



EXAMINING ARTIFICIAL INTELLIGENCE

Implications for Homeland Security,
Emergency Management, and Public Health

Glen Woodbury, CHDS

(Created with significant support from Open AI's ChaptGPT4)

Why are we talking about this now?

Sudden and Broad Availability

Significant Investments

Competition

Nation-State Developments

Innovation Accelerations (this presentation is already outdated)

Faster-than-Policy Evolutions

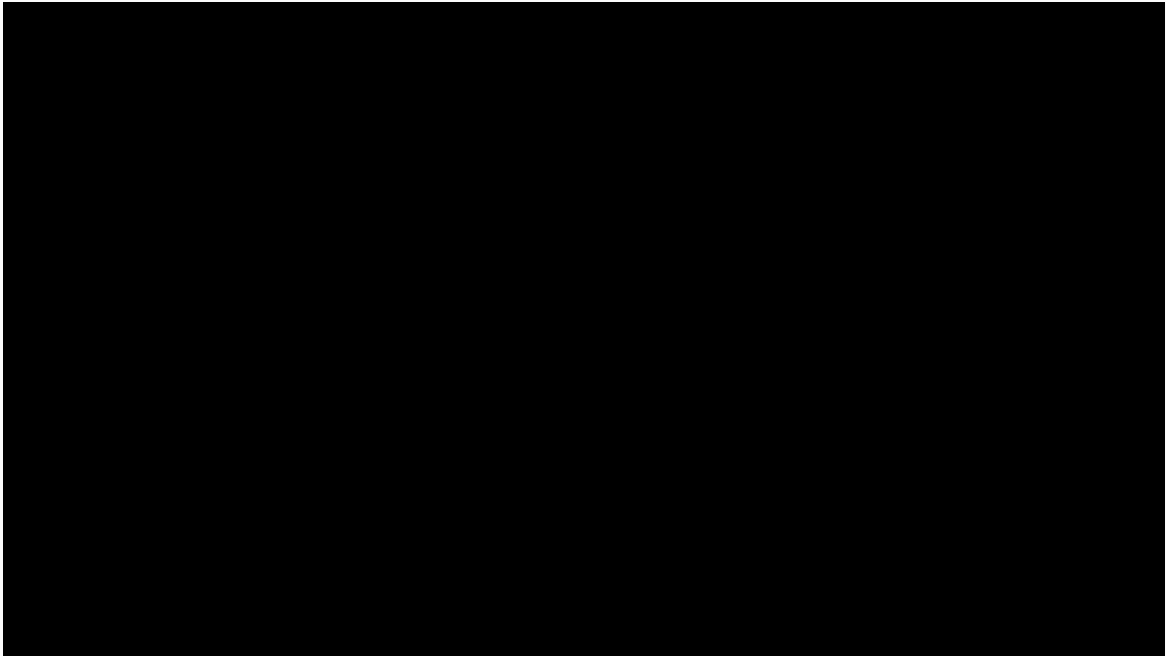


https://www.youtube.com/watch?v=pRTm_UHR8Uo
July 21, 2023

**Why are we talking about
this now?**

<https://www.youtube.com/watch?v=Ya1Ppu-Q34>

<https://www.synthesia.io/post/ai-tools>



**What are *your* experiences with
“AI” so far?**



Basic Understandings

(although basic categorizations of AI vary widely)

Narrow AI

General AI

Generative AI

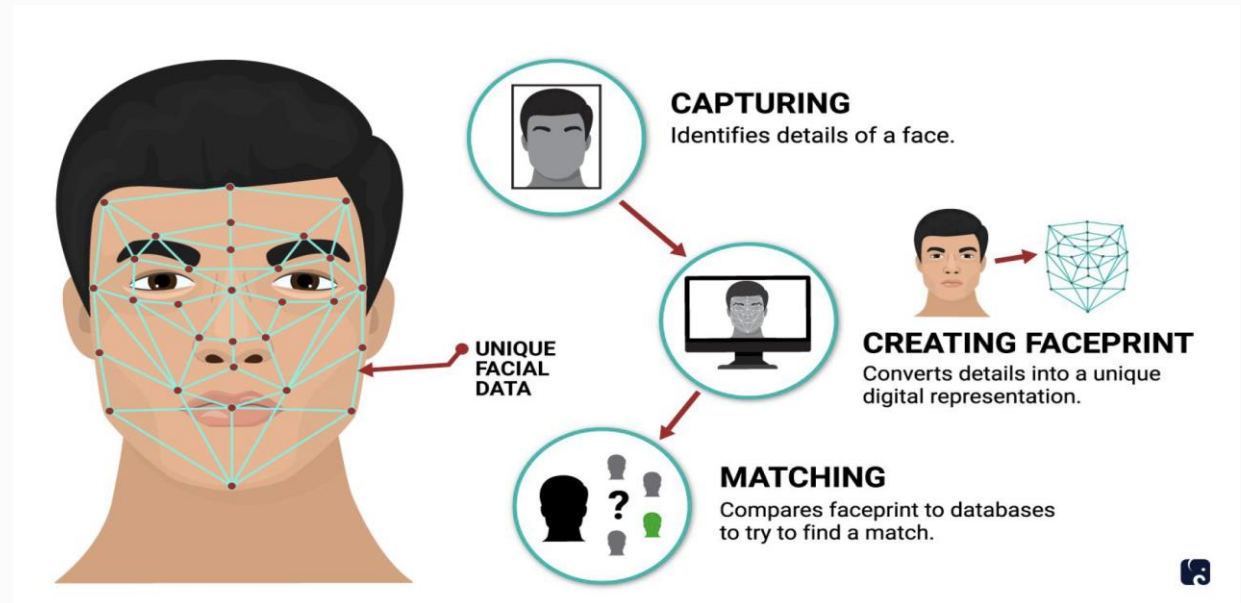
Machine Learning

Deep Learning, Reinforcement Learning

Computer Vision

Natural Language Processing

Narrow AI



<https://stoplapdspying.org/facial-recognition-factsheet/>

Systems designed to perform specific tasks or applications.

Lack the general intelligence to work outside their domain.

