GISMO

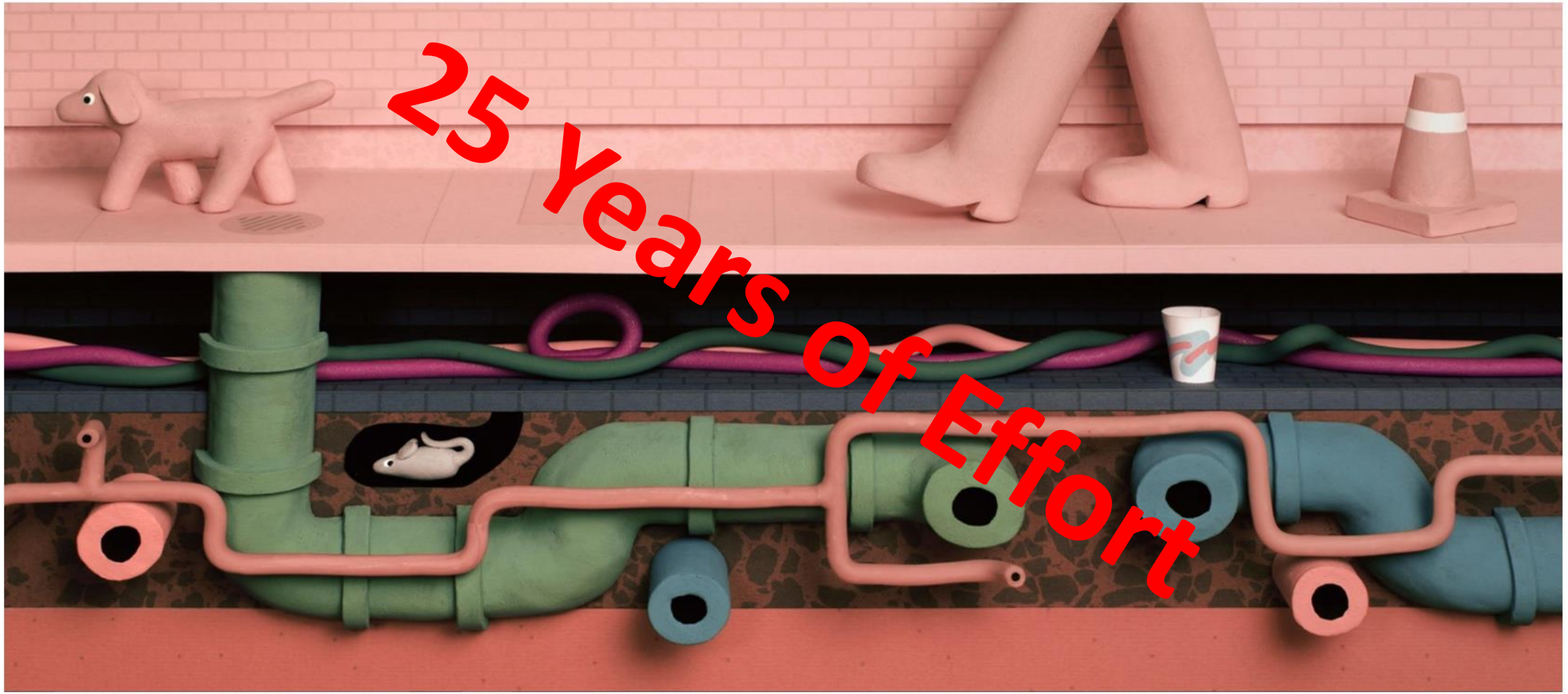
NYC Geospatial Information Systems and Mapping Organization

Post 9/11 GISMO Focus on Disaster and Emergency Preparedness and Response including National and International Engagement

Building the OGC MUDDI Standard

Model for Underground Data Definition and Integration

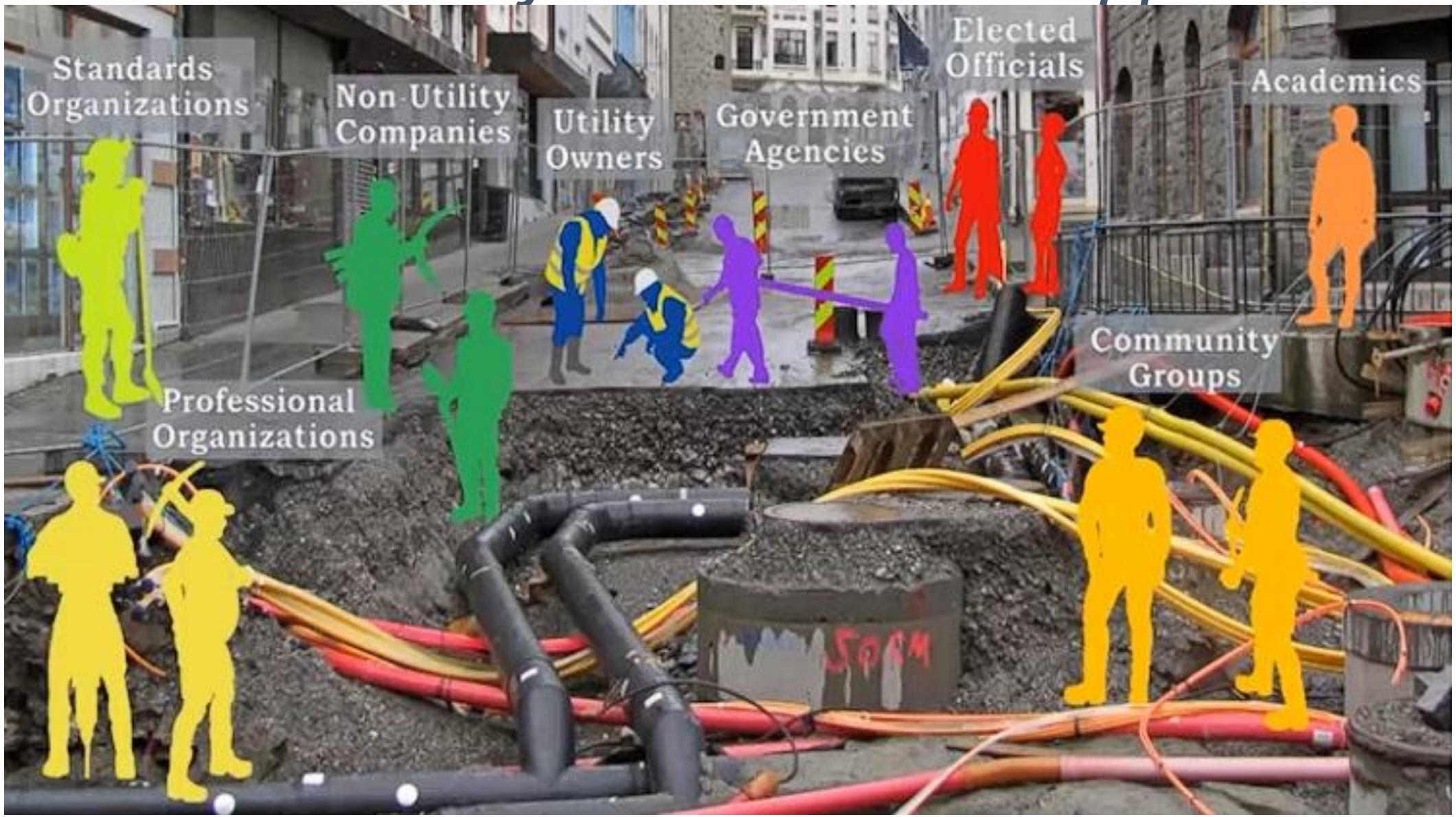
Initiated by NYCEM and GISMO, Supported By Fund for the City of New York



