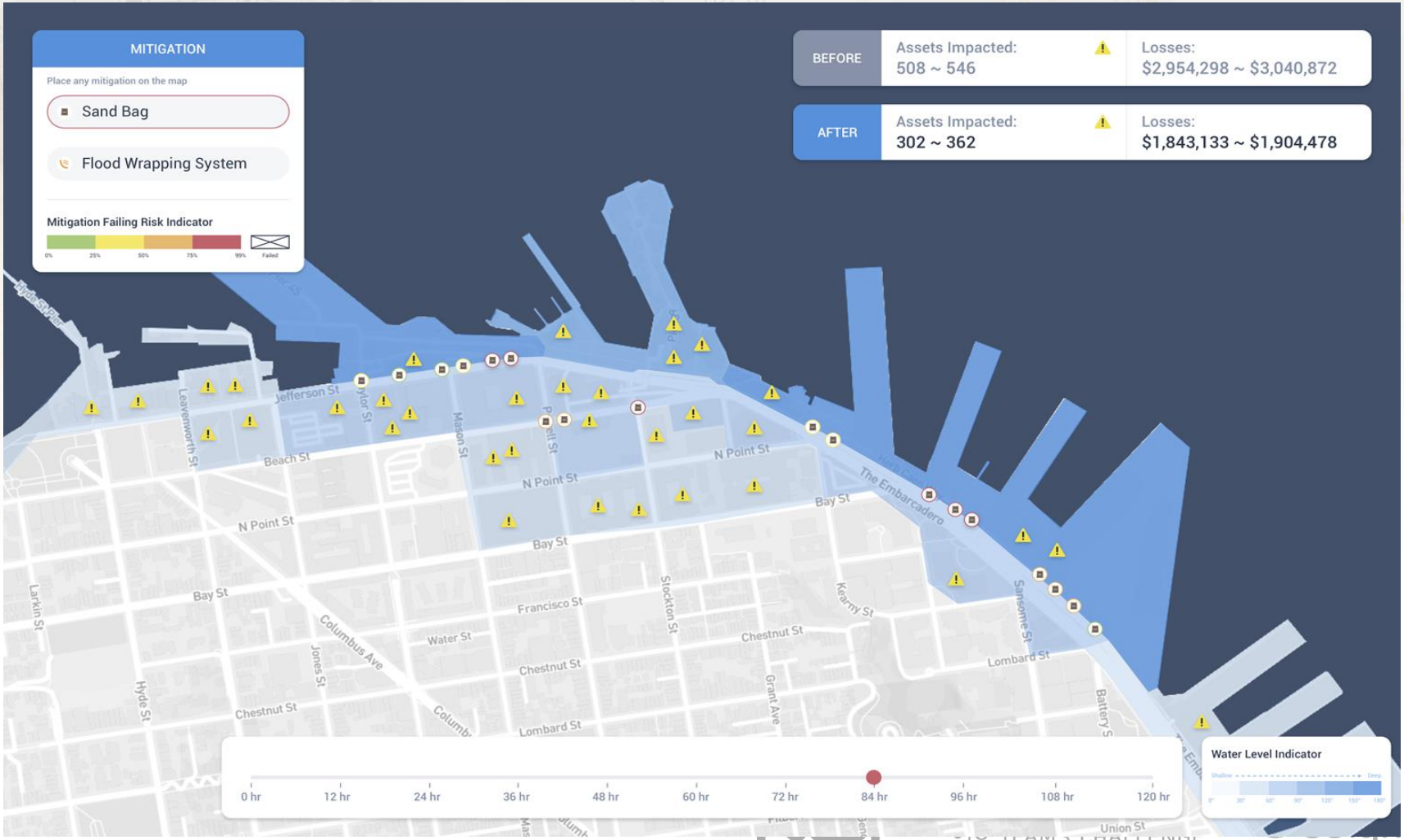

Weather information
Flood monitor
River routing
Flood inundation
Smart Assimilation System
Flood inundation forecast

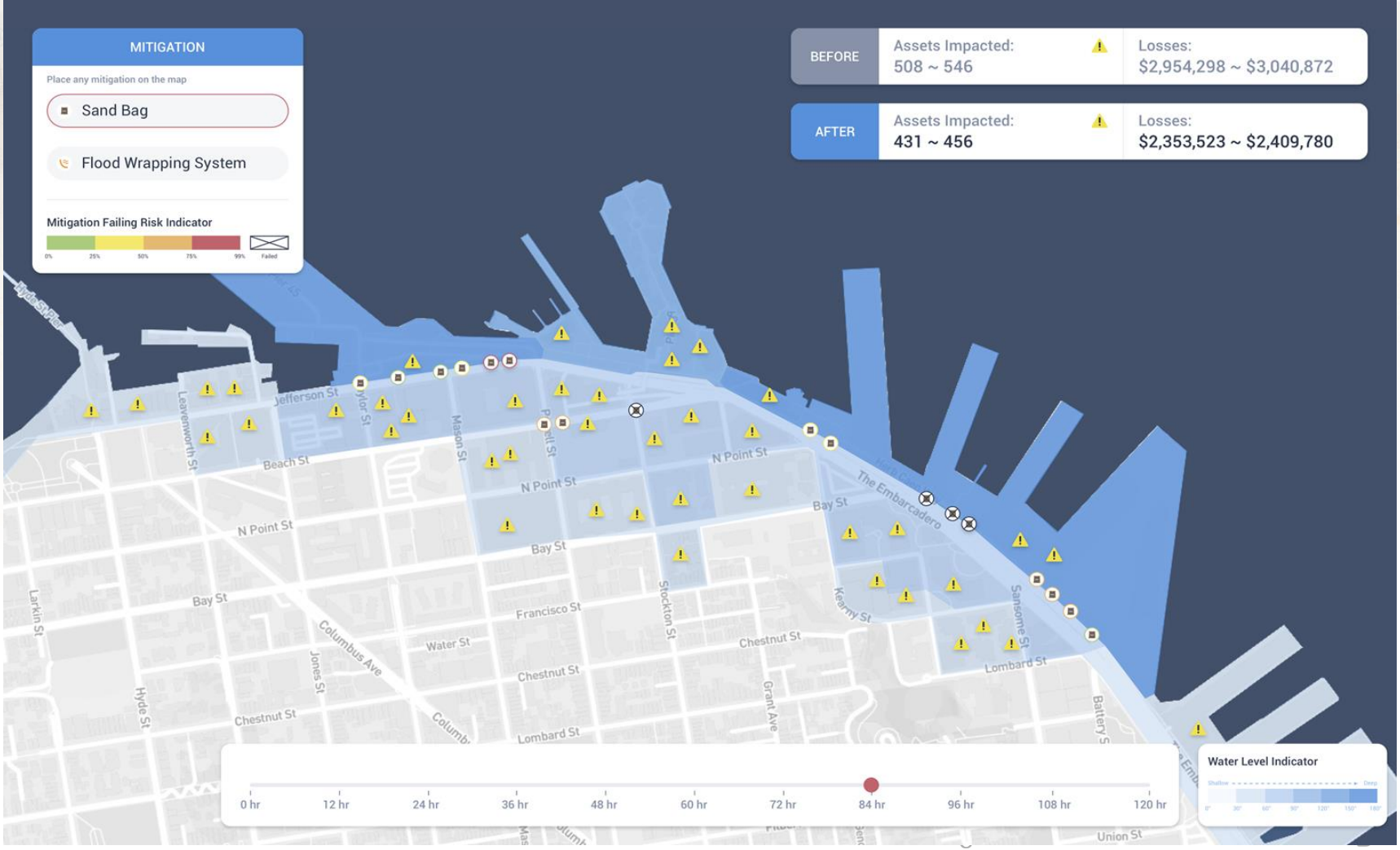

MITIGATION
Assets Impacted:
16 ~ 24
Losses:
$283,728 ~ $290,372
Pier 45
Pier 39
Jefferson St
Taylor St
Leavenworth St
Mason St
Powell St
Beach St
N Point St
N Point St
Bay St
Bay St
Bay St
Francisco St
Water St
Chestnut St
Chestnut St
Lombard St
Lombard St
Stockton St
Kearny St
Sansome St
Grant Ave
Jones St
Hyde St
Larkin St
Columbus Ave
The Embarcadero
Herb Caen Way
Union St
0 hr
12 hr
24 hr
36 hr
48 hr
60 hr
72 hr
84 hr
96 hr
108 hr
120 hr
Water Level Indicator

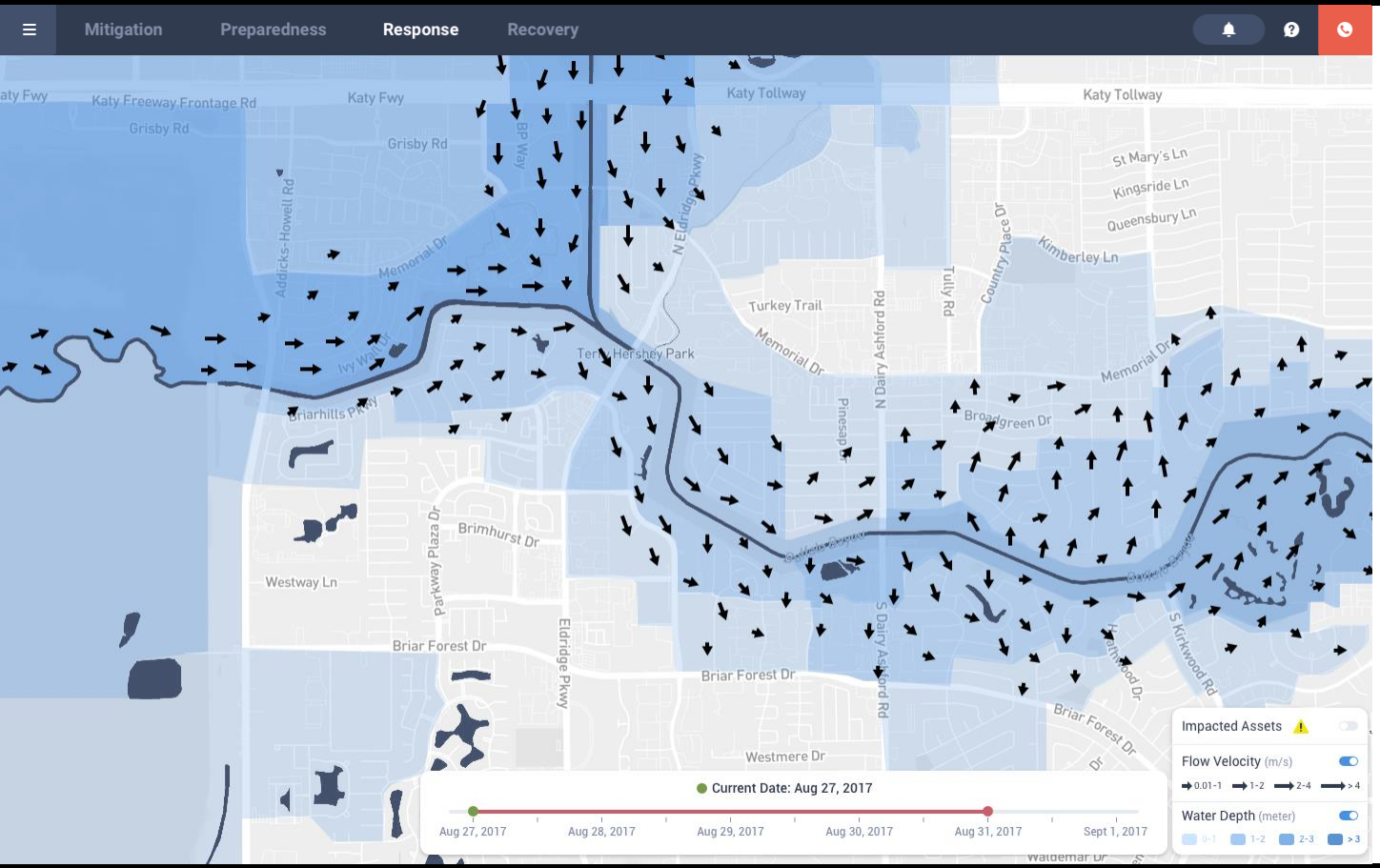

MITIGATION
Assets Impacted:
366 ~ 398
Losses:
$1,433,452 ~ $1,440,628
Pier 45
Jefferson St
Taylor St
Mason St
Powell St
Leavenworth St
Beach St
N Point St
Bay St
Francisco St
Stockton St
Kearny St
Sansome St
Herb Caen Way
The Embarcadero
Lombard St
Chestnut St
Water St
Columbus Ave
Jones St
Hyde St
Larkin St
Grant Ave
Union St
0 hr
12 hr
24 hr
36 hr
48 hr
60 hr
72 hr
84 hr
96 hr
108 hr
120 hr
Water Level Indicator