Examples: voice assistants, facial recognition systems, cyber-security apps, disease outbreak detection, predictive analytics

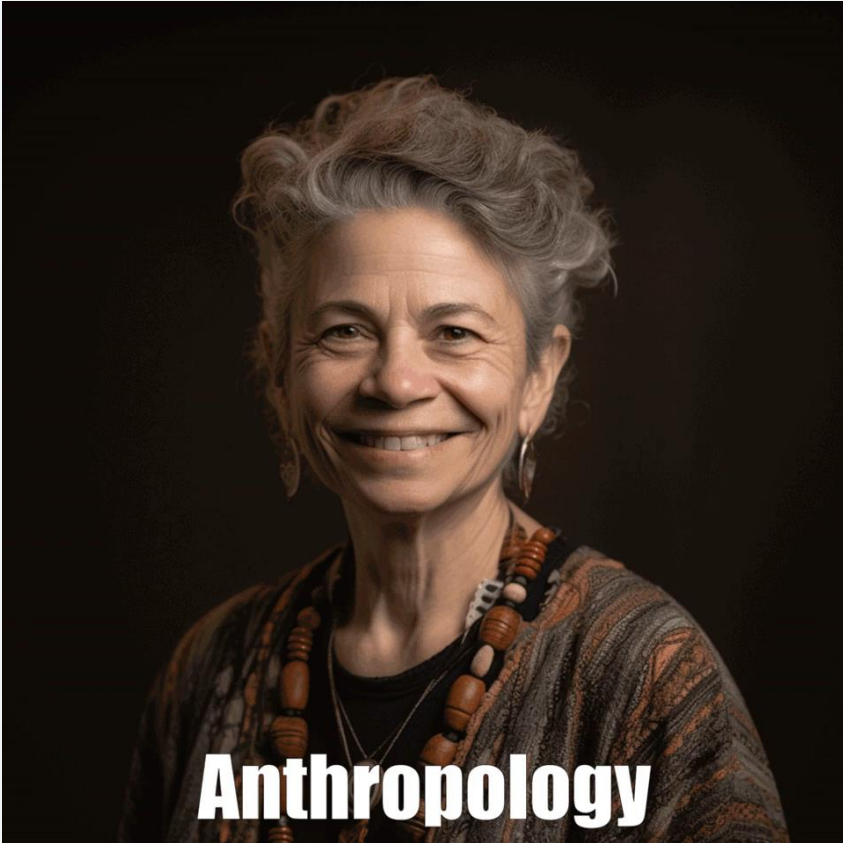
General AI



Human-level intelligence and are capable of performing any intellectual task that a human being can do.

Demonstrate a broad range of cognitive abilities, including reasoning, problem-solving, learning, and understanding natural language.

Largely theoretical for now, we're not here yet...



Created by MidJourney AI

Generative AI

Specific subset of artificial intelligence algorithms that are designed to generate new content, such as images, music, or text, that resembles human-created content.

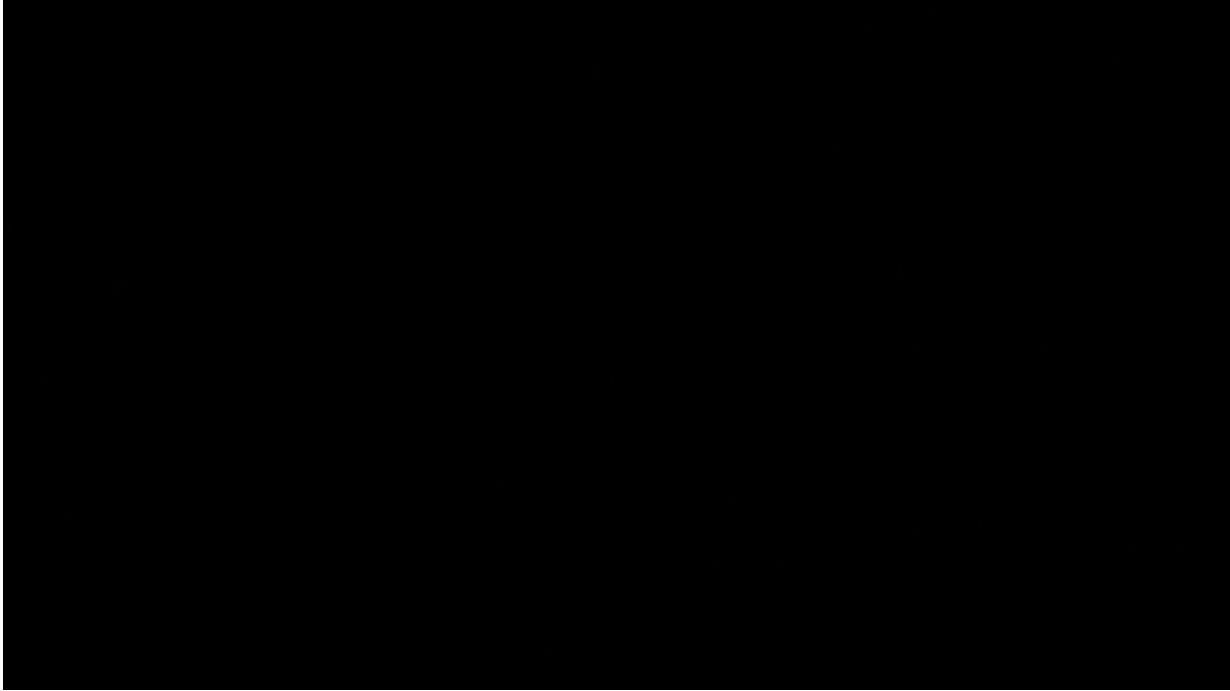
Often utilize deep learning techniques to generate new data based on patterns and examples present in existing data sets.

Disaster scenario simulations, infectious disease spread simulations, anomaly detection, ChatGPT, DALL-E2

