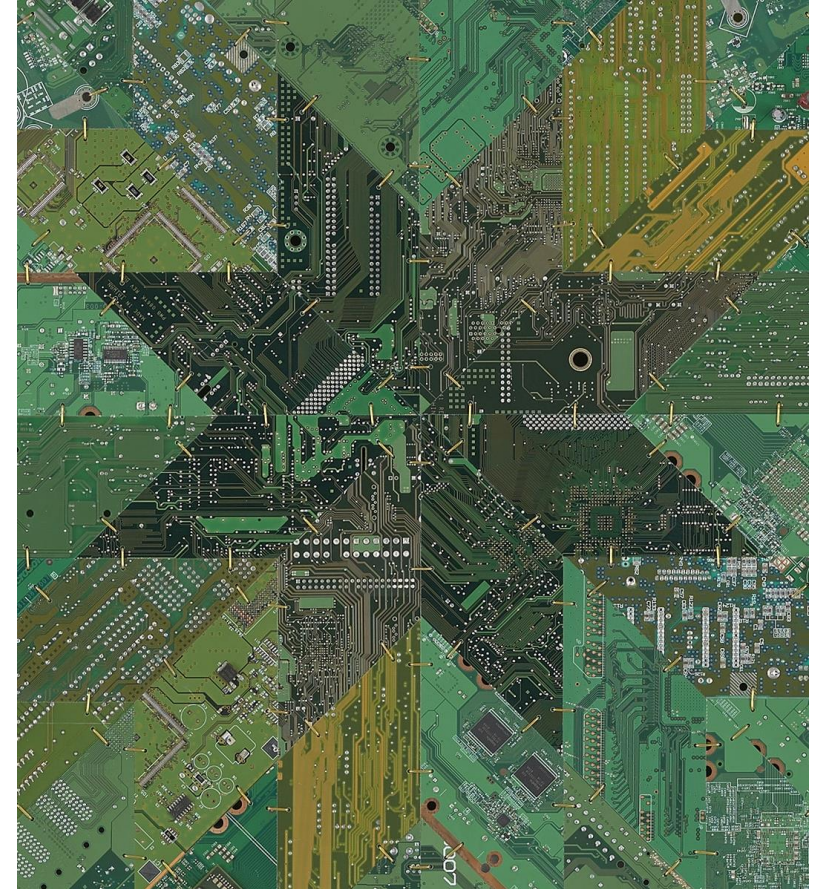


A Different Future for AI: Indigenous Wisdom, Circular Systems & the Story *We Choose*