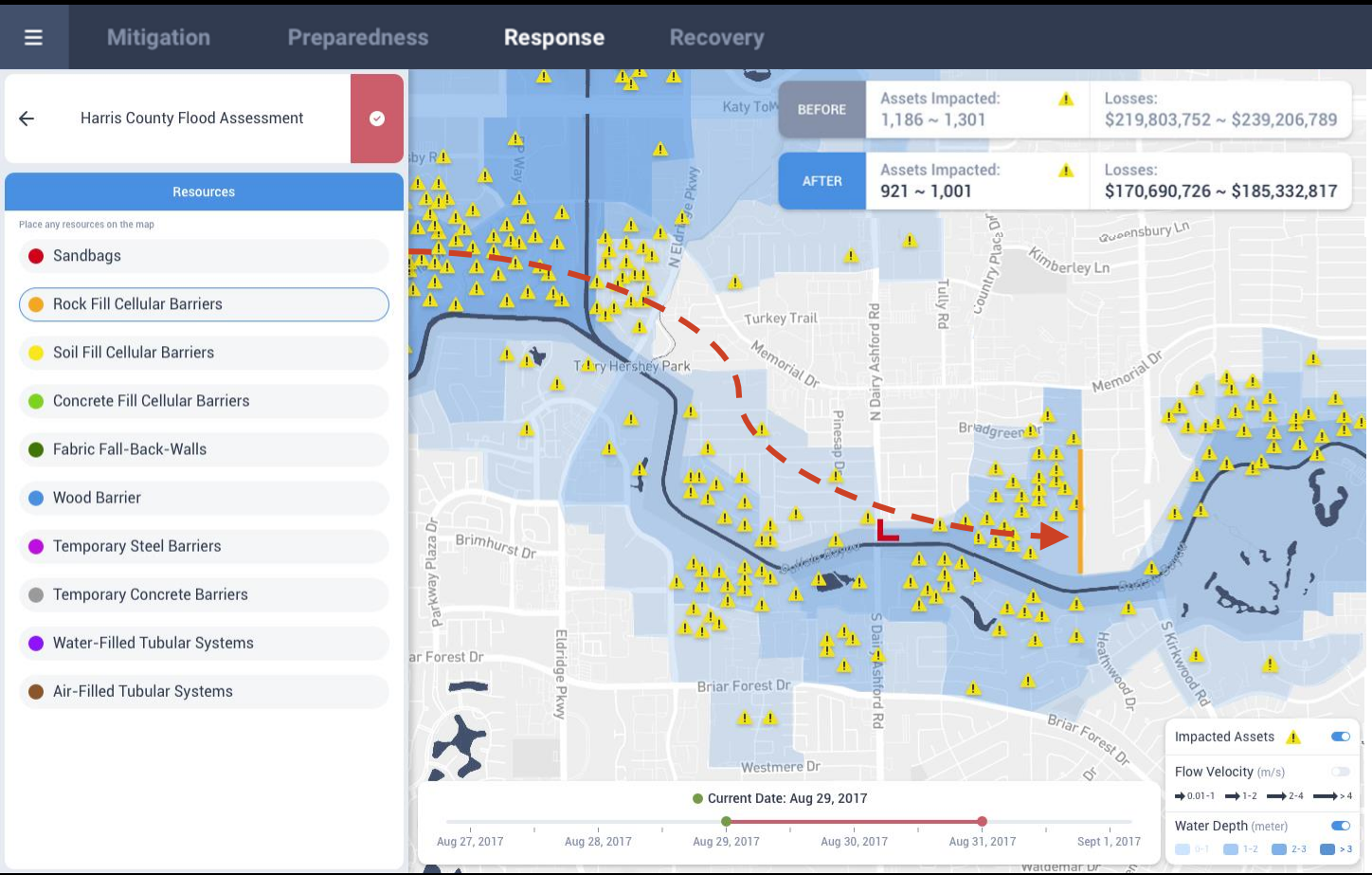

MITIGATION
Assets Impacted:
508 ~ 546
Losses:
$2,954,298 ~ $3,040,872
Beach St
N Point St
Bay St
Francisco St
Water St
Chestnut St
Lombard St
Union St
Jefferson St
Leavenworth St
Taylor St
Mason St
Powell St
Stockton St
Kearny St
Sansome St
Grant Ave
Jones St
Hyde St
Larkin St
Columbus Ave
The Embarcadero
0 hr
12 hr
24 hr
36 hr
48 hr
60 hr
72 hr
84 hr
96 hr
108 hr
120 hr
Water Level Indicator


MITIGATION
Place any mitigation on the map
Sand Bag
Flood Wrapping System
Mitigation Failing Risk Indicator
0%
25%
50%
75%
99%
Failed
BEFORE
Assets Impacted:
16 ~ 24
Losses:
$283,728 ~ $290,372
AFTER
Assets Impacted:
16 ~ 24
Losses:
$283,728 ~ $290,372
Pier 45
Pier 39
Jefferson St
Leavenworth St
Taylor St
Mason St
Beach St
N Point St
Bay St
Francisco St
Water St
Chestnut St
Lombard St
Union St
Larkin St
Hyde St
Jones St
Columbus Ave
Stockton St
Grant Ave
Kearny St
Sansome St
The Embarcadero
0 hr
12 hr
24 hr
36 hr
48 hr
60 hr
72 hr
84 hr
96 hr
108 hr
120 hr
Water Level Indicator


MITIGATION
Place any mitigation on the map
Sand Bag
Flood Wrapping System
Mitigation Failing Risk Indicator
0%
25%
50%
75%
99%
Failed
BEFORE
Assets Impacted:
508 ~ 546
Losses:
$2,954,298 ~ $3,040,872
AFTER
Assets Impacted:
302 ~ 362
Losses:
$1,843,133 ~ $1,904,478
Jefferson St
Beach St
N Point St
Bay St
Francisco St
Chestnut St
Lombard St
Water St
Union St
Columbus Ave
The Embarcadero
Leavenworth St
Taylor St
Mason St
Powell St
Stockton St
Kearny St
Grant Ave
Sansome St
Battery St
Larkin St
Hyde St
Jones St
0 hr
12 hr
24 hr
36 hr
48 hr
60 hr
72 hr
84 hr
96 hr
108 hr
120 hr
Water Level Indicator
Shallow
Deep


MITIGATION
Place any mitigation on the map
Sand Bag
Flood Wrapping System
Mitigation Failing Risk Indicator
0%
25%
50%
75%
99%
Failed
BEFORE
Assets Impacted:
508 ~ 546
Losses:
$2,954,298 ~ $3,040,872
AFTER
Assets Impacted:
431 ~ 456
Losses:
$2,353,523 ~ $2,409,780
Jefferson St
Beach St
N Point St
Bay St
Francisco St
Water St
Chestnut St
Lombard St
Union St
The Embarcadero
Leavenworth St
Mason St
Taylor St
Powell St
Stockton St
Kearny St
Sansome St
Battery St
Grant Ave
Columbus Ave
Jones St
Hyde St
Larkin St
0 hr
12 hr
24 hr
36 hr
48 hr
60 hr
72 hr
84 hr
96 hr
108 hr
120 hr
Water Level Indicator
Shallow
Deep


Mitigation
Preparedness
Response
Recovery
Katy Freeway Frontage Rd
Katy Fwy
Grisby Rd
Katy Tollway
St Mary's Ln
Kingsride Ln
Queensbury Ln
Kimberley Ln
Addicks-Howell Rd
Memorial Dr
Ivy Wall
Terry Hershey Park
Briarhills Pkwy
Turkey Trail
N Eldridge Pkwy
Tully Rd
Country Place Dr
N Dairy Ashford Rd
Pinesage
Browngreen Dr
Brimhurst Dr
Parkway Plaza Dr
Westway Ln
Briar Forest Dr
Eldridge Pkwy
S Dairy Ashford Rd
Briarwood Dr
S Kirkwood Rd
Westmere Dr
Current Date: Aug 27, 2017
Aug 27, 2017
Aug 28, 2017
Aug 29, 2017
Aug 30, 2017
Aug 31, 2017
Sept 1, 2017
Impacted Assets
Flow Velocity (m/s)
0.01-1
1-2
2-4
> 4
Water Depth (meter)
1-2
2-3
> 3