Machine Learning

<https://www.youtube.com/watch?v=RbyQcCT6890>

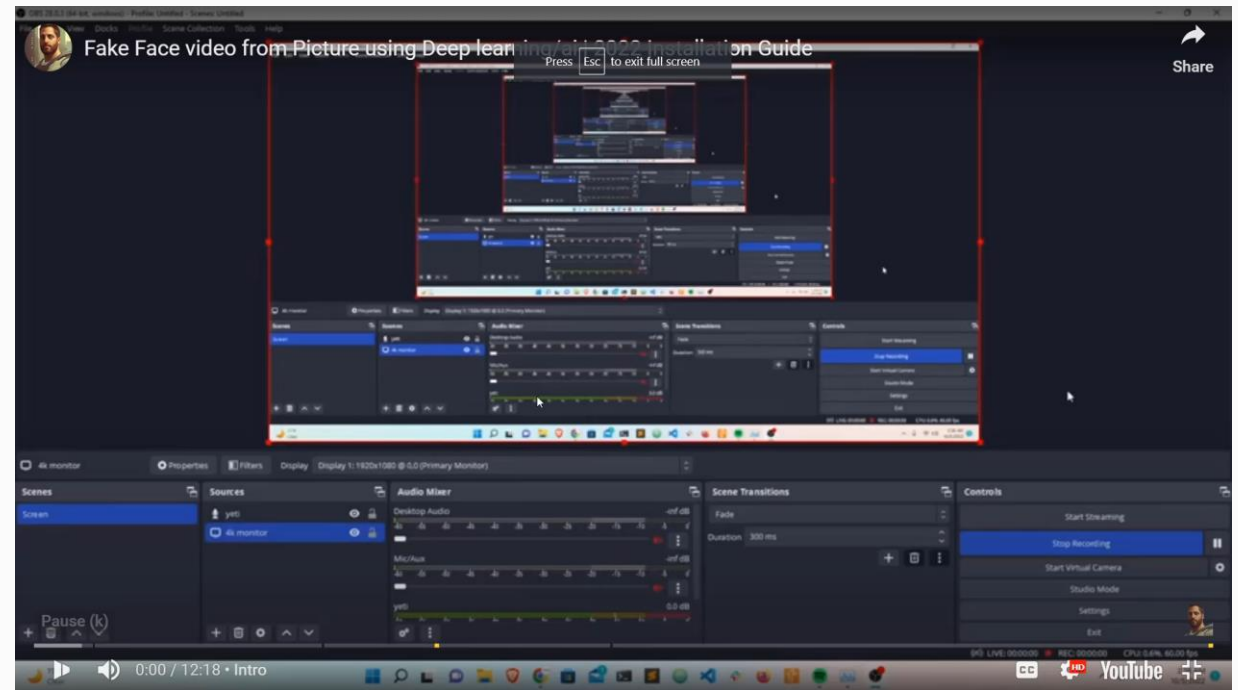
Google DeepMind



Focuses on creating algorithms and models that can learn and make predictions or decisions without being explicitly programmed.

Involves training a model on a large dataset and allowing it to learn patterns and relationships within the data to make accurate predictions or decisions.

Deep Learning, Reinforcement Learning



Subset of Machine Learning using artificial neural networks to understand complex patterns and relationships

Reinforcement Learning involves training AI systems through trial and error interactions with an environment

Predictive analytics, border security screening, risk assessment

[Deep Learning Video Instruction](#)

Natural Language Processing

Focuses on the interaction between computers and human language.

It involves tasks such as speech recognition, language translation, sentiment analysis, and text generation.

NLP enables computers to understand, interpret, and generate human language.

Applications of Natural Language Processing





Drones



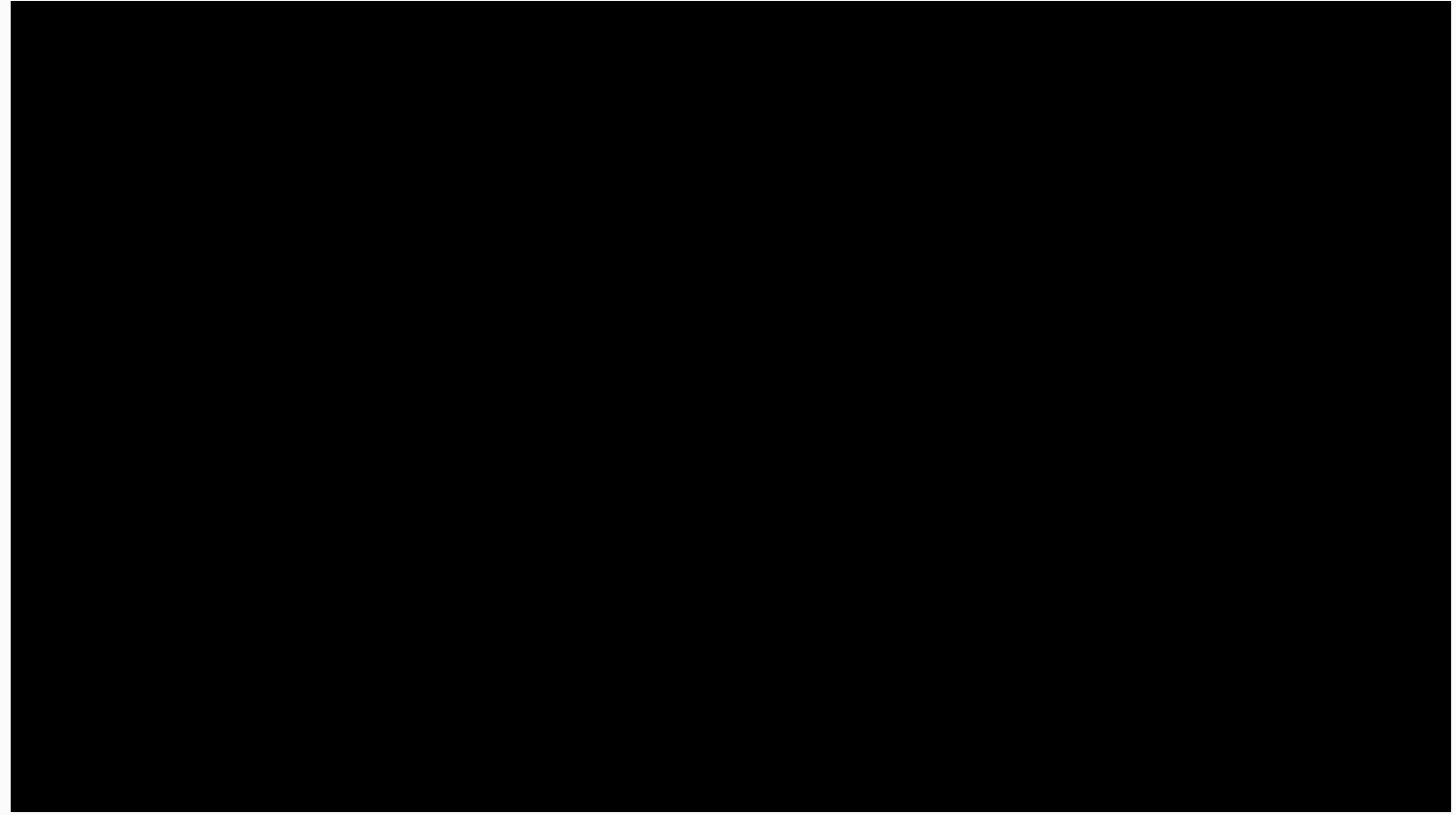
Automated Vehicles



Crawly and Creepy



Generative AI Enabled



Opportunities

**How many
emerging
technologies
do you see?**

**How many are
already available?**

**How hard would it
be to create this
scenario in real
life?**



StratoEnergetics LIVE STREAM
<http://www.stratoenergetics.com>
Buenos Aires Event
TV Truck 02

Challenges

Anduril, Epirus to boost US Marine Corps drone defenses

By Colin Demarest

Aug 2, 01:06 PM



Pictured is the Epirus Leonidas, a counter-drone and counter-electronics high-power microwave system. (Provided/Epirus)

The U.S. Navy Wants Truly Autonomous Fighter Jets

Kyle Mizokami Popular Mechanics April 14, 2023



The Navy predicts that up to 60 percent of its future carrier air wing will consist of drones. But is it ready to put its confidence in AI?