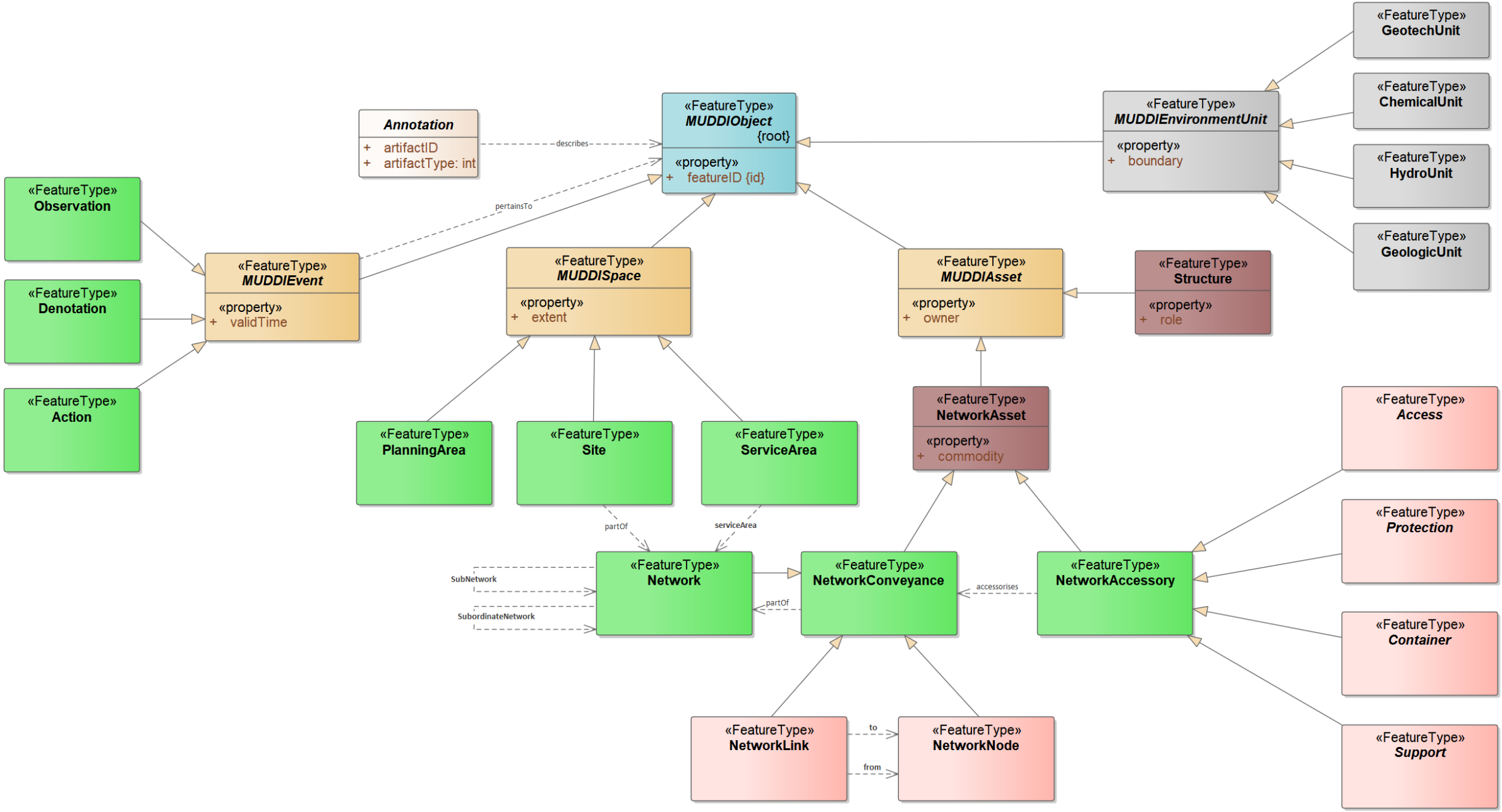
"Nobody Knows What Lies Beneath New York City" by Greg Milner for Bloomberg Businessweek Magazine, 8.10.17

Open
Geospatial
Consortium
Open Standards
for Location Data
OGC Standards are internationally recognized
specifications that power location data—from legacy web
services to modern OGC APIs.

NSF "UNUM" $1.25M Grant to NYU Team Led By Prof. Debra Laefer with GISMO Support



Open Geospatial Consortium: MUDDI Conceptual Model Overview



The U.K. NUAR is an Implementation of MUDDI

National Underground Asset Register (NUAR) | OS

Mayor Adams Announces $10 Million Platform to Map New York City's Underground, Share Data Amongst City Agencies and Utility Companies to Keep New Yorkers Safe and Improve Capital Planning: Dan Steinberg, Adam Barin *November 19, 2025*