Mitigation
Preparedness
Response
Recovery
Harris County Flood Assessment
Resources
Place any resources on the map
Sandbags
Rock Fill Cellular Barriers
Soil Fill Cellular Barriers
Concrete Fill Cellular Barriers
Fabric Fall-Back-Walls
Wood Barrier
Temporary Steel Barriers
Temporary Concrete Barriers
Water-Filled Tubular Systems
Air-Filled Tubular Systems
BEFORE
Assets Impacted:
1,186 ~ 1,301
Losses:
$219,803,752 ~ $239,206,789
AFTER
Assets Impacted:
921 ~ 1,001
Losses:
$170,690,726 ~ $185,332,817
Turkey Trail
Memorial Dr
Hershey Park
N Dairy Ashford Rd
Kimberley Ln
Queensbury Ln
Briadgreen Dr
Brimhurst Dr
Parkway Plaza Dr
Eldridge Pkwy
Briar Forest Dr
Westmere Dr
S Dairy Ashford Rd
Heathwood Dr
S Kirkwood Rd
Current Date: Aug 29, 2017
Aug 27, 2017
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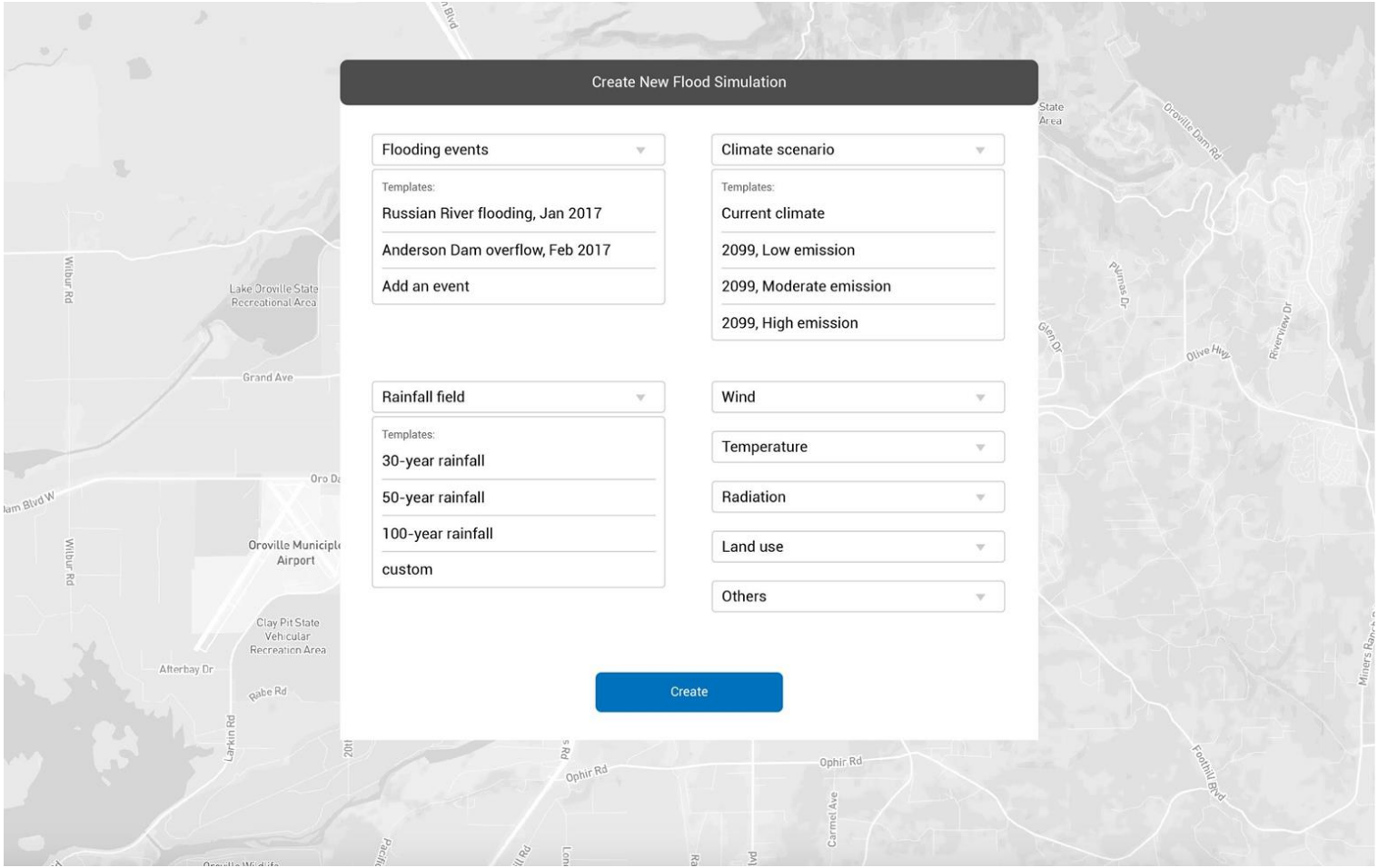
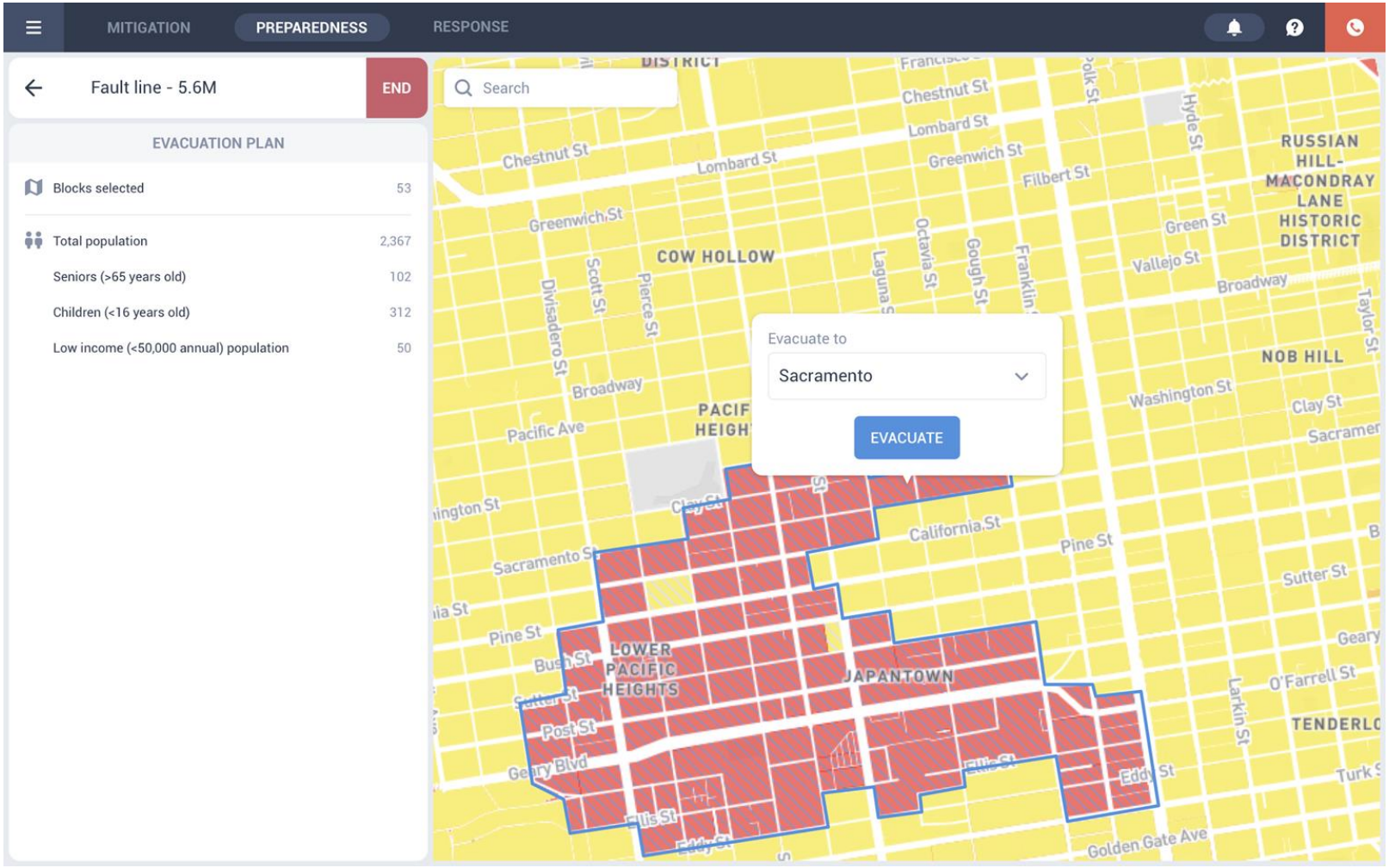
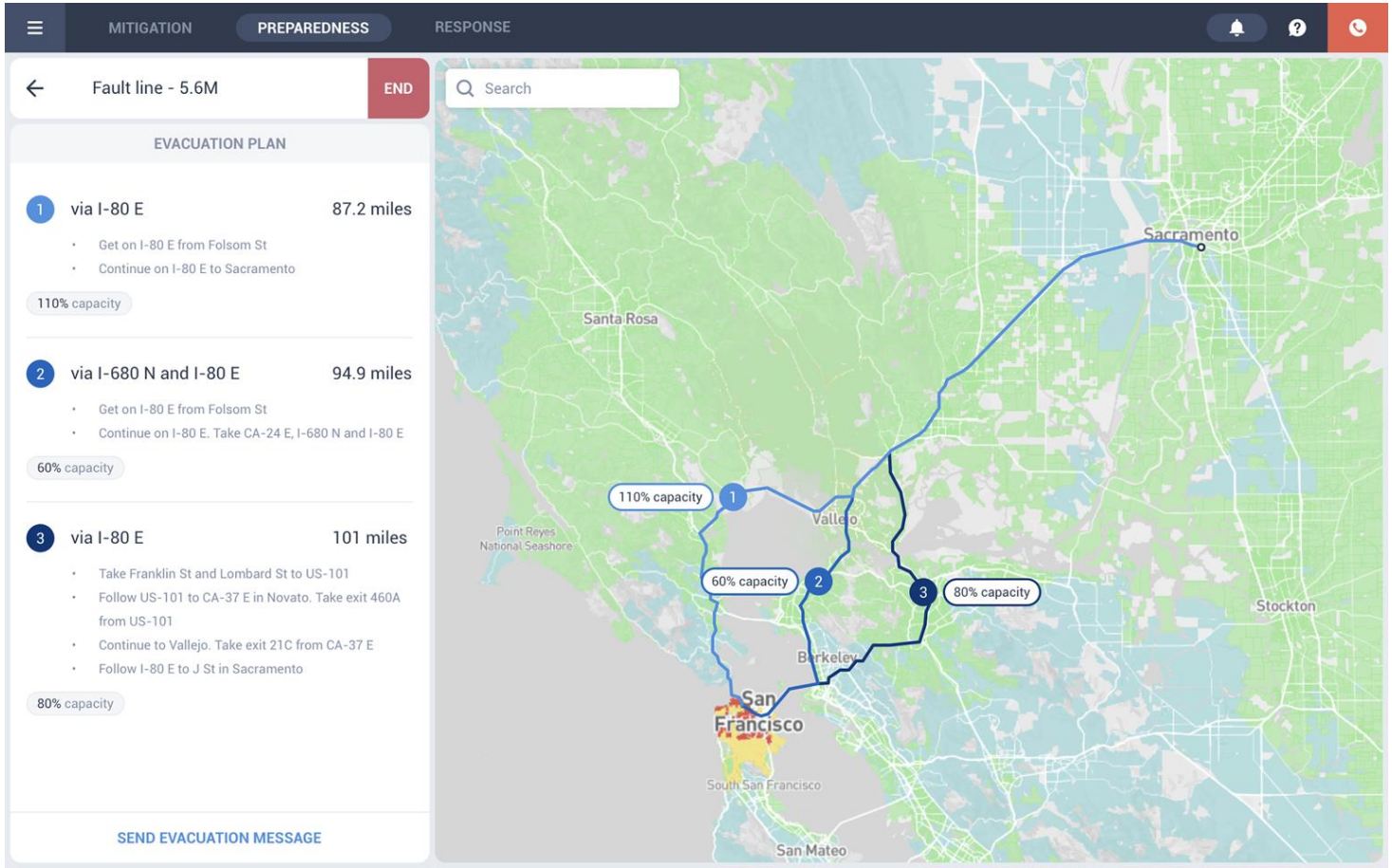
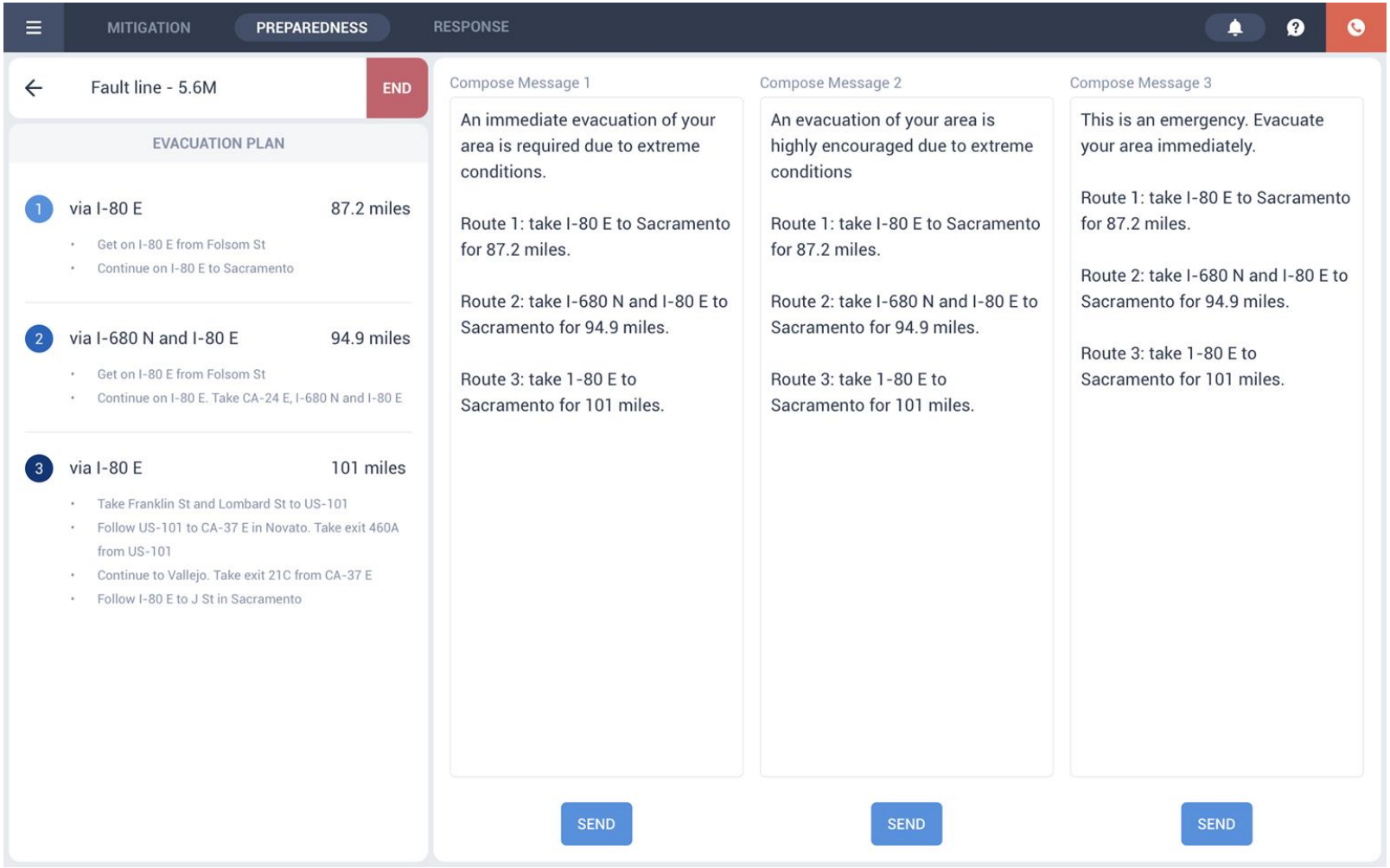
Sept 1, 2017
Impacted Assets
Flow Velocity (m/s)
0.01-1
1-2
2-4
> 4
Water Depth (meter)
1-2
2-3
> 3