**Artificial Intelligence for
Sustainability: Maximizing
Benefits for the United States:**

Wednesday, June 4, 2025

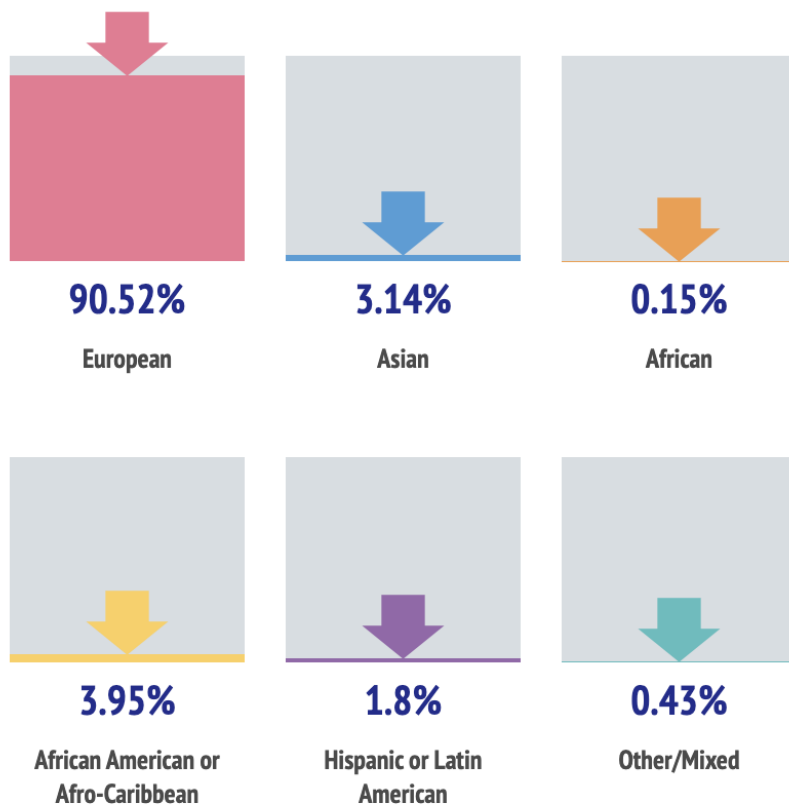
Keolu Fox, PhD | UCSD



**NATIONAL
ACADEMIES** Sciences
Engineering
Medicine

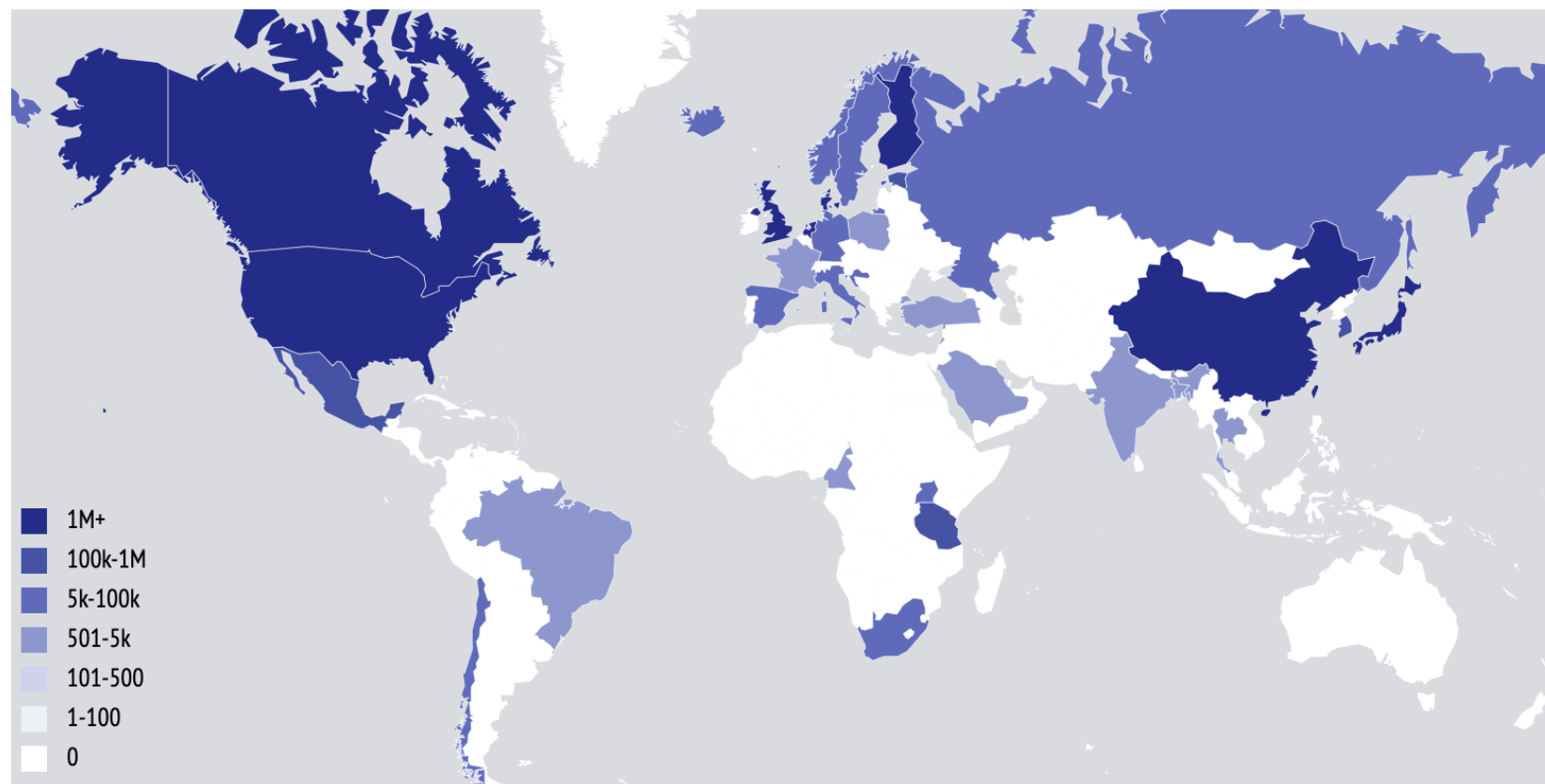
Total GWAS participants diversity

Version 1.0.0. Last check for data: 2025-04-28 00:20:34 .



Participants by country (all parent terms)

Both Stages



<< < 2023 > >>



<https://gwasdiversitymonitor.com/>

***72%** of genetic discoveries have taken places in three countries

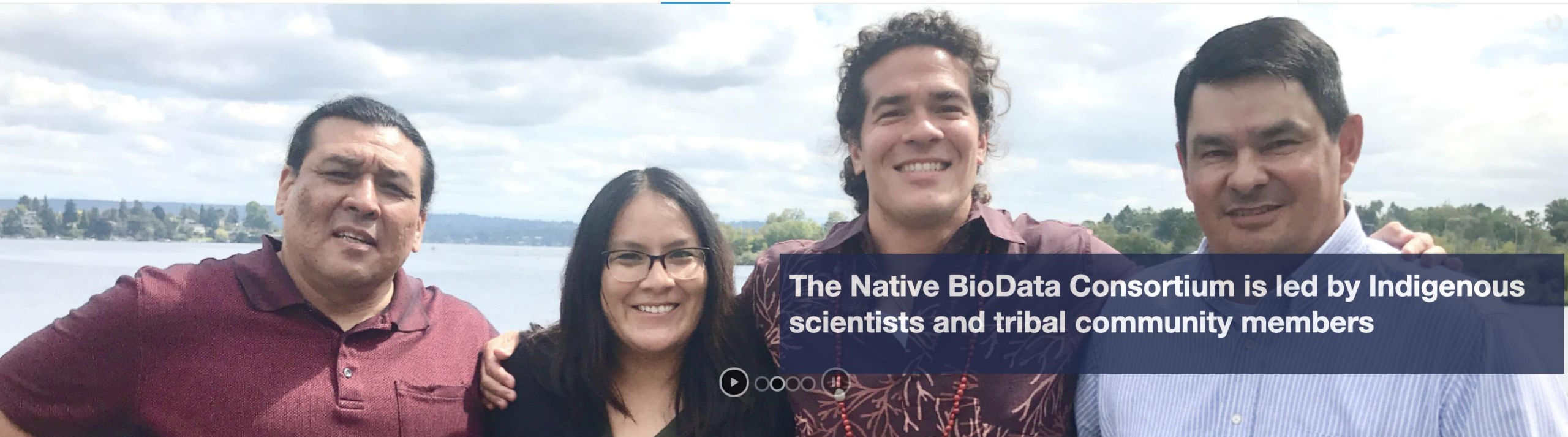


There were approximately **45,000** patents filed worldwide that mention **DNA sequencing** or analysis as a significant application or method

Illumina HQ, La Jolla, CA 2023

*Liddicoat & Leachman
Nature (2018)*





The Native BioData Consortium is led by Indigenous scientists and tribal community members

RESEARCH FOR NATIVES, BY NATIVES

The [Native BioData Consortium \(NBDC\)](#) is the first 501(c)(3) nonprofit research institute led by Indigenous scientists and tribal members in the United States. As a biorepository (or “biobank”), we ensure that advances in genetics and health research benefit all Indigenous people.