Features Include

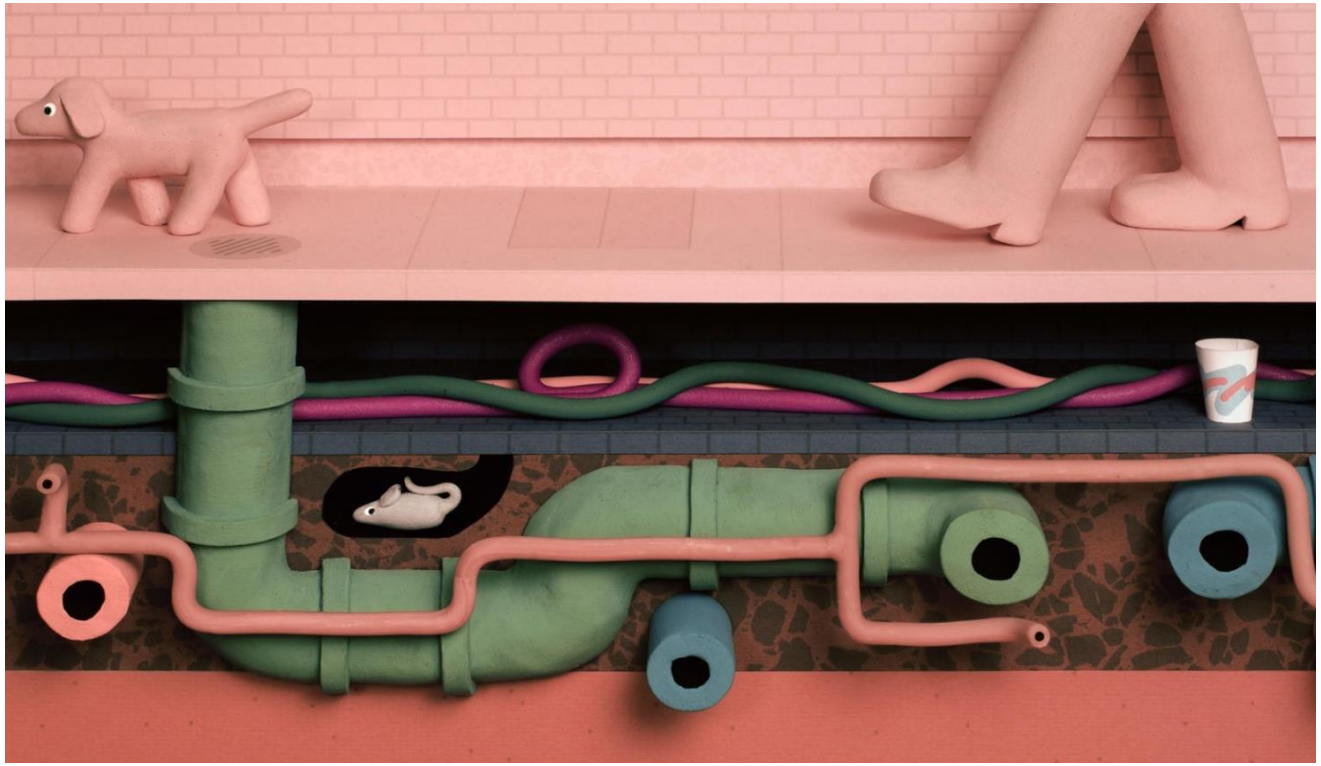
- 3D utility representations of water, sewer, electric, gas, telecom, and transit
- Digitize 20K boring records for 3D geology

Key Use Cases

- Reduce delay and costs of major construction projects
- Better disaster preparedness and response