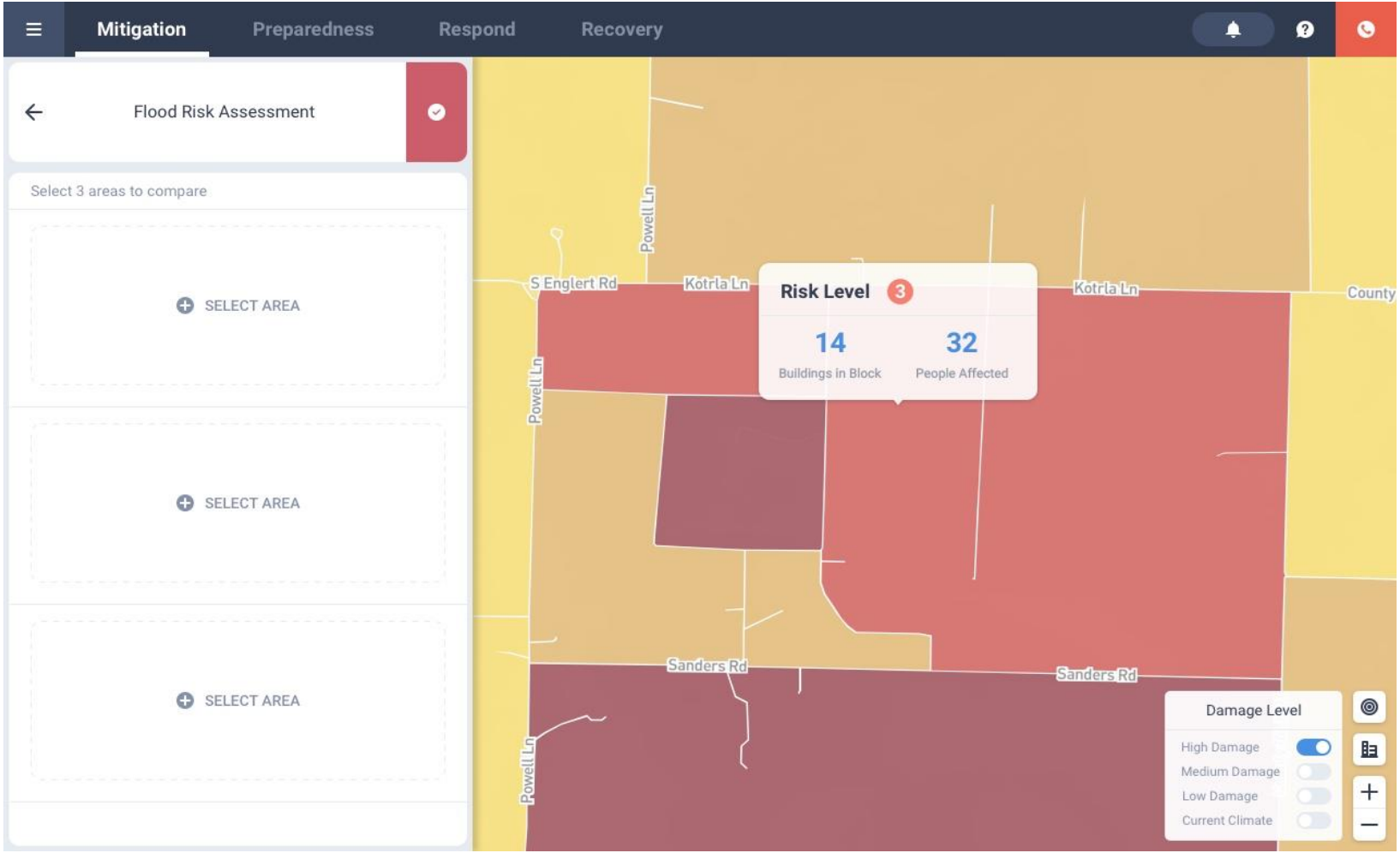


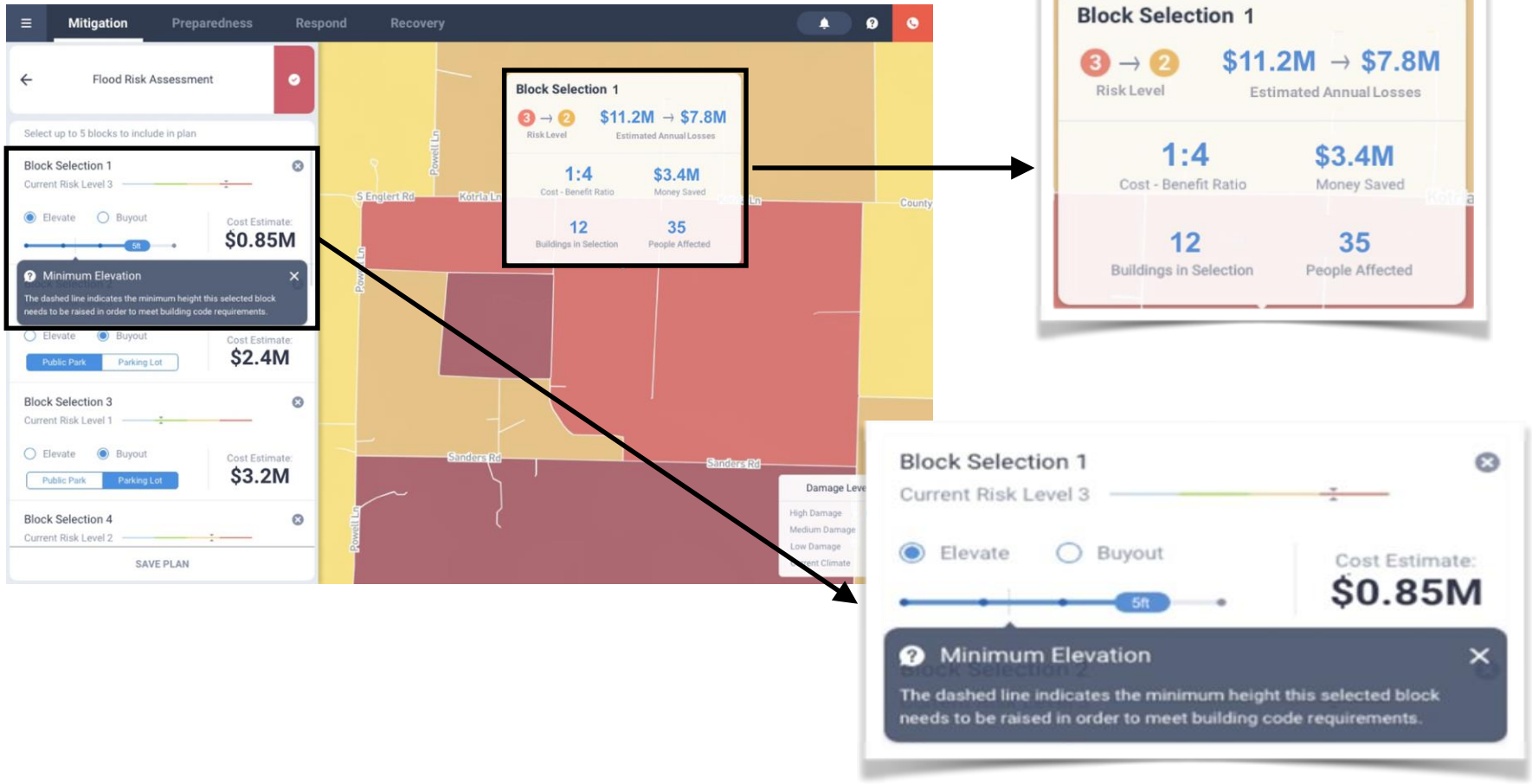

MITIGATION
PREPAREDNESS
RESPONSE
Fault line - 5.6M
END
EVACUATION PLAN
Blocks selected 53
Total population 2,367
Seniors (>65 years old) 102
Children (<16 years old) 312
Low income (<50,000 annual) population 50
Search
Evacuate to
Sacramento
EVACUATE
COW HOLLOW
NOB HILL
RUSSIAN HILL-MACONDRAY LANE HISTORIC DISTRICT
LOWER PACIFIC HEIGHTS
JAPANTOWN
Chestnut St
Lombard St
Greenwich St
Filbert St
Green St
Vallejo St
Broadway
Pacific Ave
Washington St
Clay St
California St
Pine St
Sutter St
Geary
O'Farrell St
Post St
Geary Blvd
Ellis St
Eddy St
Golden Gate Ave
Sacramento St
Bush St
Scott St
Pierce St
Divisadero St
Octavia St
Gough St
Franklin St
Laguna St
Hyde St
Larkin St
Taylor St

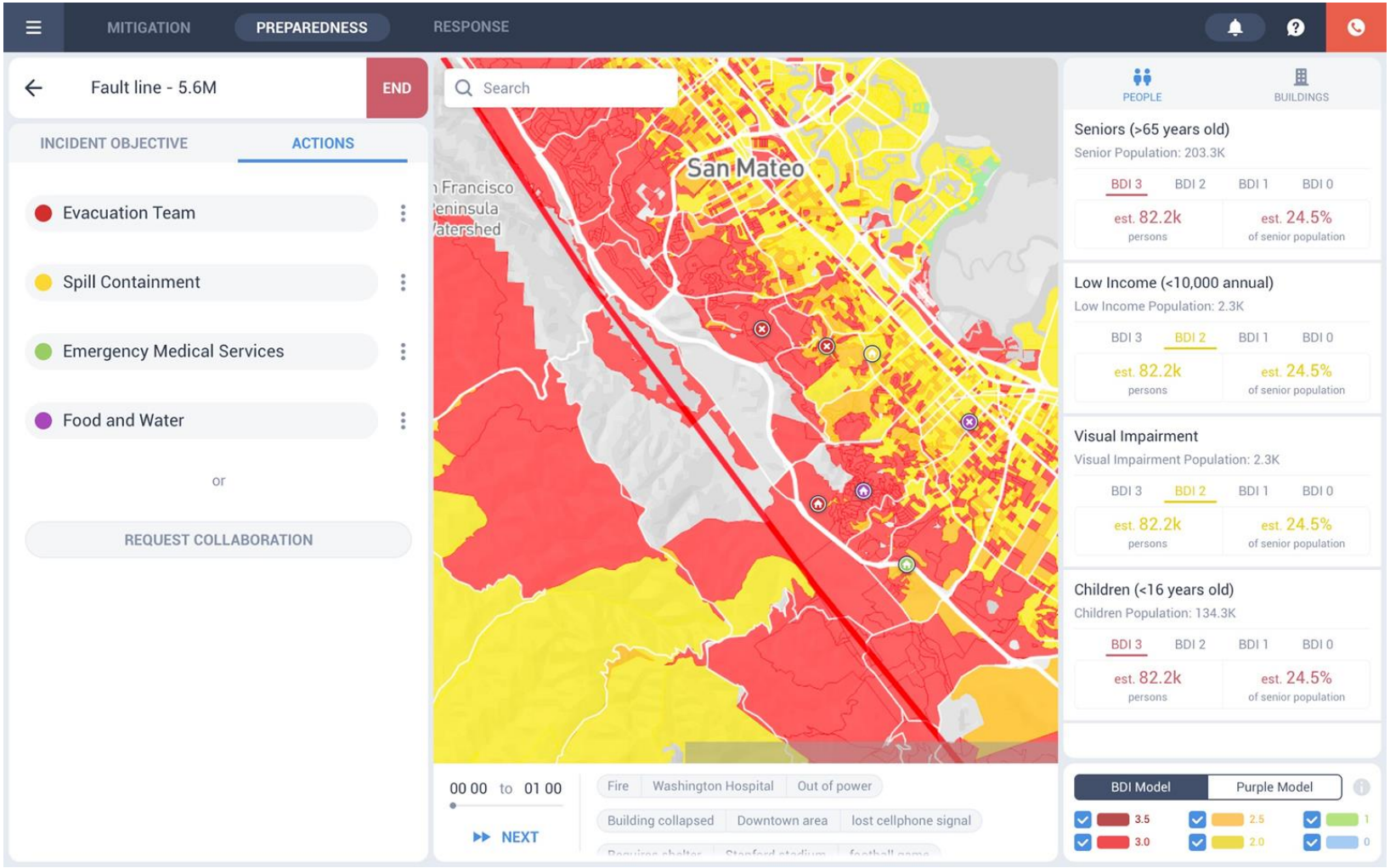
Dynamic route optimization, capacity and real-time traffic monitoring