Sovereignty = Sustainability



Why are we having a data center boom in the desert?



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A.I. tools fueled a 34% spike in Microsoft's water consumption, and one city with its data centers is concerned about the effect on residential supply

BY **MATT O'BRIEN**, **HANNAH FINGERHUT**, AND **THE ASSOCIATED PRESS**

September 9, 2023 at 8:01 AM PDT



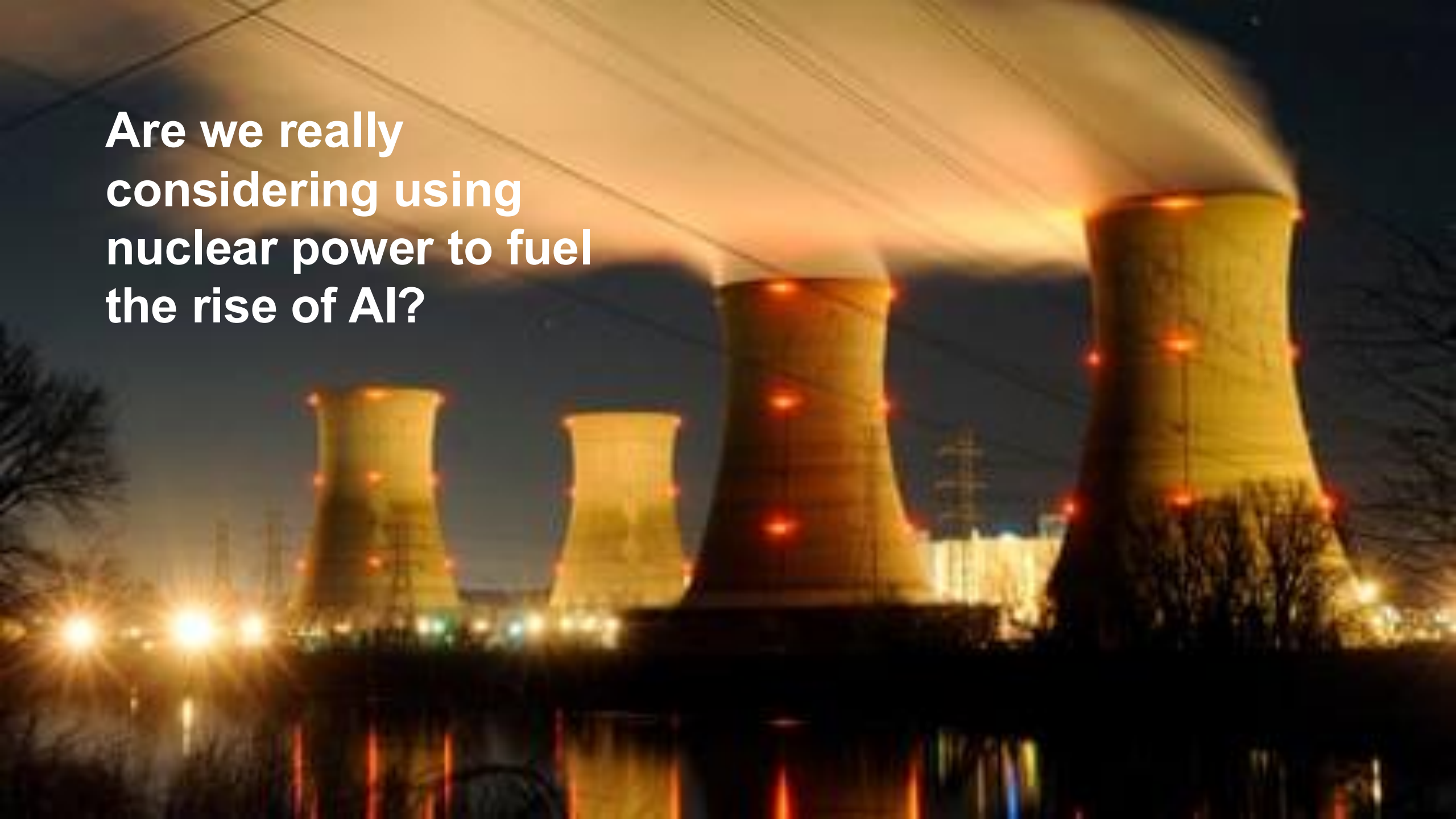
Microsoft CEO Satya Nadella discusses his company's partnership with ChatGPT maker OpenAI.