Expected Benefit

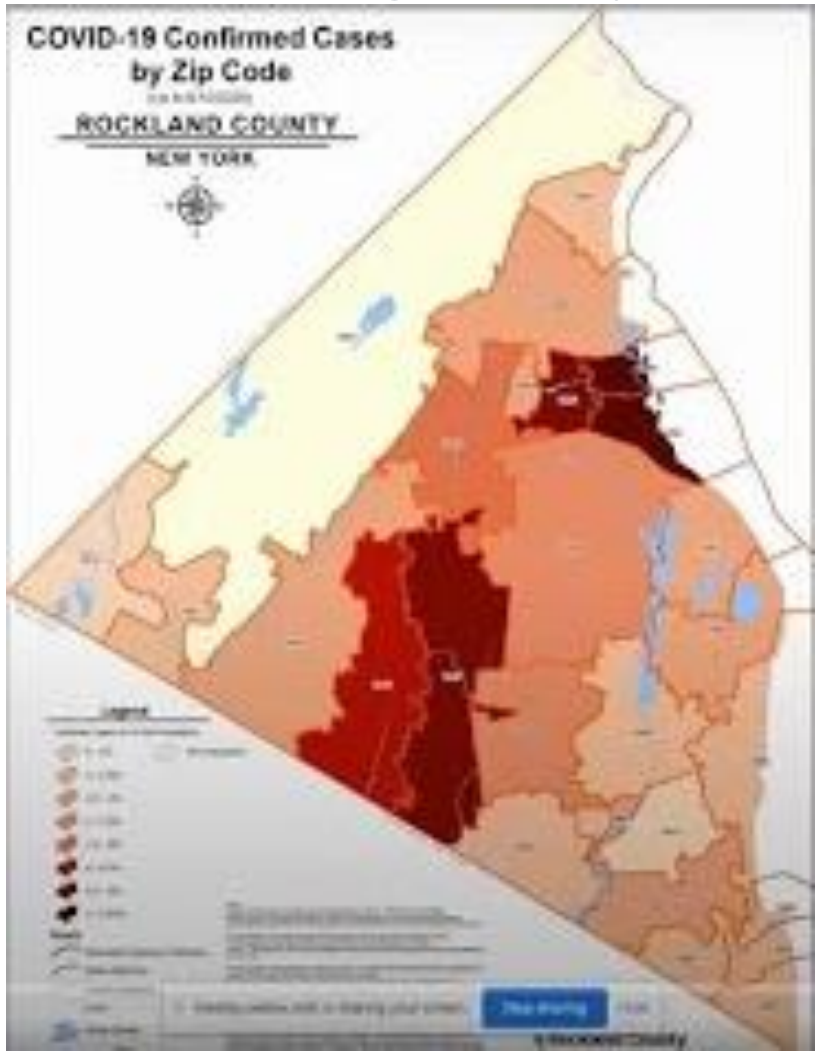
- **$ Billions in savings**

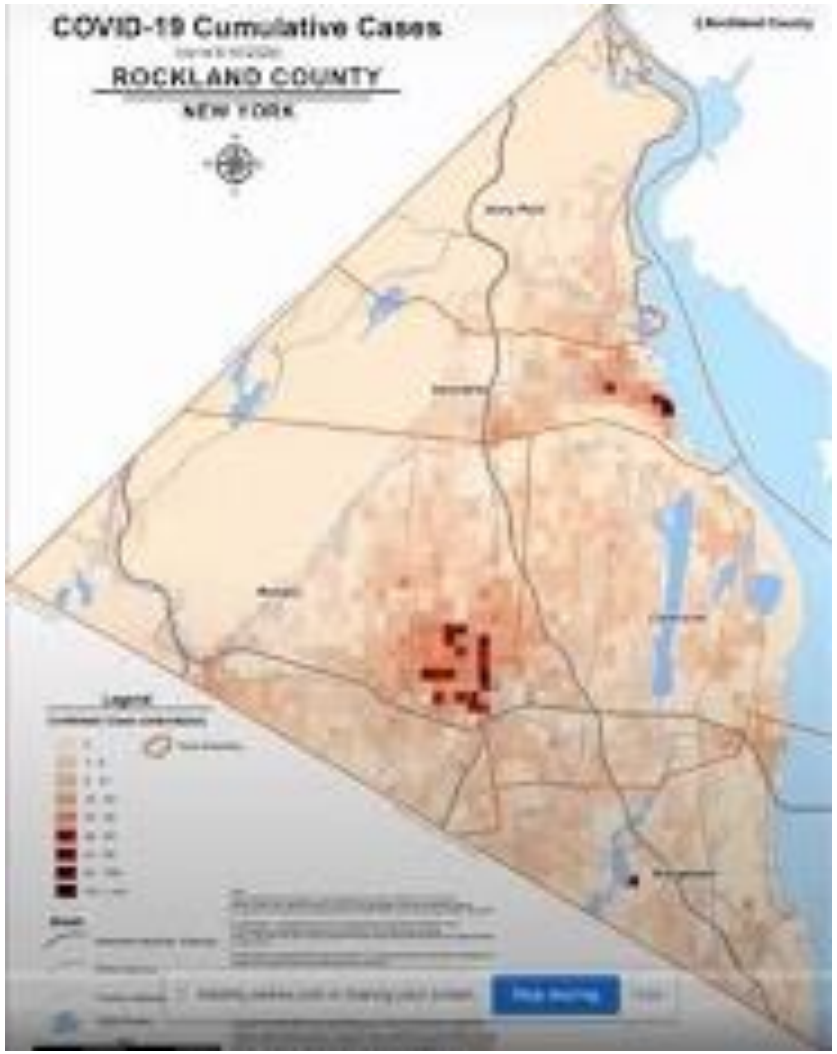


OGC Pandemic Study: COVID Cases In Rockland County

Zip Code Data vs Precision Grid Data

Working Closely With NYS ITS, NSGIC, NYS GIS Assn, OGC

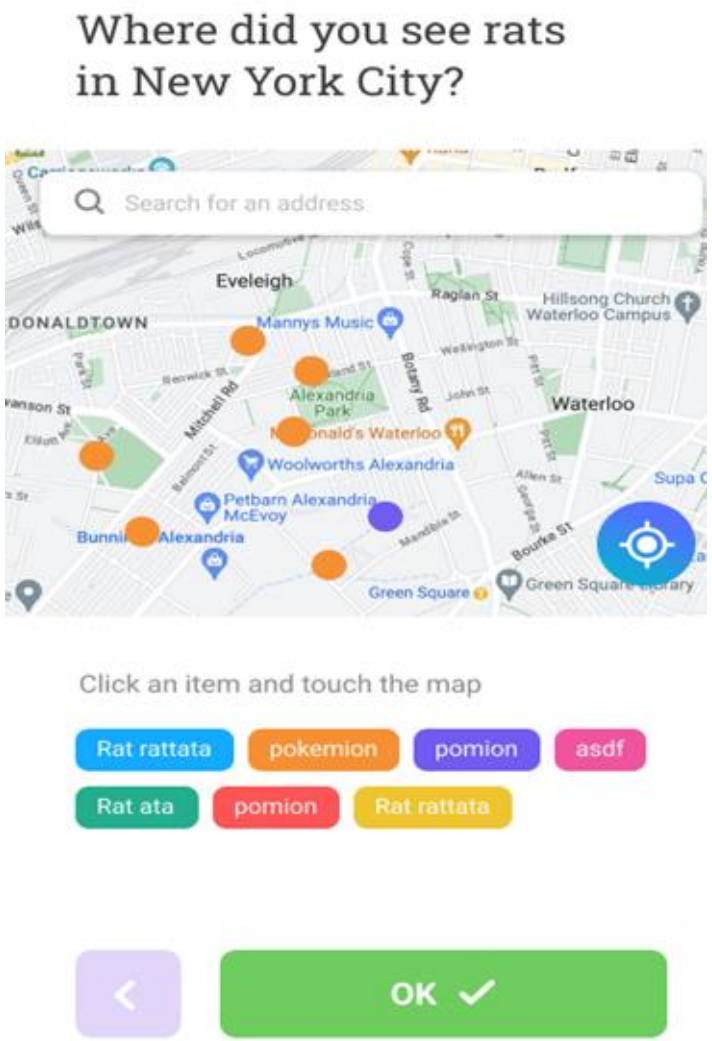




OGC Funded: Emergency Location and Language Applications (ELLA)

ELLA Design Approach in Partnership With Basil Labs

- **Integrate Components**
  - **Smart phone with Map and GPS**
  - **AI Voice to text**
  - **AI Language translation**
  - **Automatic Location capture**
  - **AI for language patterns**
  - **Simple downloadable app**



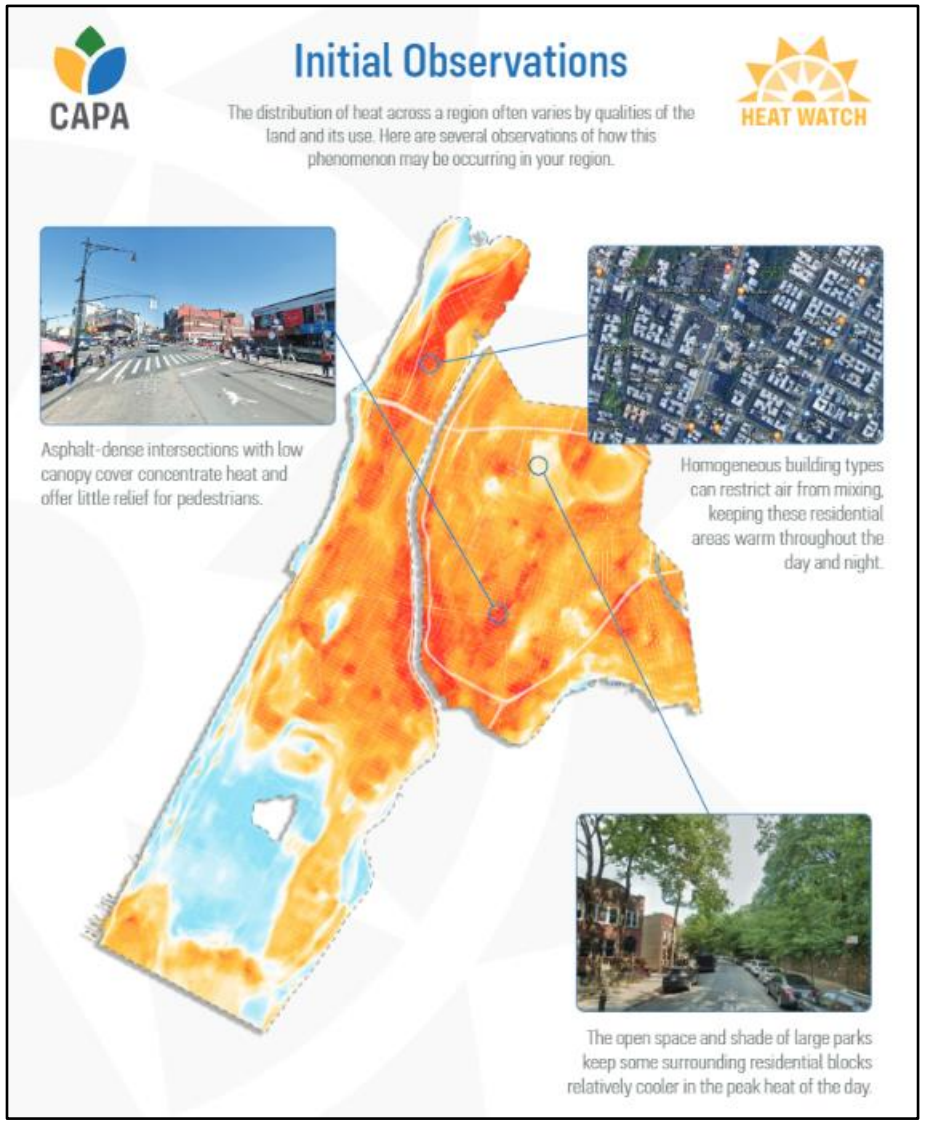
Data Entry takes 1/10th Time For Operator Input Into 3-1-1