Unmanned

Artificial intelligence flies XQ-58A Valkyrie drone

By Georgina DiNardo

Aug 3, 07:5



An XQ-58A Valkyrie drone launches at Yuma Proving Ground, Ariz., in 2020 to demonstrate the transfer of data among aircraft. (Staff Sgt. Joshua King/U.S. Air Force)

U.S. Army Begins Rolling Out Augmented Reality For Soldiers

It's the biggest and most expensive upgrade for ground troops since body armor.

BY KYLE MIZOKAMI PUBLISHED: SEP 15, 2022

SAVE ARTICLE

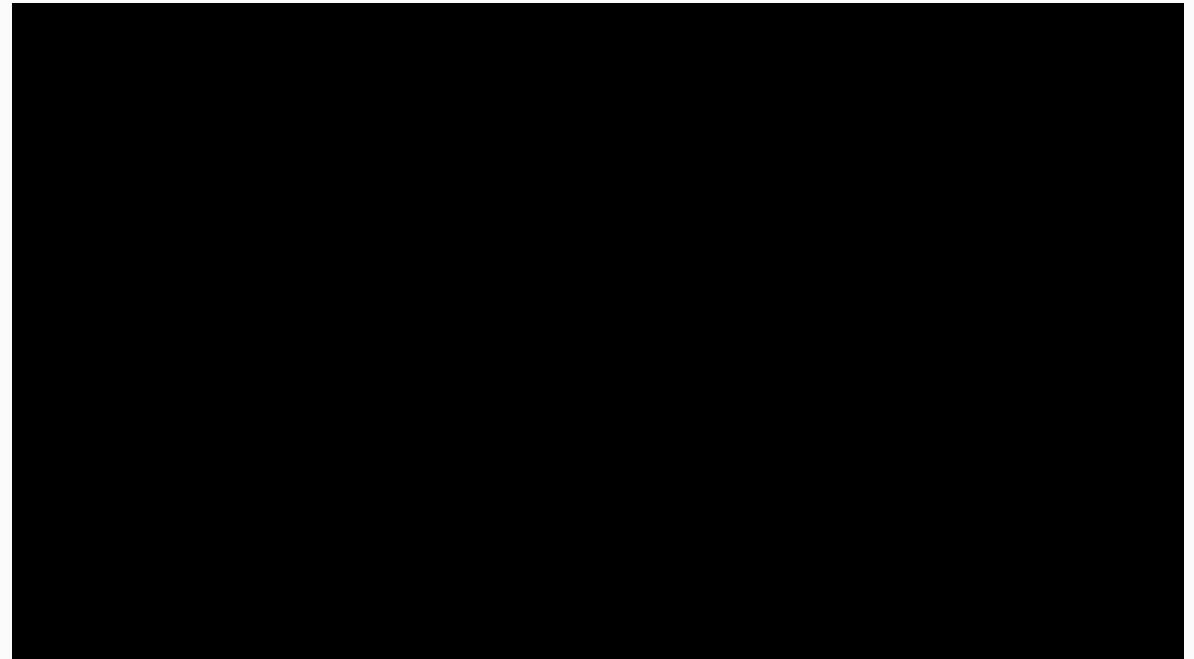
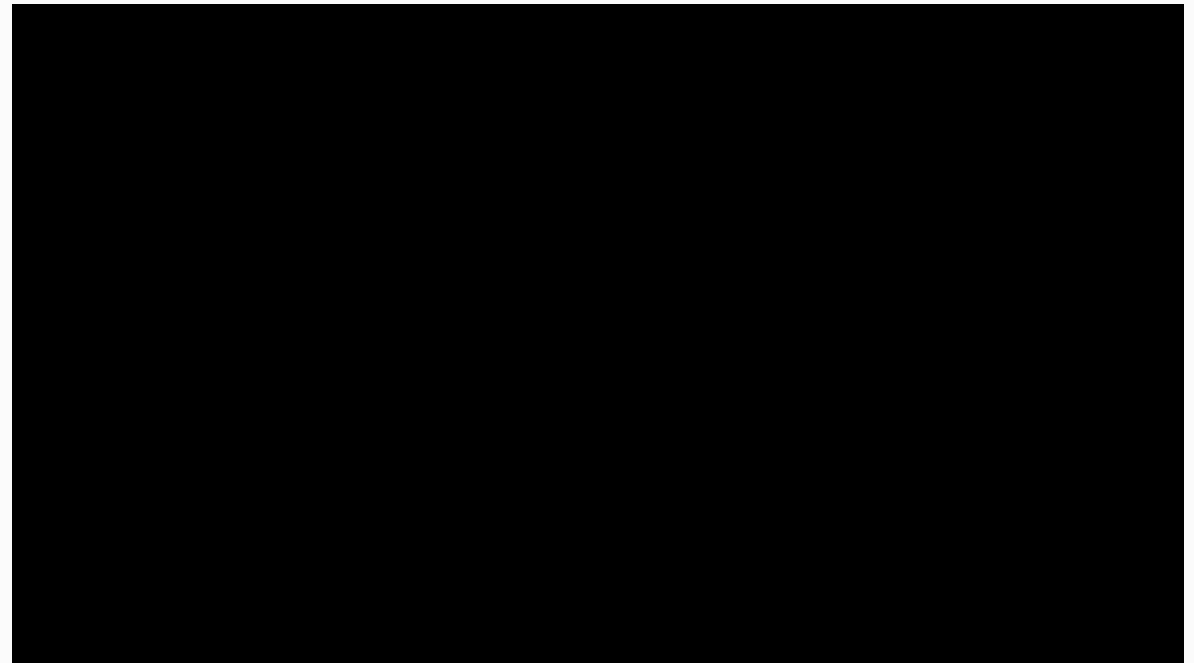