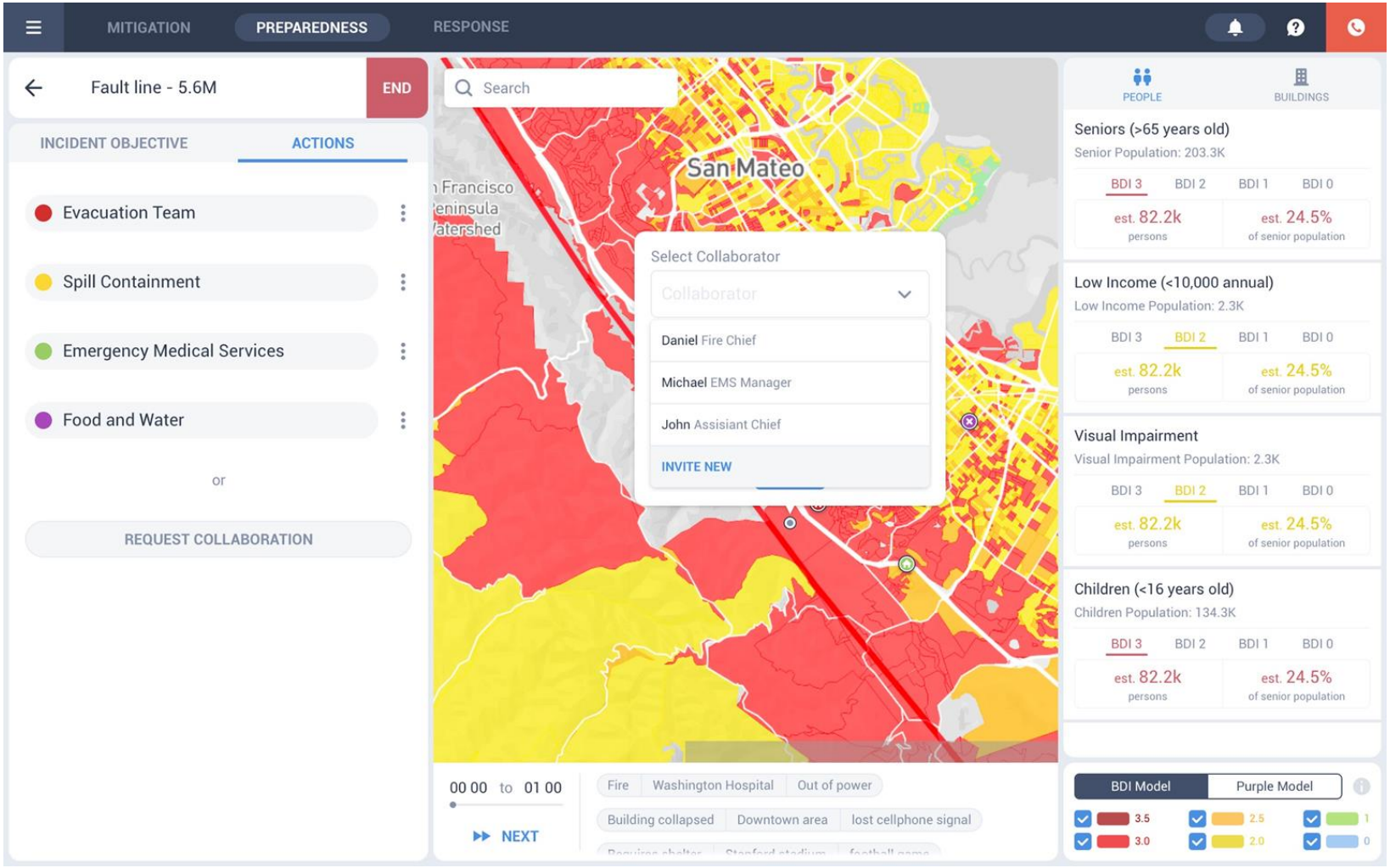


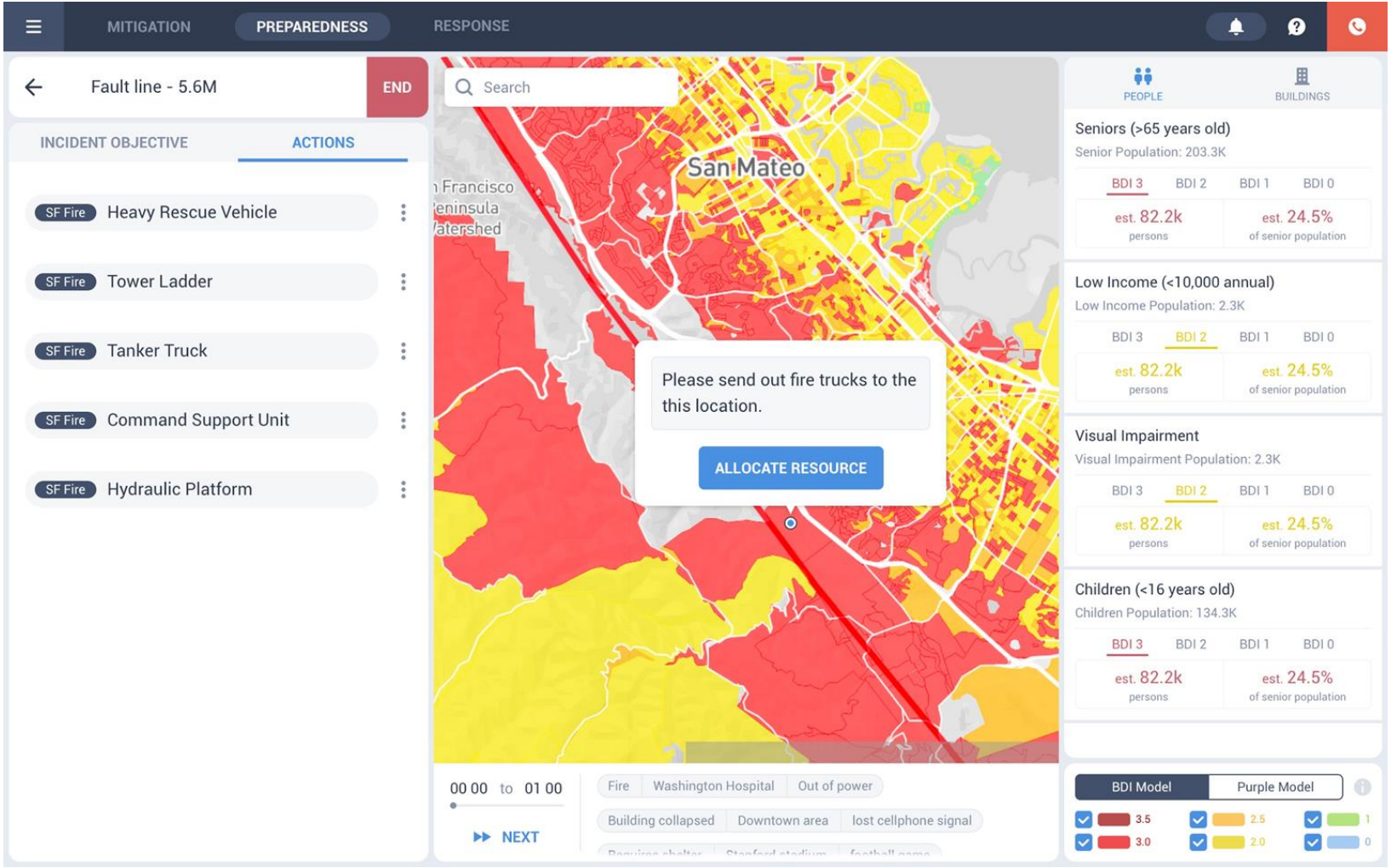

MITIGATION
PREPAREDNESS
RESPONSE
Fault line - 5.6M
END
EVACUATION PLAN
1 via I-80 E 87.2 miles
Get on I-80 E from Folsom St
Continue on I-80 E to Sacramento
2 via I-680 N and I-80 E 94.9 miles
Get on I-80 E from Folsom St
Continue on I-80 E. Take CA-24 E, I-680 N and I-80 E
3 via I-80 E 101 miles
Take Franklin St and Lombard St to US-101
Follow US-101 to CA-37 E in Novato. Take exit 460A from US-101
Continue to Vallejo. Take exit 21C from CA-37 E
Follow I-80 E to J St in Sacramento
Compose Message 1
An immediate evacuation of your area is required due to extreme conditions.
Route 1: take I-80 E to Sacramento for 87.2 miles.
Route 2: take I-680 N and I-80 E to Sacramento for 94.9 miles.
Route 3: take 1-80 E to Sacramento for 101 miles.
SEND
Compose Message 2
An evacuation of your area is highly encouraged due to extreme conditions
Route 1: take I-80 E to Sacramento for 87.2 miles.
Route 2: take I-680 N and I-80 E to Sacramento for 94.9 miles.
Route 3: take 1-80 E to Sacramento for 101 miles.
SEND
Compose Message 3
This is an emergency. Evacuate your area immediately.
Route 1: take I-80 E to Sacramento for 87.2 miles.
Route 2: take I-680 N and I-80 E to Sacramento for 94.9 miles.
Route 3: take 1-80 E to Sacramento for 101 miles.
SEND

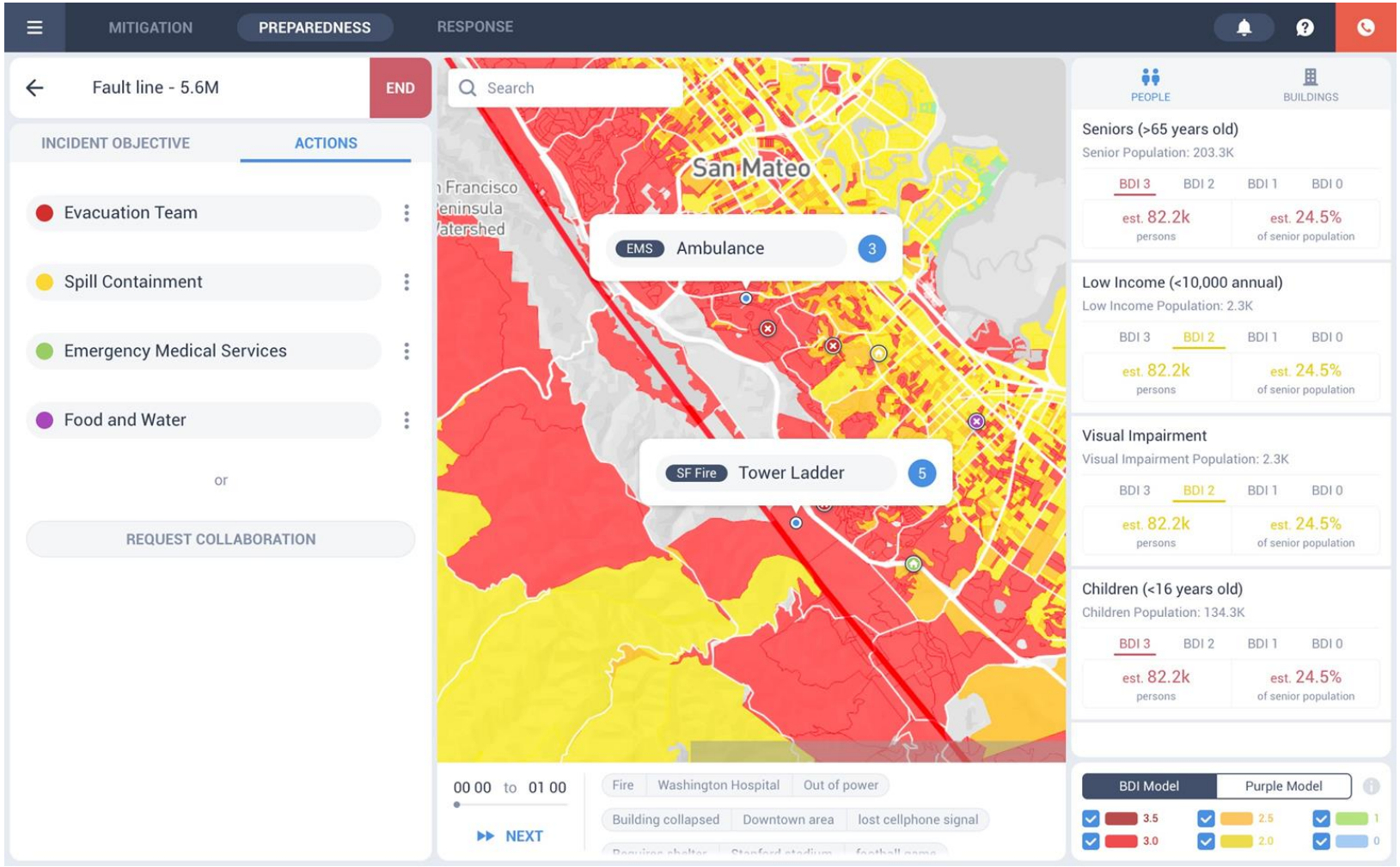

Mitigation
Preparedness
Respond
Recovery
Flood Risk Assessment
Select 3 areas to compare
SELECT AREA
SELECT AREA
SELECT AREA
Powell Ln
S Englert Rd
Kotrla Ln
Kotrla Ln
County
Powell Ln
Risk Level 3
14
Buildings in Block
32
People Affected
Sanders Rd
Sanders Rd
Powell Ln
Damage Level
High Damage
Medium Damage
Low Damage
Current Climate


Mitigation
Preparedness
Respond
Recovery
Flood Risk Assessment
Select up to 5 blocks to include in plan
Block Selection 1
Current Risk Level 3
Elevate
Buyout
5ft
Cost Estimate:
$0.85M
Minimum Elevation
The dashed line indicates the minimum height this selected block needs to be raised in order to meet building code requirements.
Elevate
Buyout
Public Park
Parking Lot
Cost Estimate:
$2.4M
Block Selection 3
Current Risk Level 1
Elevate
Buyout
Public Park
Parking Lot
Cost Estimate:
$3.2M
Block Selection 4
Current Risk Level 2
SAVE PLAN
Block Selection 1
3 → 2
Risk Level
$11.2M → $7.8M
Estimated Annual Losses
1:4
Cost - Benefit Ratio
$3.4M
Money Saved
12
Buildings in Selection
35
People Affected
S Englert Rd
Kotrla Ln
Powell Ln
Sanders Rd
Damage Leve
High Damage
Medium Damage
Low Damage
Block Selection 1
3 → 2
Risk Level
$11.2M → $7.8M
Estimated Annual Losses
1:4
Cost - Benefit Ratio
$3.4M
Money Saved
12
Buildings in Selection
35
People Affected
Block Selection 1
Current Risk Level 3
Elevate
Buyout
5ft
Cost Estimate:
$0.85M
Minimum Elevation
The dashed line indicates the minimum height this selected block needs to be raised in order to meet building code requirements.


MITIGATION
PREPAREDNESS
RESPONSE
Fault line - 5.6M
END
INCIDENT OBJECTIVE
ACTIONS
Evacuation Team
Spill Containment
Emergency Medical Services
Food and Water
or
REQUEST COLLABORATION
Search
San Mateo
PEOPLE
BUILDINGS
Seniors (>65 years old)
Senior Population: 203.3K
BDI 3 BDI 2 BDI 1 BDI 0
est. 82.2k persons
est. 24.5% of senior population
Low Income (<10,000 annual)
Low Income Population: 2.3K
BDI 3 BDI 2 BDI 1 BDI 0
est. 82.2k persons
est. 24.5% of senior population
Visual Impairment
Visual Impairment Population: 2.3K
BDI 3 BDI 2 BDI 1 BDI 0
est. 82.2k persons
est. 24.5% of senior population
Children (<16 years old)
Children Population: 134.3K
BDI 3 BDI 2 BDI 1 BDI 0
est. 82.2k persons
est. 24.5% of senior population
00 00 to 01 00
NEXT
Fire
Washington Hospital
Out of power
Building collapsed
Downtown area
lost cellphone signal
BDI Model
Purple Model
3.5
3.0
2.5
2.0
1
0


MITIGATION
PREPAREDNESS
RESPONSE
Fault line - 5.6M
END
INCIDENT OBJECTIVE
ACTIONS
Evacuation Team
Spill Containment
Emergency Medical Services
Food and Water
or
REQUEST COLLABORATION
Search
San Mateo
Select Collaborator
Collaborator
Daniel Fire Chief
Michael EMS Manager
John Assisiant Chief
INVITE NEW
PEOPLE
BUILDINGS
Seniors (>65 years old)
Senior Population: 203.3K
BDI 3 BDI 2 BDI 1 BDI 0
est. 82.2k persons
est. 24.5% of senior population
Low Income (<10,000 annual)
Low Income Population: 2.3K
BDI 3 BDI 2 BDI 1 BDI 0
est. 82.2k persons
est. 24.5% of senior population
Visual Impairment
Visual Impairment Population: 2.3K
BDI 3 BDI 2 BDI 1 BDI 0
est. 82.2k persons
est. 24.5% of senior population
Children (<16 years old)
Children Population: 134.3K
BDI 3 BDI 2 BDI 1 BDI 0
est. 82.2k persons
est. 24.5% of senior population
00 00 to 01 00
NEXT
Fire
Washington Hospital
Out of power
Building collapsed
Downtown area
lost cellphone signal
BDI Model
Purple Model
3.5
2.5
1
3.0
2.0
0