Open Geospatial Consortium (OGC) Funds GISMO to Study Extreme Heat In Harlem

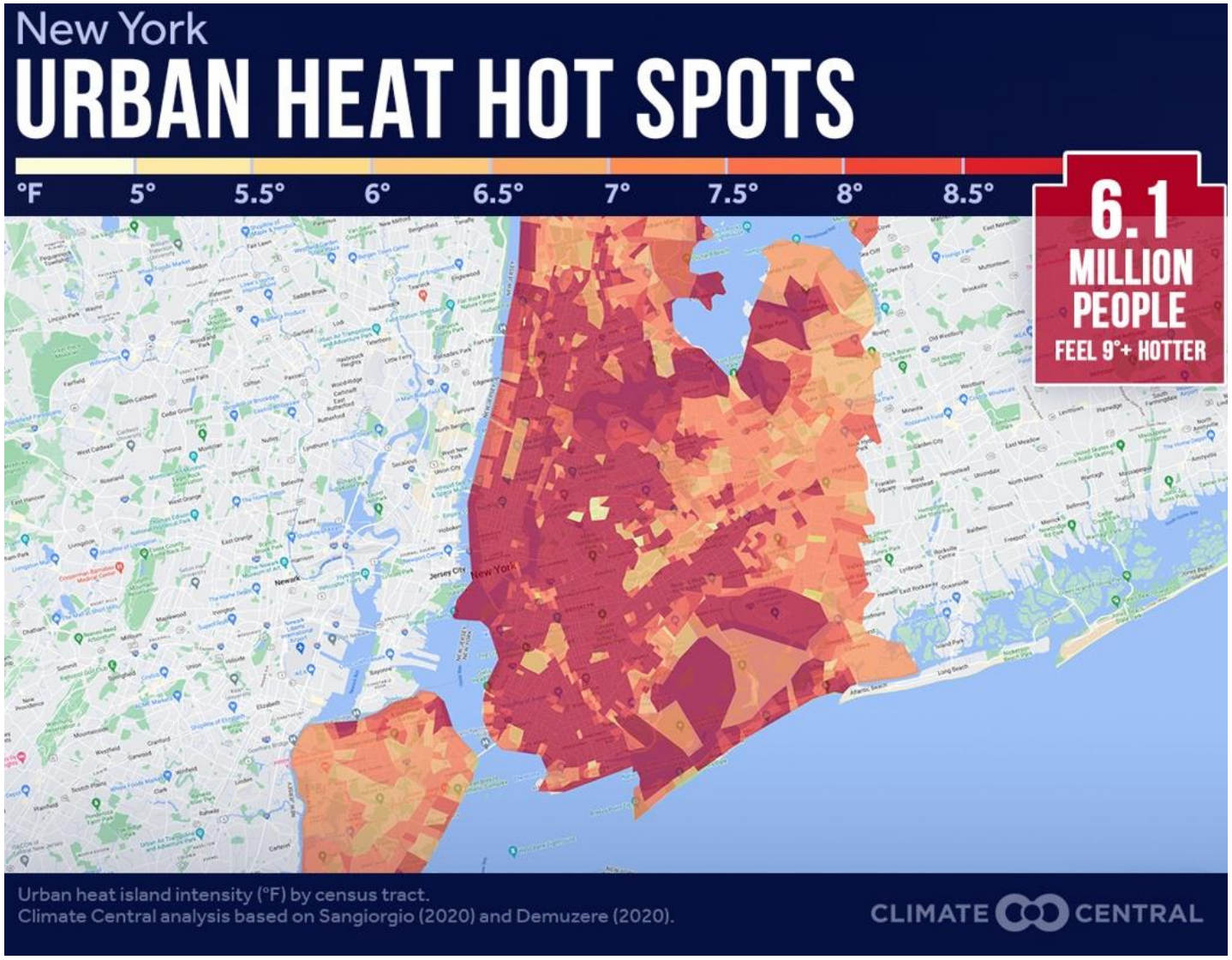
Key Findings

- NYC Temperatures Based On Readings In Shaded Locations Like Central Park
- The **Heat Island Effect** makes Temperatures in Residential Neighborhoods 10 degrees Hotter than Reported Temperatures
- Rooftops, Building Facades, Cars and Streets can reach temperatures above 150 Degrees Because Solar Energy is Converted To Heat Energy
- **Residences on Top Floors and With Southern Exposures Can Reach Deadly Temperatures on the Hottest and Most Humid Days**
- **NYC now estimates extreme heat causes 500+ annual excess deaths**
- Smartphone and Sensor Technology Present An Opportunity to Safeguard those most Sensitive To the Effects of High Temperature
  - **NYC recently raised annual estimated heat deaths from about 5 to 500**
  - **Pheonix, Arizona is using this study to create its own extreme heat analysis model**

NOAA/CAPA 2021 Study of North Manhattan/South Bx



Climate Central: NYC Hot Spots by Census Tract



| Heat Watch Bronx-Manhattan_Report_111021.pdf

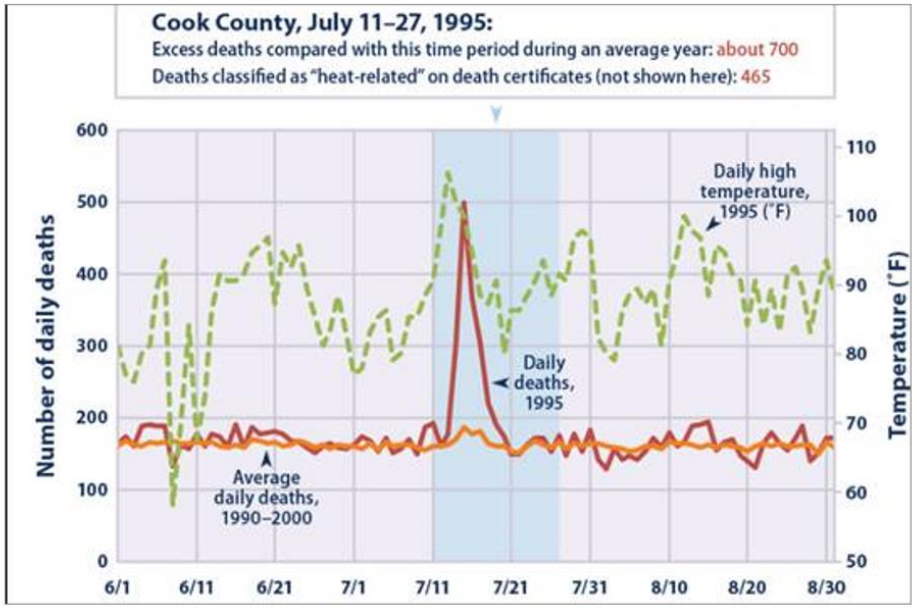
Urban Heat Hot Spots | Climate Central

NYC Raises It Estimates of Annual Heat Deaths from 5 to 500 Based On A Count of "Excess Deaths"