<https://www.c4isrnet.com/video/2023/07/19/dod-artificial-intelligence-agents-successfully-pilot-fighter-jet/>

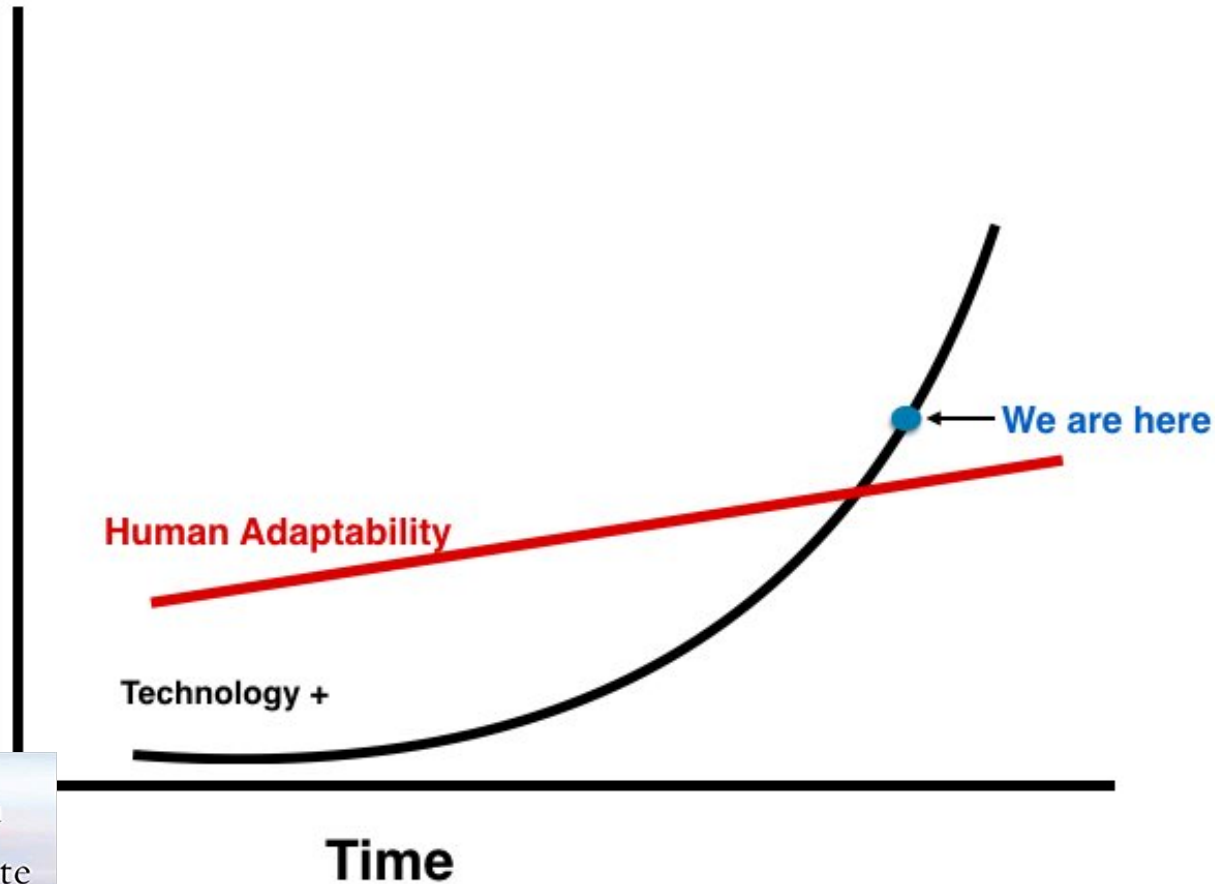
Opportunity?



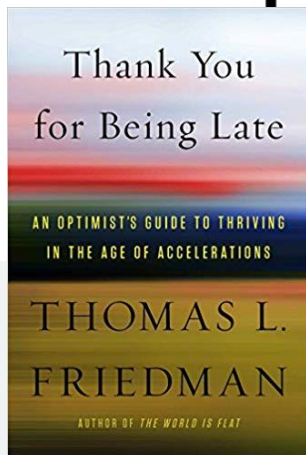
Challenge?



Rate of change



Why is this dynamic important?



Eric Teller, in Thomas Friedman,
Thank You for Being Late

More Challenges with AI

Bias

Hallucinations

Privacy

Vulnerability

Misuse

Lack of Transparency

Ethics and Accountability

Errors

Workforce Disruption

Dependency

Interpretability

Others?

Opportunities with AI

Surveillance

Threat detection

Risk assessment

Biometric identification

Disaster response

Predictive modeling

Cybersecurity

Data analysis

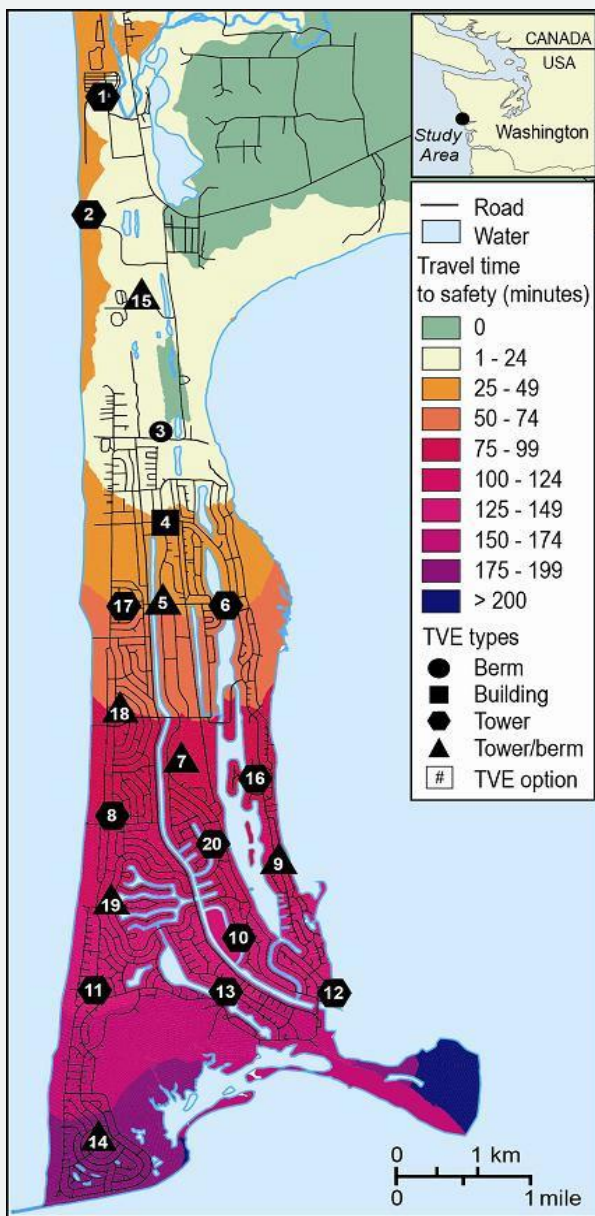
Vaccine development

Medical diagnosis

AI-powered decision support systems

Supply chain optimization

Others?