MITIGATION
PREPAREDNESS
RESPONSE
Fault line - 5.6M
END
INCIDENT OBJECTIVE
ACTIONS
SF Fire Heavy Rescue Vehicle
SF Fire Tower Ladder
SF Fire Tanker Truck
SF Fire Command Support Unit
SF Fire Hydraulic Platform
Search
San Mateo
Please send out fire trucks to the this location.
ALLOCATE RESOURCE
00 00 to 01 00
NEXT
Fire
Washington Hospital
Out of power
Building collapsed
Downtown area
lost cellphone signal
PEOPLE
BUILDINGS
Seniors (>65 years old)
Senior Population: 203.3K
BDI 3 BDI 2 BDI 1 BDI 0
est. 82.2k persons
est. 24.5% of senior population
Low Income (<10,000 annual)
Low Income Population: 2.3K
BDI 3 BDI 2 BDI 1 BDI 0
est. 82.2k persons
est. 24.5% of senior population
Visual Impairment
Visual Impairment Population: 2.3K
BDI 3 BDI 2 BDI 1 BDI 0
est. 82.2k persons
est. 24.5% of senior population
Children (<16 years old)
Children Population: 134.3K
BDI 3 BDI 2 BDI 1 BDI 0
est. 82.2k persons
est. 24.5% of senior population
BDI Model
Purple Model
3.5
2.5
1
3.0
2.0
0


MITIGATION
PREPAREDNESS
RESPONSE
Fault line - 5.6M
END
INCIDENT OBJECTIVE
ACTIONS
Evacuation Team
Spill Containment
Emergency Medical Services
Food and Water
or
REQUEST COLLABORATION
Search
San Mateo
EMS Ambulance 3
SF Fire Tower Ladder 5
00 00 to 01 00
NEXT
Fire
Washington Hospital
Out of power
Building collapsed
Downtown area
lost cellphone signal
PEOPLE
BUILDINGS
Seniors (>65 years old)
Senior Population: 203.3K
BDI 3 BDI 2 BDI 1 BDI 0
est. 82.2k persons
est. 24.5% of senior population
Low Income (<10,000 annual)
Low Income Population: 2.3K
BDI 3 BDI 2 BDI 1 BDI 0
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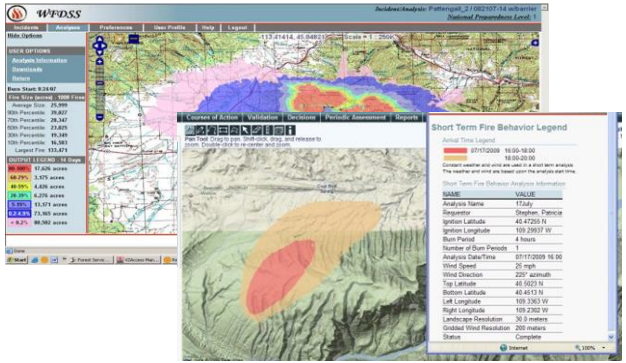
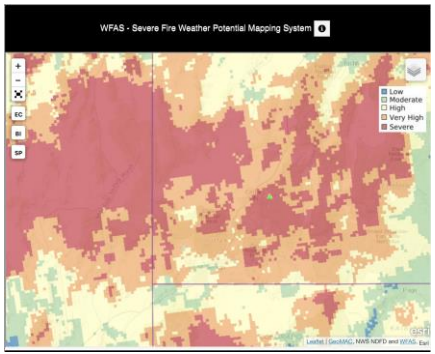
Visual Impairment
Visual Impairment Population: 2.3K
BDI 3 BDI 2 BDI 1 BDI 0
est. 82.2k persons
est. 24.5% of senior population
Children (<16 years old)
Children Population: 134.3K
BDI 3 BDI 2 BDI 1 BDI 0
est. 82.2k persons
est. 24.5% of senior population
BDI Model
Purple Model
3.5
3.0
2.5
2.0
1
0

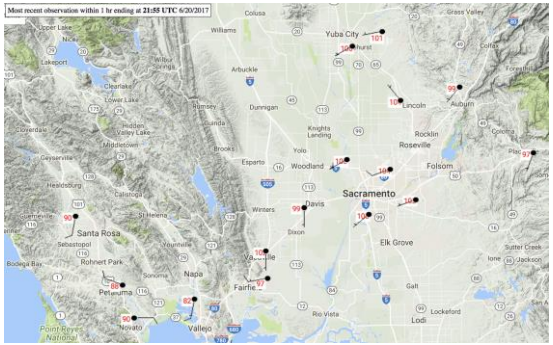
Wildland Fire Prediction



Wildland Fire Decision Support System (FSPro, FSim and Farsite)



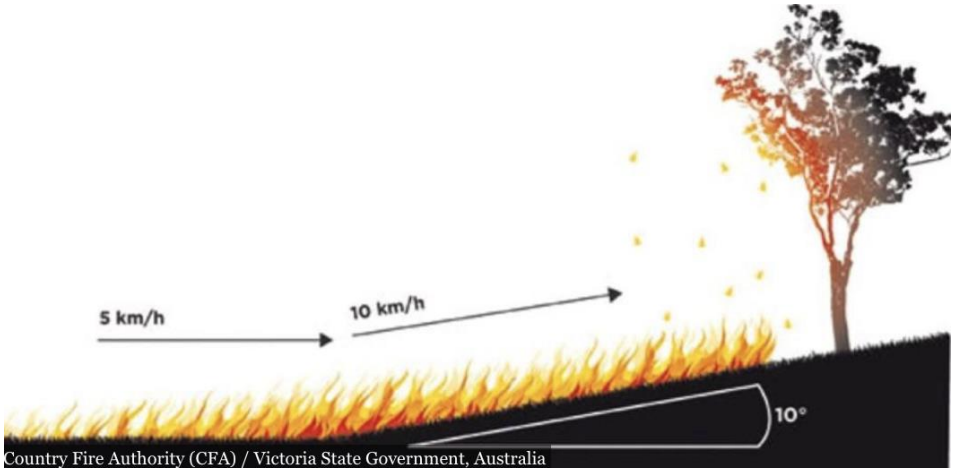
Fire Weather Forecasts



Live Conditions: RAWS, Fuel Moisture

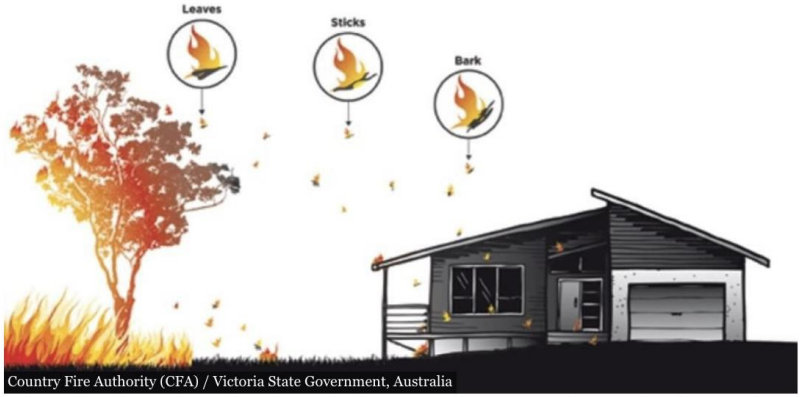
ONE CONCERN CONFIDENTIAL: DO NOT DISTRIBUTE

Wildfires can rapidly speed up with slight changes in topography



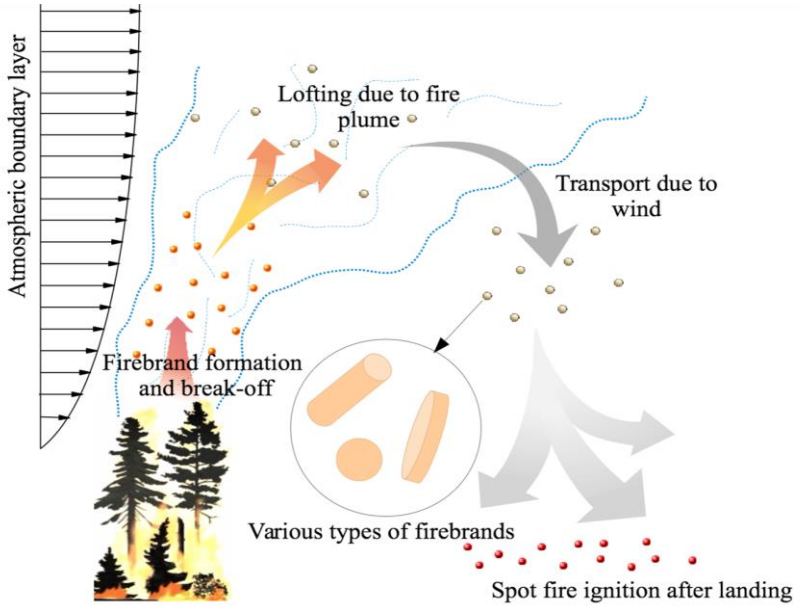
Country Fire Authority (CFA) / Victoria State Government, Australia