CHONA KASINGER/BLOOMBERG VIA GETTY IMAGES

**Could AI keep
us dependent
on natural gas
for decades to
come?**



**Are we really
considering using
nuclear power to fuel
the rise of AI?**



Jevons Paradox:

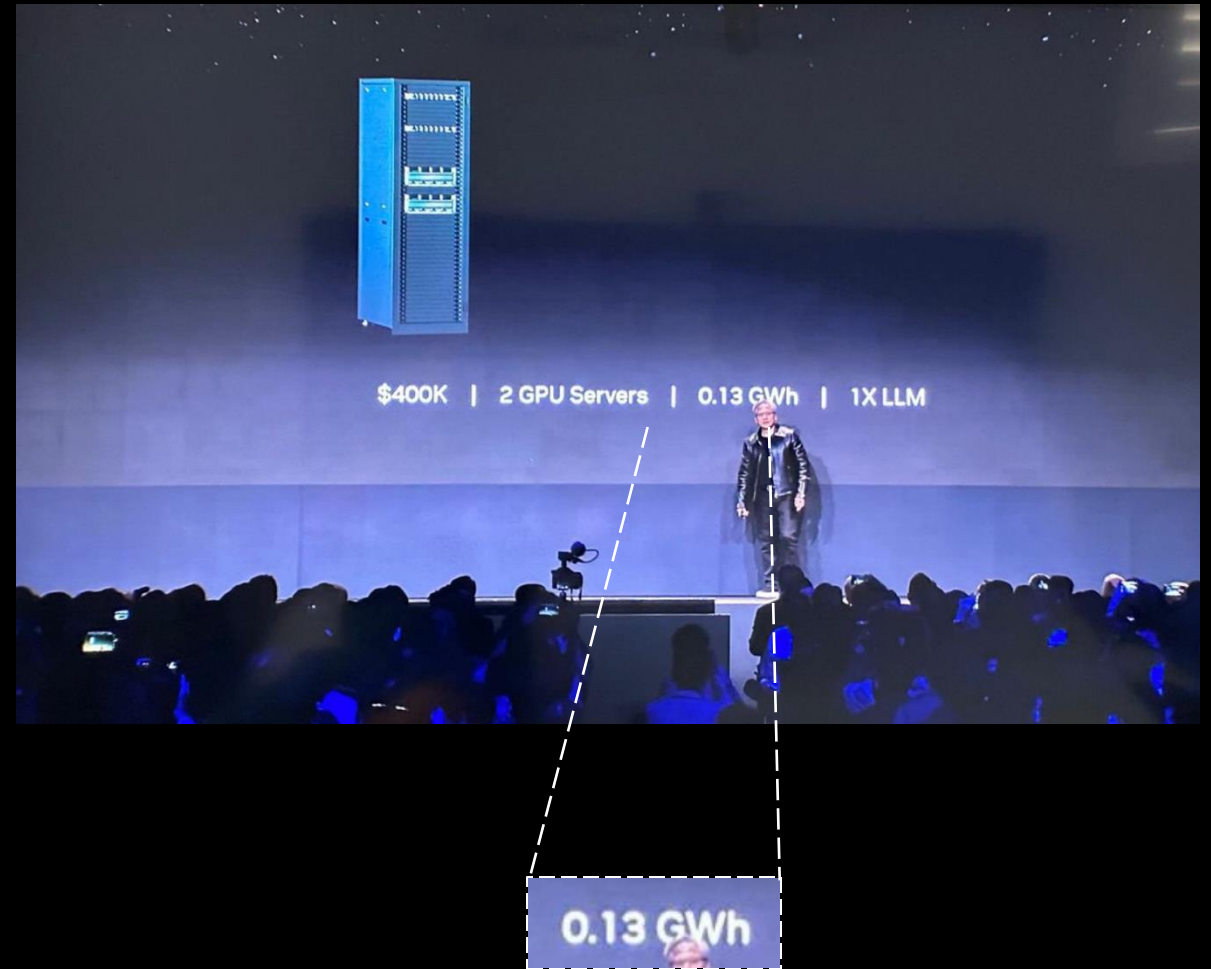
When improving efficiency in using a resource leads to more overall use of that resource, instead of less. It happens because using the resource becomes cheaper and easier, which encourages more people to use it.