Ocean Shores, WA
 Tsunami Evacuation Times
 USGS

Large Language Model Demo (A cautionary tale...)

What I've tried so far...

What I've imagined trying...

Here's something quick...

Text input to ChatGPT4.
A map was not loaded.

“Ocean Shores, Washington State is prone to tsunami hazards. Prepare a draft evacuation announcement that would use appropriate routes to **mote** to high ground and/or away from the shore inundation areas.”

(count 1, 2, 3...)

[Your Organization Name]

Evacuation Announcement: Tsunami Hazard Alert

Date: [Current Date]

Time: [Current Time]

Location: Ocean Shores, Washington

Attention all residents and visitors of Ocean Shores,

This is an urgent announcement from the [Your Organization Name]

We have been alerted to a potential tsunami hazard in the area. Immediate action is required for your safety. Please remain calm and follow the instructions provided.

1. Evacuation Order:

Due to the impending tsunami hazard, an evacuation order has been issued for all residents and visitors in Ocean Shores, Washington. It is crucial that you evacuate the coastal areas and move to higher ground immediately to ensure your safety.

2. Safe Evacuation Routes:

a) Route 1 - Northbound:

If you are currently located in the southern part of Ocean Shores (e.g., downtown area), please evacuate using Route 1 (Northbound). Follow Ocean Shores Blvd NW towards Damon Rd, then turn right onto Damon Rd and continue until Damon Rd intersects with WA-109. Take a left onto WA-109 N and proceed until you reach the designated evacuation site at [(Designated Safe Location)].

b) Route 2 - Southbound:

If you are currently located in the northern part of Ocean Shores (e.g., Ocean City State Park), please evacuate using Route 2 (Southbound). Follow Ocean Shores Blvd NW south until it intersects with WA-115, then turn left onto WA-115. Continue on WA-115 until you reach Ocean Beach Rd and turn right. Follow Ocean Beach Rd until you reach the designated evacuation site at [(Designated Safe Location)].

3. Designated Safe Location:

The designated safe location for the evacuation is [(Name and Address of Safe Location)]. This location has been determined to be outside the tsunami inundation zone and will provide you with the highest level of safety. Please make your way there promptly.

4. Recommended Precautions:

- a) Take essential supplies with you, such as medications, clothing, blankets, and important documents.
- b) Secure your homes by turning off utilities, closing windows, and locking doors.
- c) If there are vulnerable individuals or neighbors who require assistance, please lend them a helping hand in evacuating safely.

5. Stay Informed:

Continue listening to local news channels, official announcements, or emergency alerts on your mobile devices for updates regarding the situation. Do not return to the coastal areas until authorities have issued an all-clear notification.

Your safety is our top priority. Please cooperate fully with authorities and take immediate action to evacuate as instructed. Remember, time is of utmost importance during a tsunami evacuation.

For additional information or assistance, call the Ocean Shores Emergency Hotline at [Emergency Hotline Number].

Thank you for your cooperation. Stay safe.[Your Organization Name]

(edited)

[Your Organization Name]

Evacuation Announcement: Tsunami Hazard Alert

Date: [Current Date]

Time: [Current Time]

Location: Ocean Shores, Washington

Attention all residents and visitors of Ocean Shores,

This is an urgent announcement from the [Your Organization Name]

We have been alerted to a potential tsunami hazard in the area. Immediate action is required for your safety. Please remain calm and follow the instructions provided.

1. Evacuation Order:

Due to the impending tsunami hazard, an evacuation order has been issued for all residents and visitors in Ocean Shores, Washington. It is crucial that you evacuate the coastal areas and move to higher ground immediately to ensure your safety.

2. Safe Evacuation Routes:

a) Route 1 - Northbound:

If you are currently located in the southern part of Ocean Shores (e.g., downtown area), please evacuate using Route 1 (Northbound). Follow Ocean Shores Blvd NW towards Damon Rd, then turn right onto Damon Rd and continue until Damon Rd intersects with WA-109. Take a left onto WA-109 N and proceed until you reach the designated evacuation site at [(Designated Safe Location)].

b) Route 2 - Southbound:

If you are currently located in the northern part of Ocean Shores (e.g., Ocean City State Park), please evacuate using Route 2 (Southbound). Follow Ocean Shores Blvd NW south until it intersects with WA-115, then turn left onto WA-115. Continue on WA-115 until you reach Ocean Beach Rd and turn right. Follow Ocean Beach Rd until you reach the designated evacuation site at [(Designated Safe Location)].

**Ok, let's try
Bard**

**“What are the proper
evacuation routes for
evacuating Ocean Shores
Washington if there is a
tsunami?”**

There are several evacuation routes for evacuating Ocean Shores, Washington in the event of a tsunami. The best route for you will depend on your location and the severity of the tsunami.

Here are some of the main evacuation routes:

- North: Follow SR 115 north to Hoquiam.
- East: Follow SR 109 east to Aberdeen.
- South: Follow Ocean Shores Boulevard south to the junction of SR 115.
- West: Follow the Grays Harbor Rail Trail west to the junction of SR 109.