Chicago 1995 Heat Wave: Population 2.8 Million

700 heat related deaths equals 25 deaths per 100,000

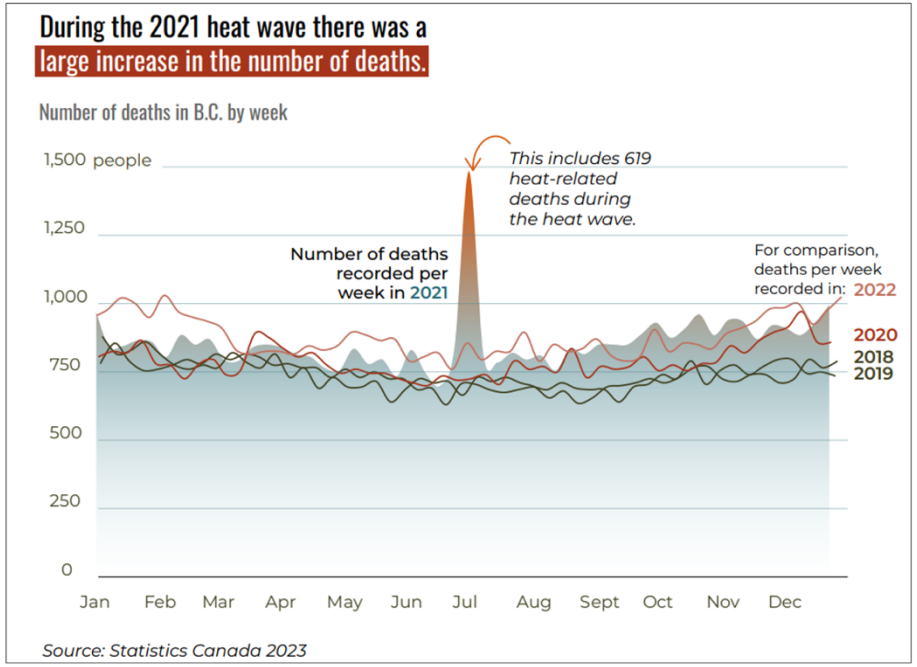
Climate Change Indicators: Heat-Related Deaths | US EPA



2026 Heat Mortality Report | Environment and Health Data Portal

Excess Deaths:Vancouver BC During 6/25 to 7/1 Heat Wave

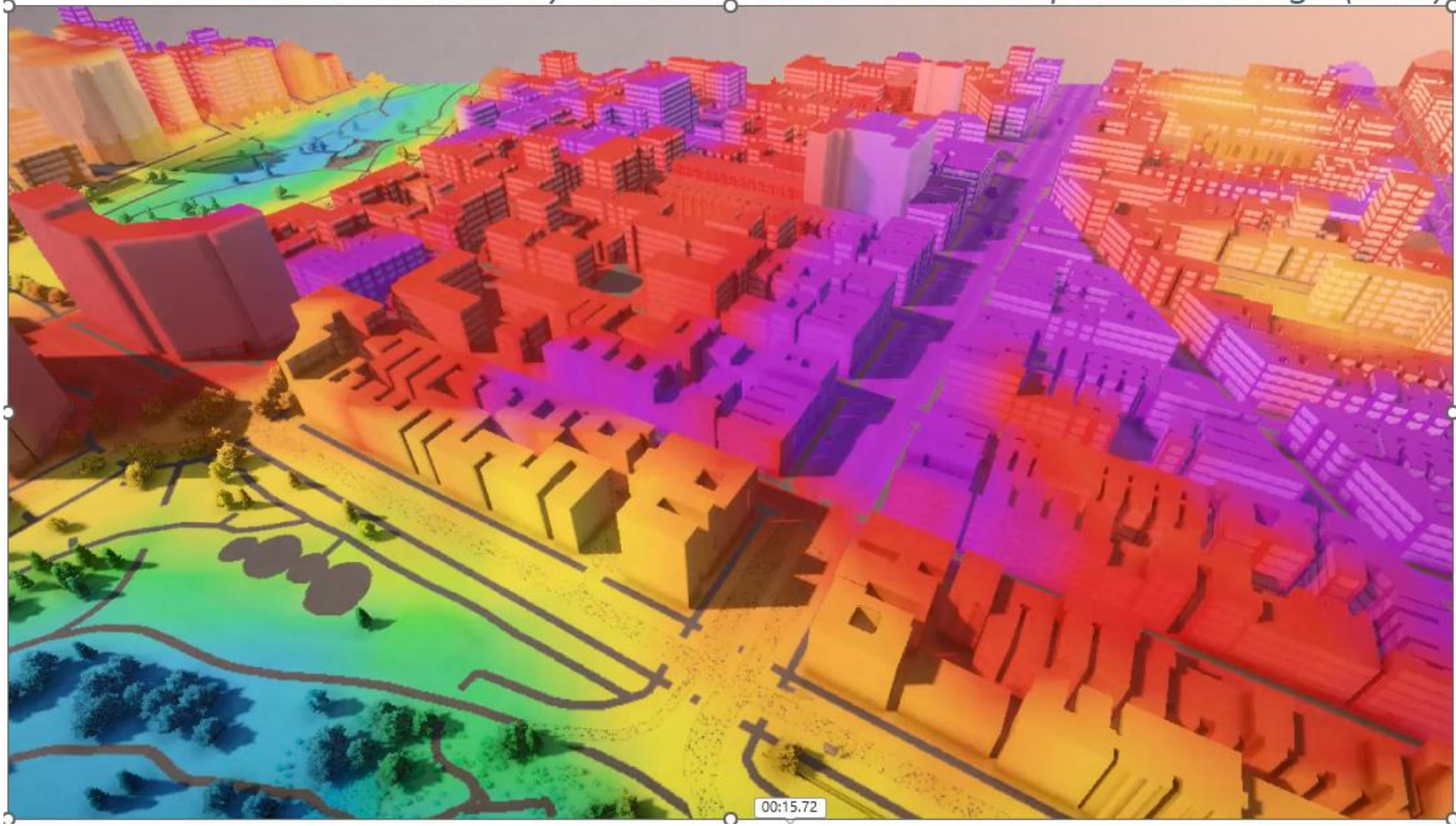
619 Deaths, 675,000 Population: Rate 92 Deaths/100,000



The case for adapting to extreme heat: Costs of the 2021 B.C heat wave (climateinstitute.ca)

Heat Grid Depiction for Central Harlem

UHI Grid ARD Scaled by Observed Heat Island Temperature Range (11 F)