Embers can travel miles ahead of active fire line and burn houses down

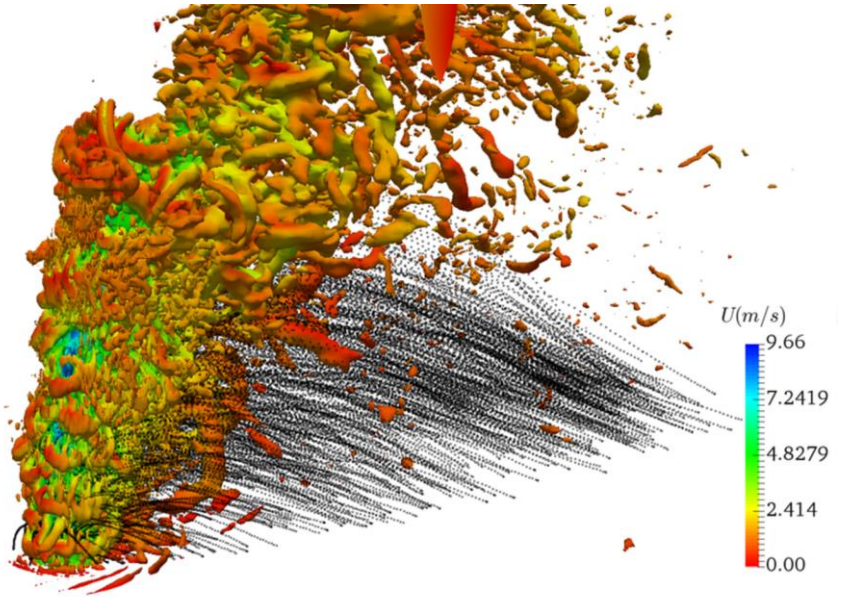


Country Fire Authority (CFA) / Victoria State Government, Australia

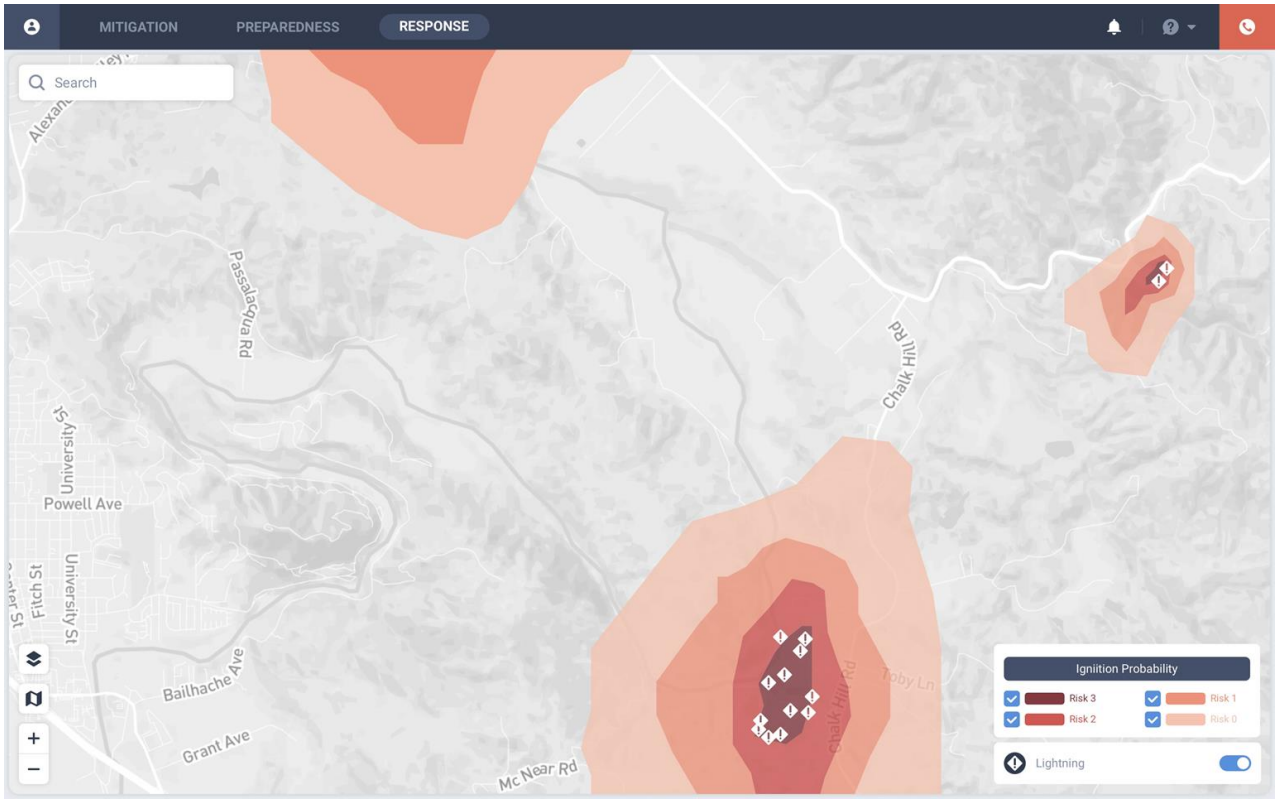
State-of-the-art ember modeling



Modeling highly granular ember paths



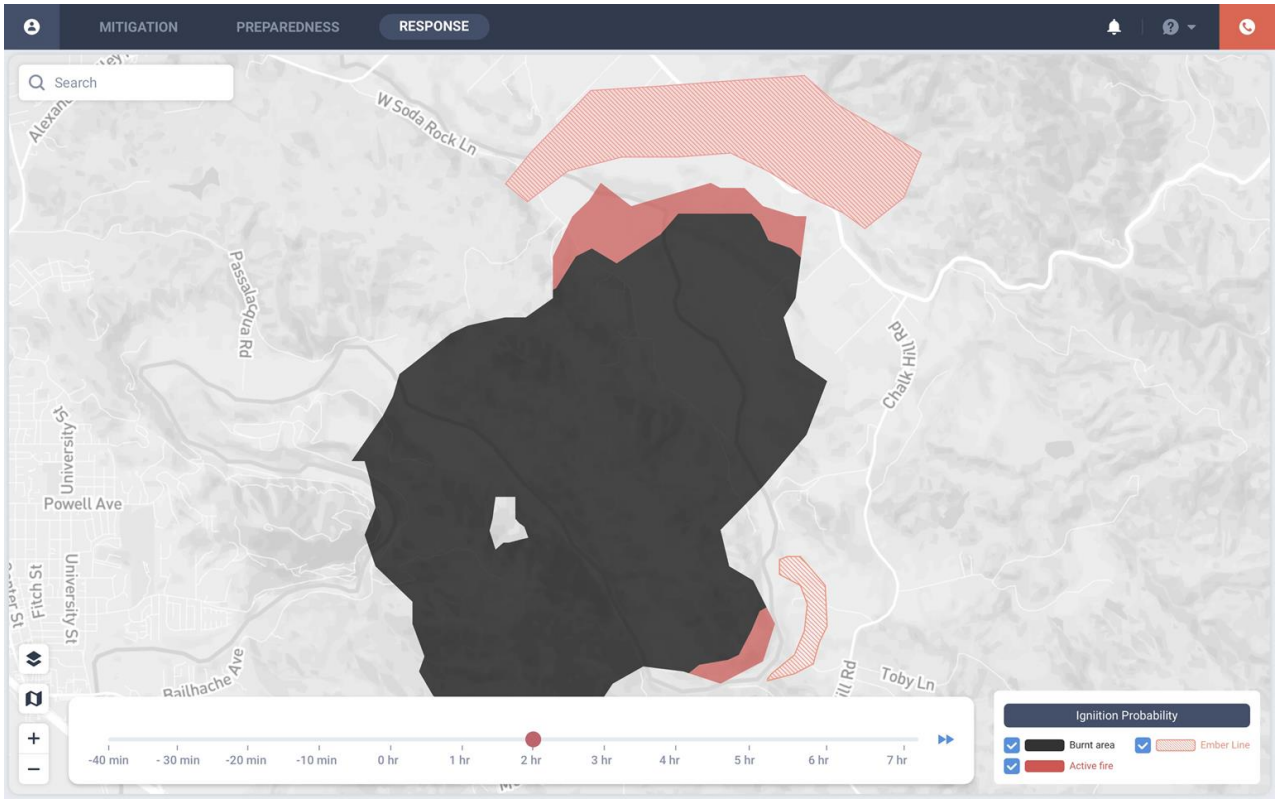
Monitor the likelihood of wildfires based on current conditions



Key Highlights

- Monitor high probability fire ignition areas
- See recent lightning spots where fire probability will increase
- View spatially across jurisdiction

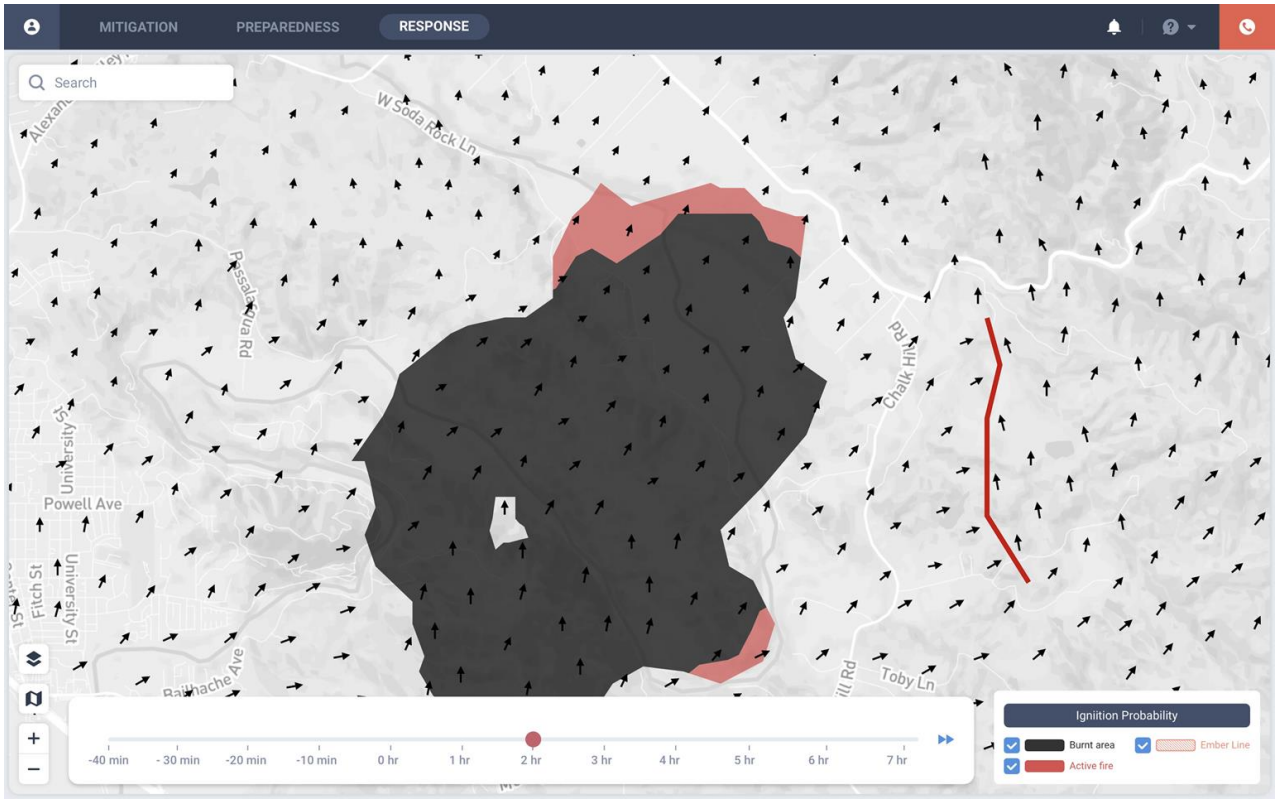
Draw the timeline forwards to see predicted path of active fire



Key Highlights

- Draw time slider into 1 hour fire spread projections
- Identify how the fire is likely to behave
- Identify where the fire is likely to spread

Toggle views to see wind, instability, and fuel: Wind



Key Highlights

Wind View

- See wind patterns on top of the fire
- Quickly identify key areas of sudden wind change which may drastically change behavior of fire

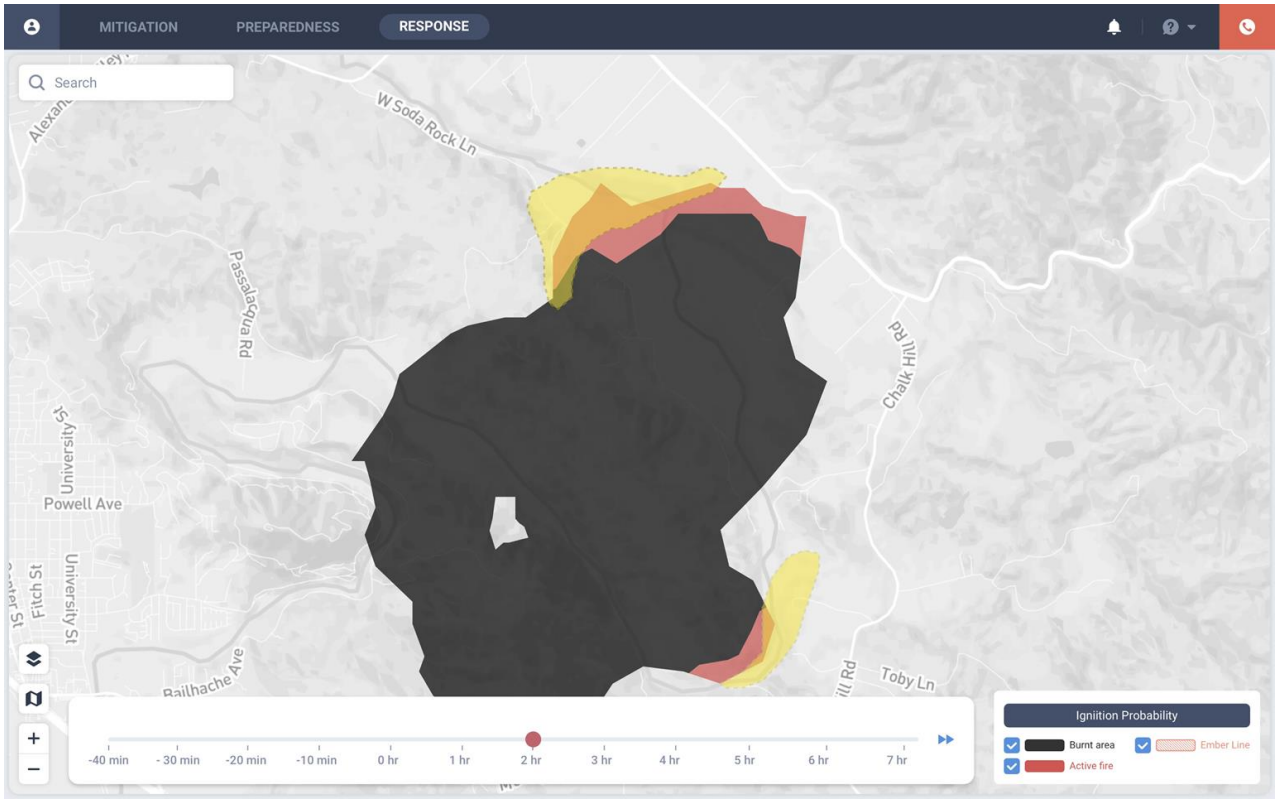
Instability View

- See areas where instability conditions may create volatile behavior

Fuel View

- See different fuel types

Toggle views to see wind, instability, and fuel: Instability



Key Highlights

Wind View

- See wind patterns on top of the fire
- Quickly identify key areas of sudden wind change which may drastically change behavior of fire

Instability View

- See areas where instability conditions may create volatile behavior

Fuel View

- See different fuel types

Toggle views to see wind, instability, and fuel: Fuel

Key Highlights

Wind View

- See wind patterns on top of the fire
- Quickly identify key areas of sudden wind change which may drastically change behavior of fire