If you are unable to evacuate by car, **you can also evacuate on foot to the nearest high ground.** The following are some high ground areas that are safe from tsunamis:

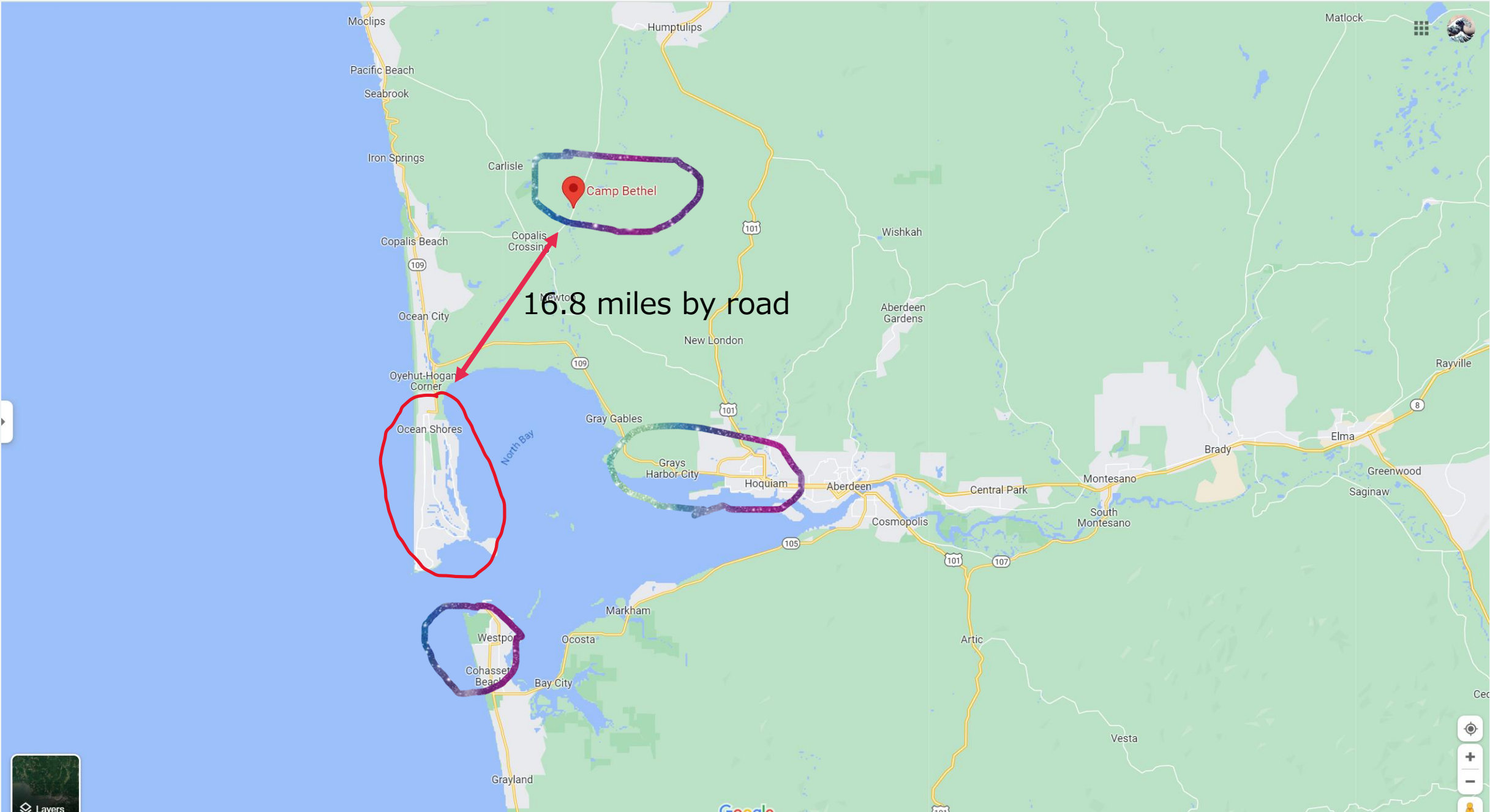
- Camp Bethel: This is a campground located at 47 Kirkpatrick Road.**
- Westport: This is a town located about 15 miles west of Ocean Shores.**
- Grays Harbor: This is a county located about 20 miles east of Ocean Shores.**

It is important to remember that a tsunami can arrive within minutes of an earthquake, so it is important to be prepared to evacuate quickly. If you hear a tsunami warning, listen to the instructions of local officials and evacuate to the nearest safe location.

Here are some additional tips for evacuating during a tsunami:

- Stay calm and follow instructions from local officials.
- Evacuate early, even if you do not see the tsunami.
- Do not wait for official confirmation of a tsunami.
- Evacuate to high ground, at least 100 feet above sea level.
- Avoid low-lying areas, such as beaches, bays, and rivers.
- Do not drive through flooded areas.
- Have a plan for what to do with your pets.

By following these tips, you can help to ensure your safety in the event of a tsunami.