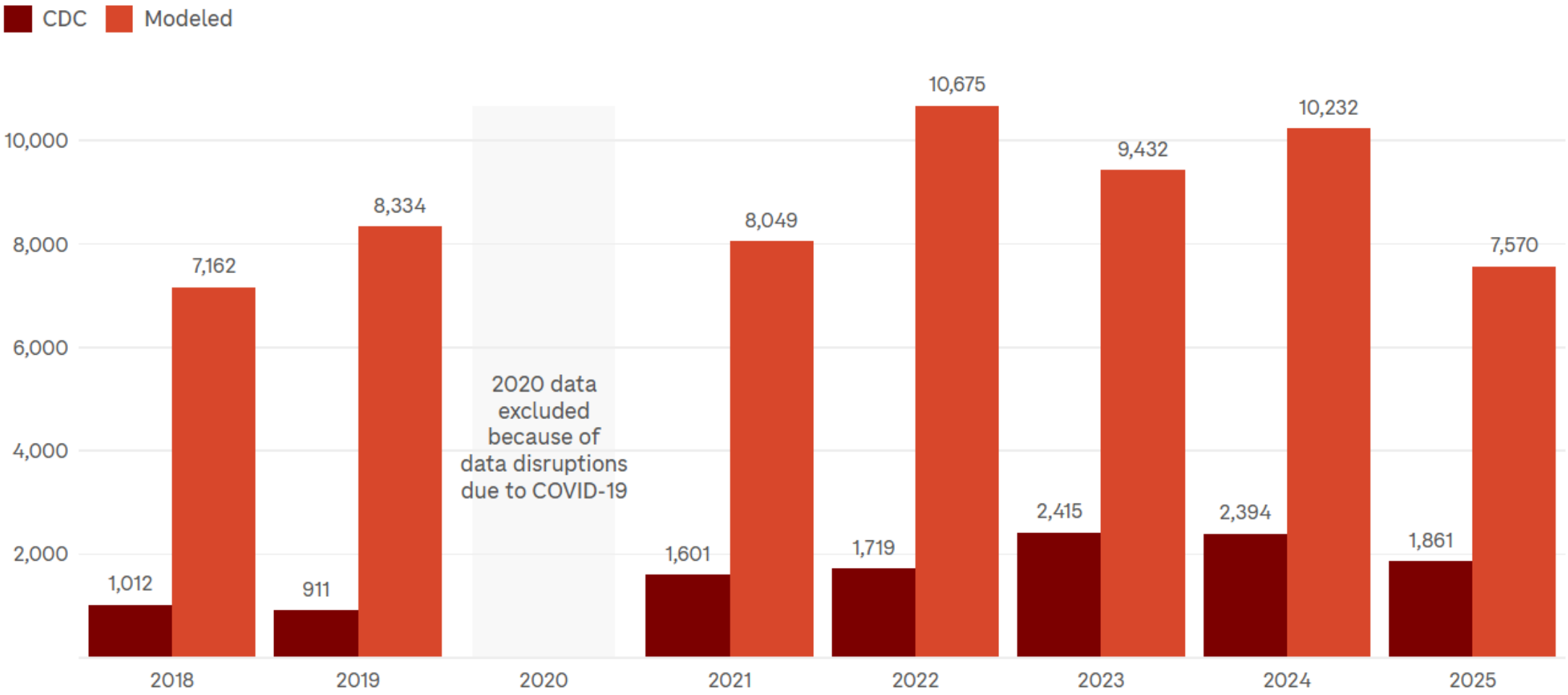


Navteca

FME by Safe Software

NPR spent 2 years tracking deaths from heat and found a staggering hidden toll

Official records may vastly undercount heat-related deaths



GISMO Helps Pass Legislation to Amend the NYC Charter

Providing for a GIO, GIS Steering Committee, and GIS Strategic Plan

These Simple and Needed Measures Should Be Implemented

GISMO: Layers of Engagement Beyond NYC

Because All Data From Everywhere Is Connected

FGDC: Federal Geographic Data Committee

↓

Federal GIOs and Agencies: USGS, DOT, EPA, Census

↓

Regional Offices: FEMA R2

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NGAC: National Geographic Advisory Committee GISMO Member

→

States	NSGIC: NYS, NJ, Mass, Conn, D.C.
Tribal Nations	(NTGISC) Nat'l Tribal Geographic Info Support Center
Municipalities	NLC, ICMA, Council of Mayors
Counties	Westchester, Rockland, Nassau, Suffolk
Private Sector	ESRI, LiveXYZ, VHB, Google,
Higher Ed	Hunter, Lehman, NYU, Columbia, Pratt
Professional Orgs	Open Geospatial Consortium Int'l U.K. Canada American Society of Civil Engineers American Geographical Society National Association of Public Safety GIS
Int'l Orgs	Open Geospatial Consortium

Estimates Suggest About 200,000 Geospatial Workers in the U.S.