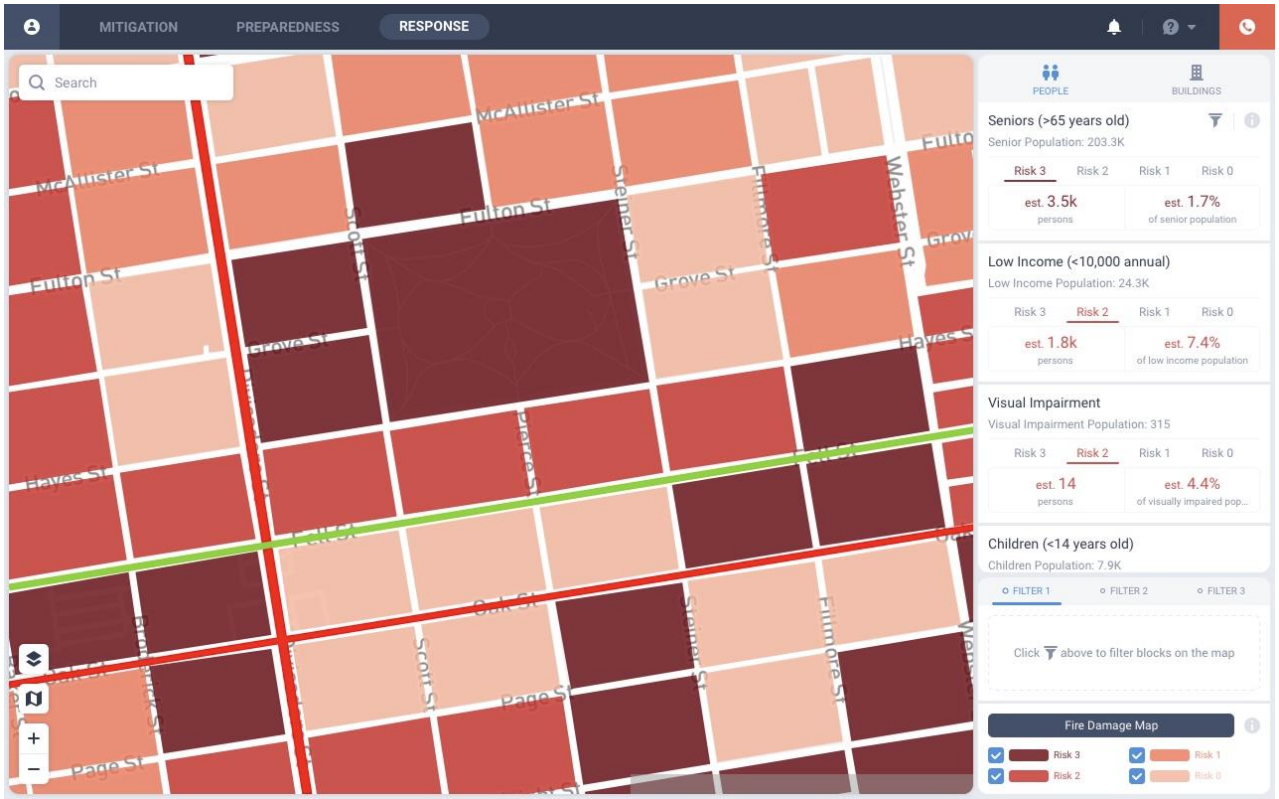
Instability View

- See areas where instability conditions may create volatile behavior

Fuel View

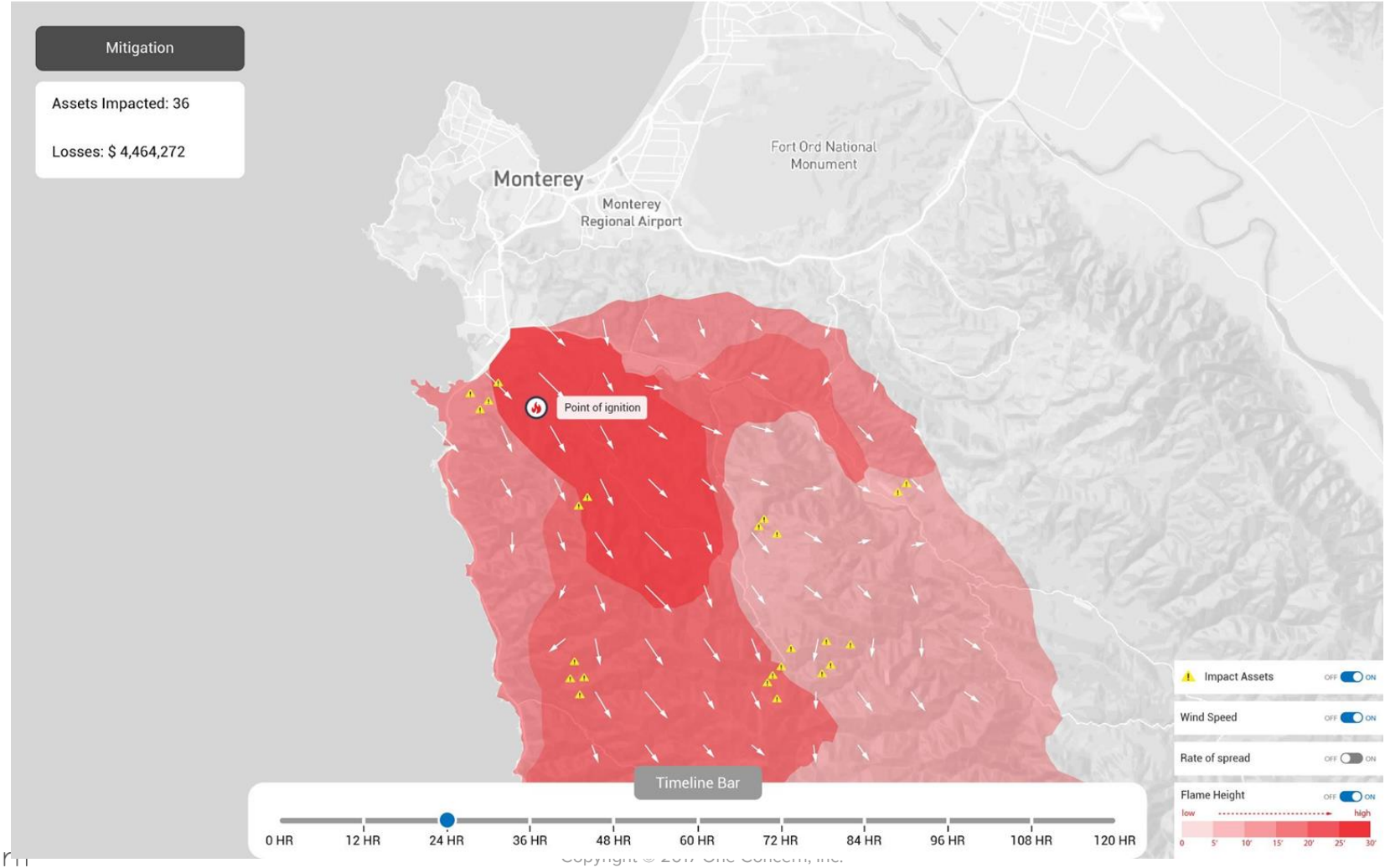
- See different fuel types

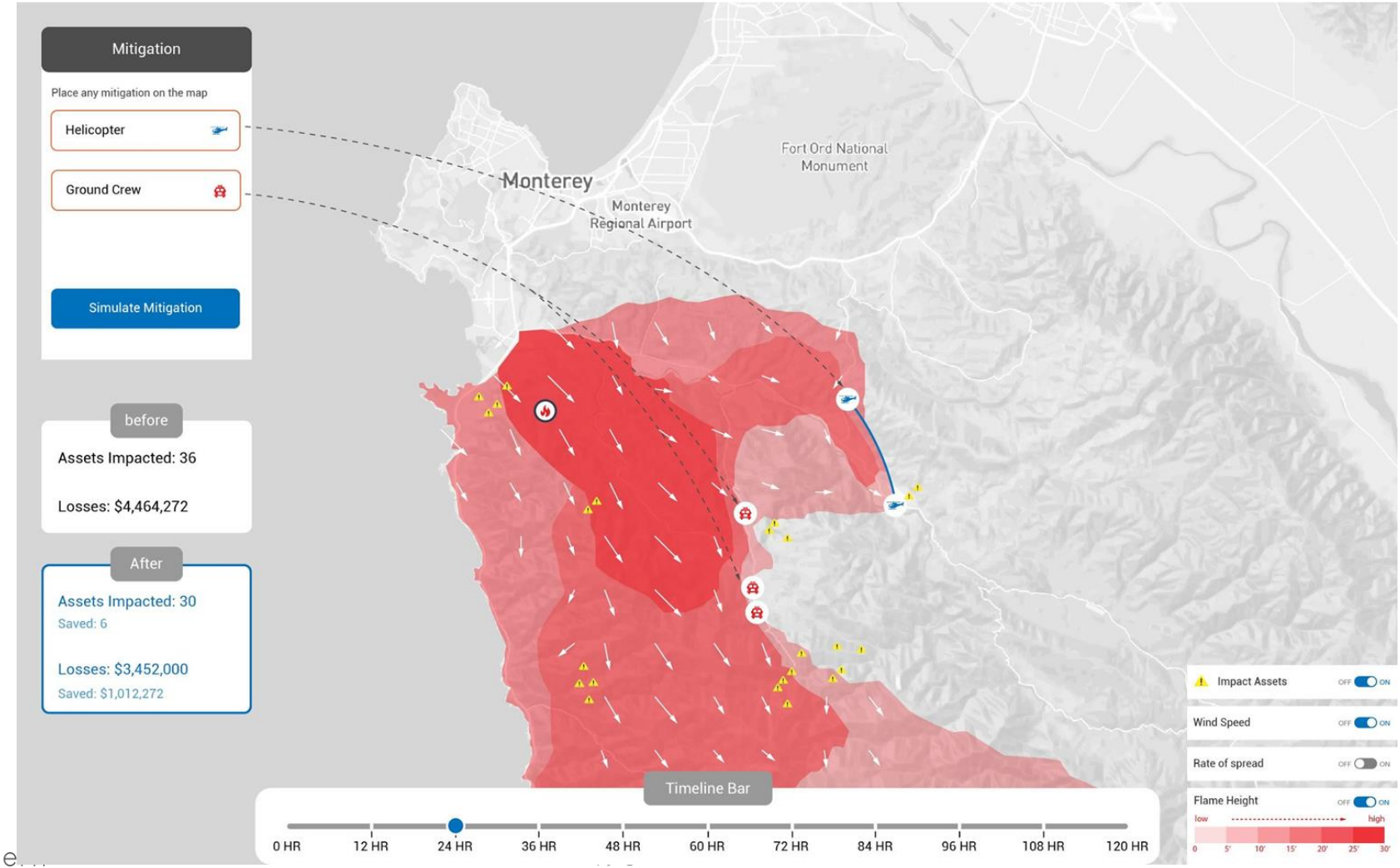
Zoom into community view to see block-level risk



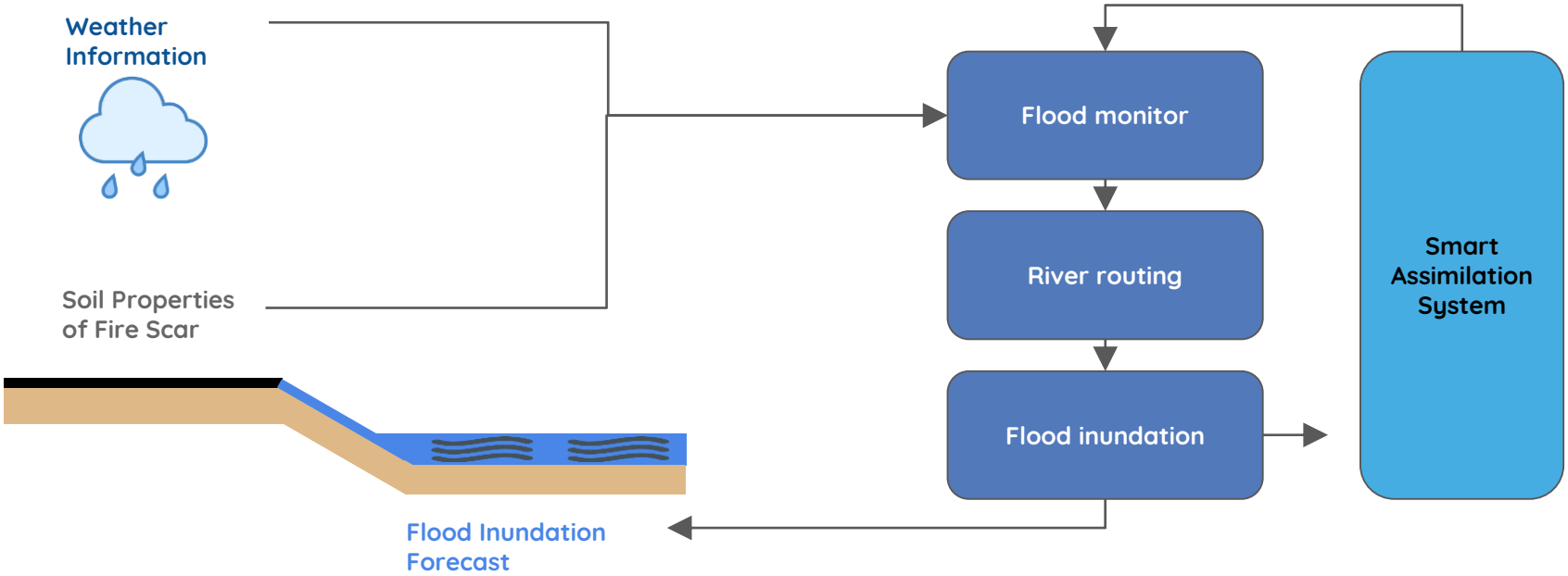
Key Highlights

- Access block level risk assessments to the active fire
- Evacuate building and demographic data
- Identify vulnerable populations




Mitigation
Place any mitigation on the map
Helicopter
Ground Crew
Simulate Mitigation
before
Assets Impacted: 36
Losses: $4,464,272
After
Assets Impacted: 30
Saved: 6
Losses: $3,452,000
Saved: $1,012,272
Monterey
Monterey Regional Airport
Fort Ord National Monument
Timeline Bar
0 HR
12 HR
24 HR
36 HR
48 HR
60 HR
72 HR
84 HR
96 HR
108 HR
120 HR
Impact Assets
Wind Speed
Rate of spread
Flame Height
low
high

Post-Fire Flood Risk Changes



Keys to “Good” Artificial Intelligence

Scalability

Dynamic - Validation & Belief Propagation

Effective Biase

Intellectually Honest

Intellectually Thorough

Effective Communication

What do we need to do?

Ask ourselves fundamental questions.

Lead technology - do not let technology lead us!

Work with developing firms and emerging tech to tailor solutions.

Begin to consider where AI could support our discipline.

Gregory T Brunelle
Director - Global Engagement-North America
& Senior Emergency Management Advisor
One Concern, Inc
169 University Avenue, Palo Alto, CA 94301| oneconcern.com
greg@oneconcern.com
518.944.5920