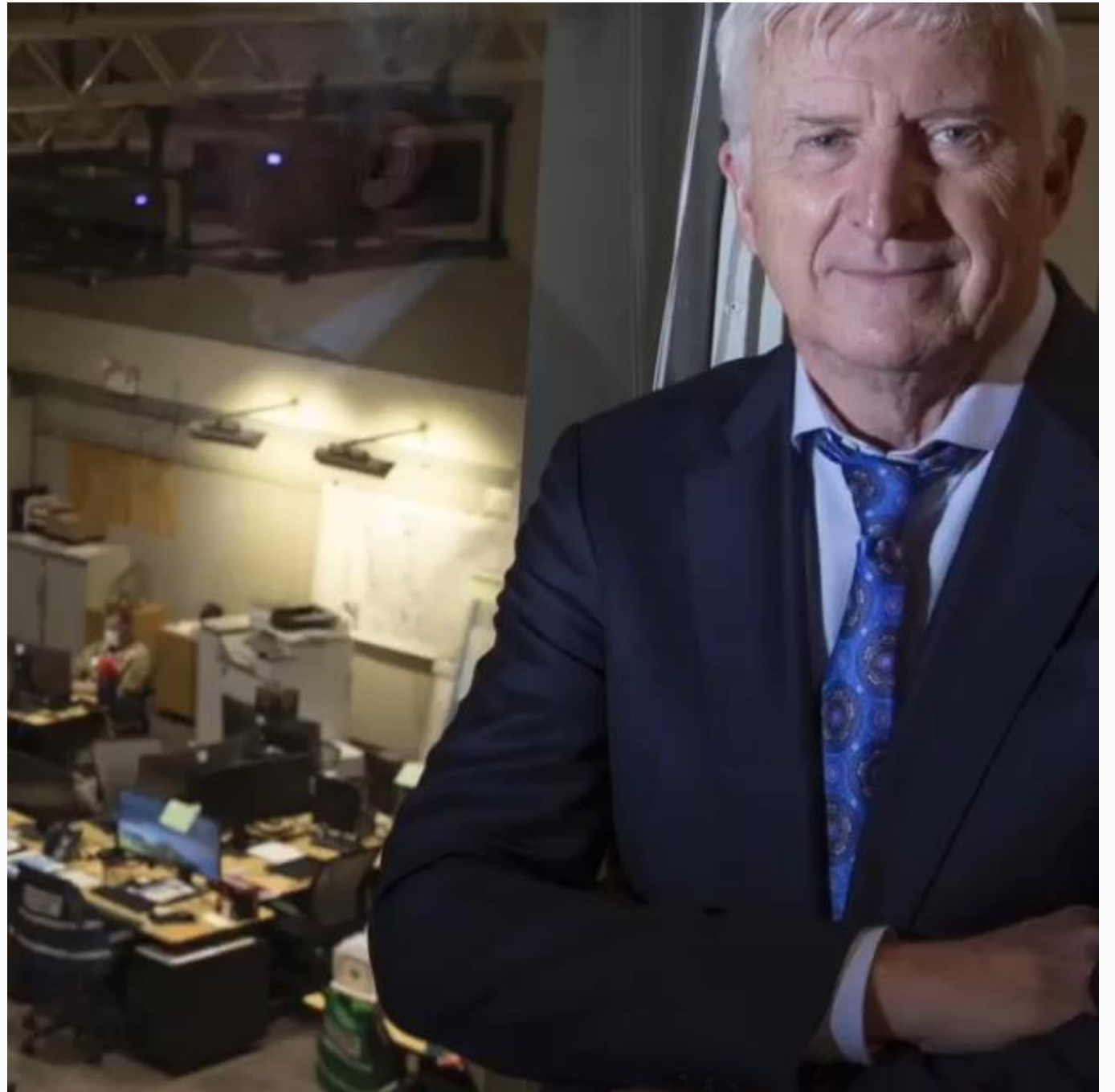


16.8 miles by road

Official

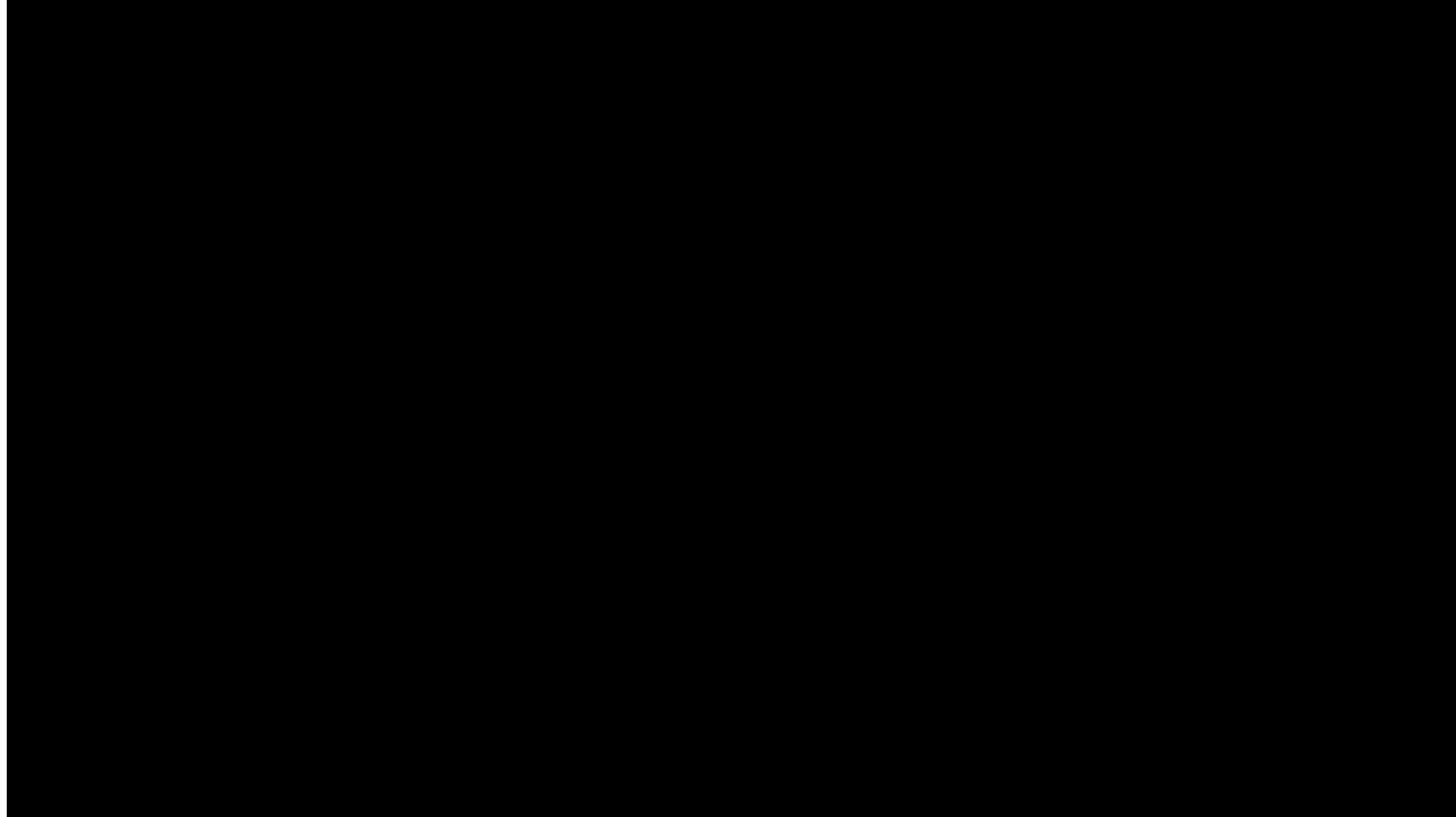
Announcement

(this could easily be done in
multiple languages)



How to make a better official announcement

(this could also easily be
done in multiple languages)



Applications?

Fire

Law Enforcement

Emergency Management

Emergency Medical Services

Public Works

Executive and Elected Officials

Cyber

Homeland Security

Public Health

Resiliency

Emergency Management Applications?

Plans

Exercise

Training

EOC Operations

SITREPS

AARs

Policy Options

Watch Officer/Warning Center Logs

HR

Finance

Legal

And more.....



Discussion...

“Everything that comes next, will be better than what we see today.”

GLEN WOODBURY

GLEN.WOODBURY@NPS.EDU

GLENWOODBURY@GMAIL.COM