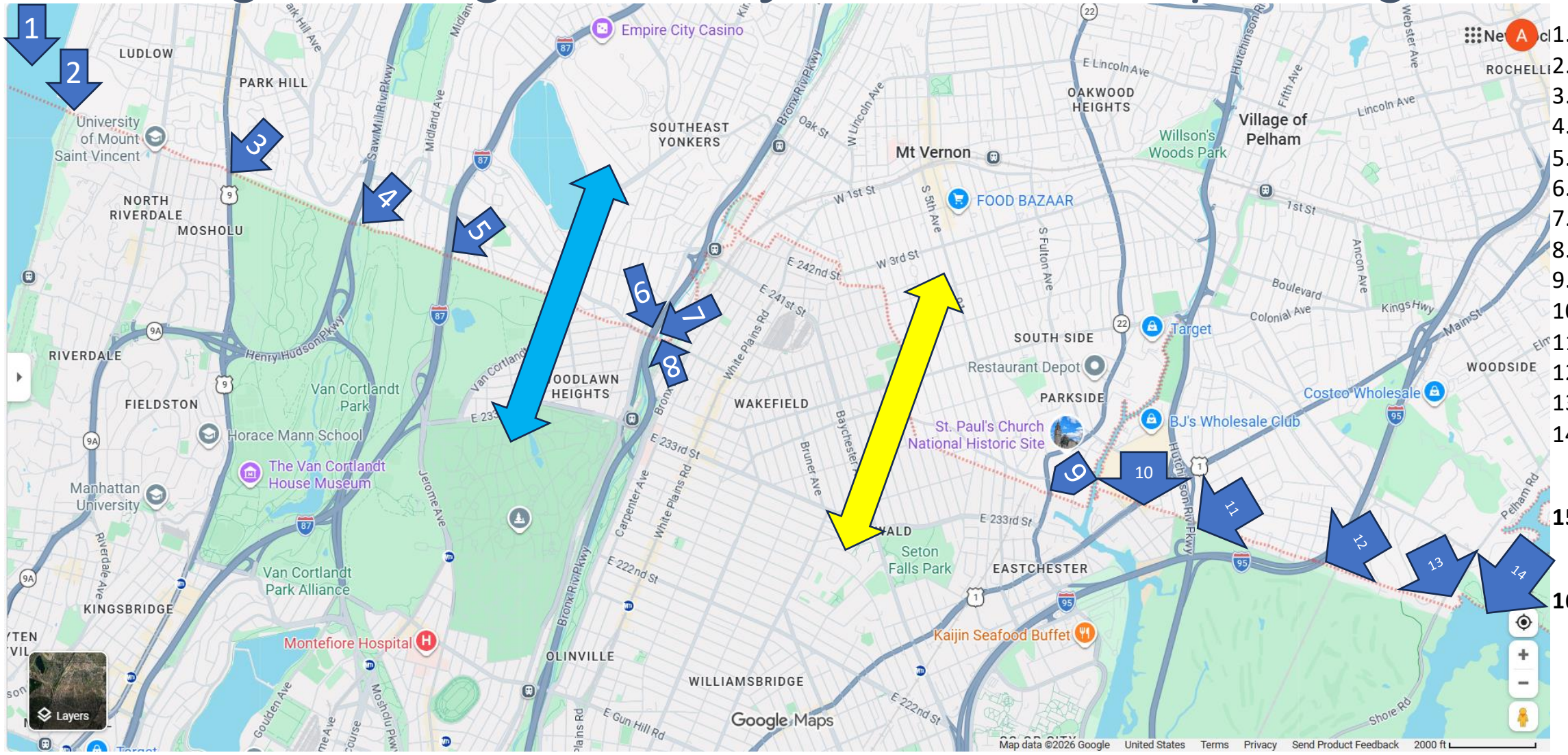
Member Organizations

- American Association for Geodetic Surveying (AAGS)
- American Association of Geographers (AAG)
- American Society of Civil Engineers (ASCE)
- American Society for Photogrammetry and Remote Sensing (ASPRS)
- Cartography and Geographic Information Society (CaGIS)
- Geospatial Professional Network (GPN - formerly URISA)
- GIS Certification Institute (GISCI)
- International Association of Assessing Officers (IAAO)
- Management Association for Private Photogrammetric Surveyors (MAPPS)
- National Society of Professional Surveyors (NSPS)
- National States Geographic Information Council (NSGIC)
- National Tribal Geographic Information Support Center (NTGISC)
- University Consortium for Geographic Information Science (UCGIS)
- United States Geospatial Intelligence Foundation (USGIF)

Advisory Organizations

- American Planning Association (APA)
- MidAmerica GIS Consortium (MAGIC)
- National Alliance for Public Safety GIS Foundation (NAPSG)
- National Association of Counties (NACo)
- National Emergency Number Association (NENA)
- National League of Cities
- Western Governors Association (WGA)

Proposed: Westchester/NYC Bronx Major Network Border Crossings To Integrate Data for a Common Operating Picture



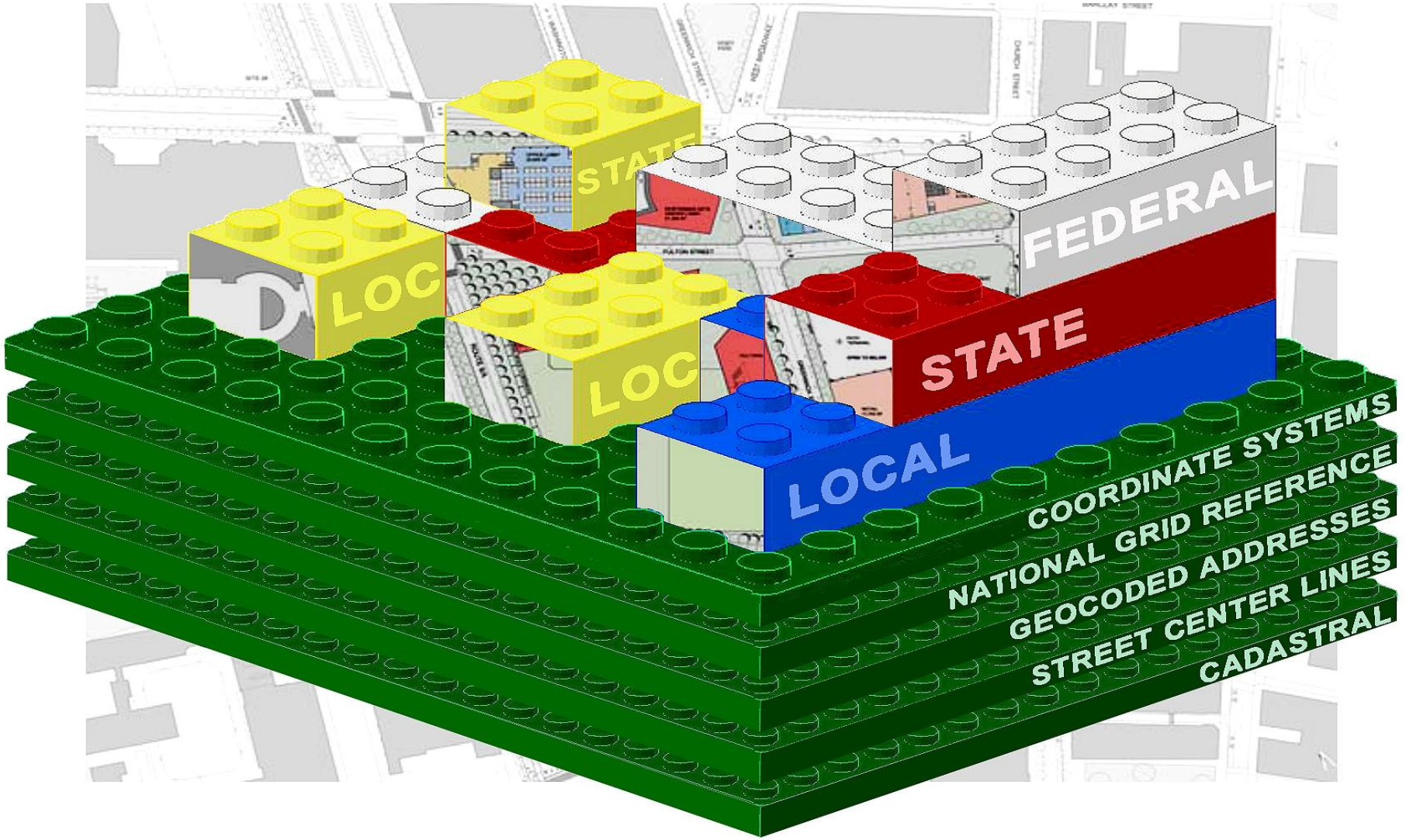
1. Hudson River
2. Rail: Amtrak
3. Route 9, 9a
4. Saw Mill Pkwy
5. Route 87
6. Bx River Pkwy
7. Bronx River
8. Metro N. RR
9. Route 22
10. Route 1
11. Hutch Pkwy
12. Route 95
13. Shore Road
14. L.I. Sound

15. Water Supply

16. Power Trans.

Common Operating Picture for Water Supply, Transportation, Power, and Disaster Planning and Response

Vision For The National Spatial Data Infrastructure (NSDI)



One Map To Bind Them All

What's Coming In The Future?

AI^{GEO}

Artificial Intelligence to the Power of **Geo**spatial

NYS GIS Association GeoAI Committee

NYC GISMO GeoAI Committee

Artificial Intelligence SubCommittee of NGAC