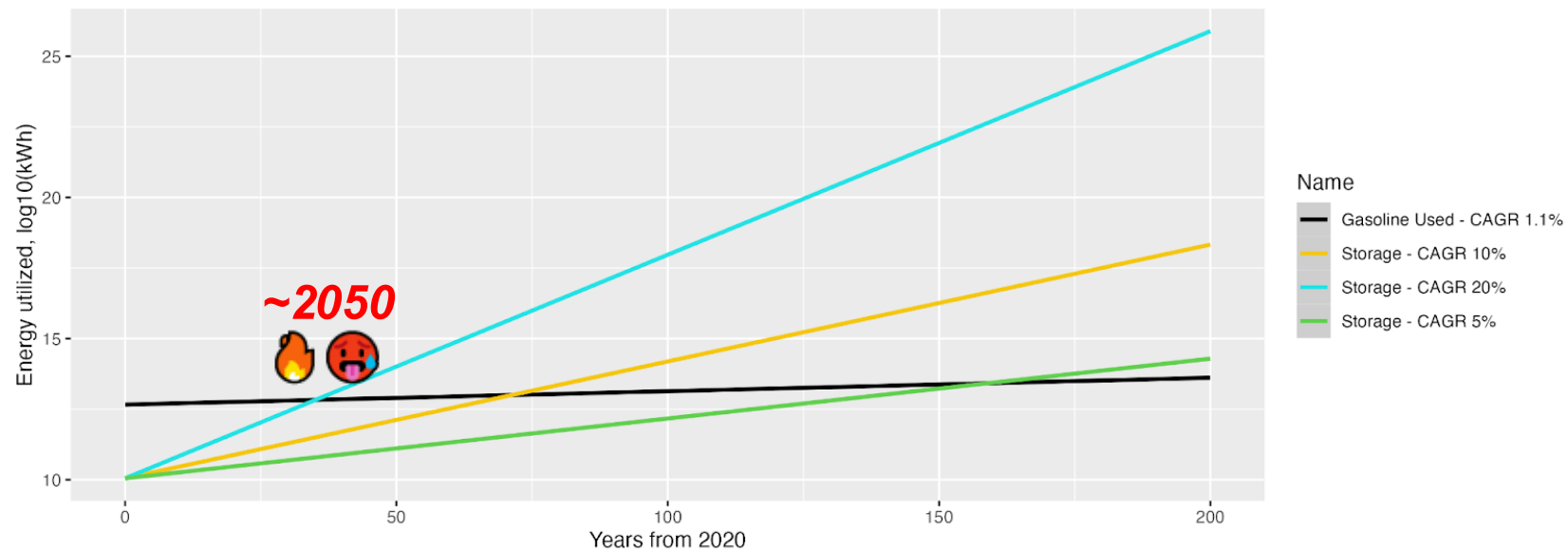
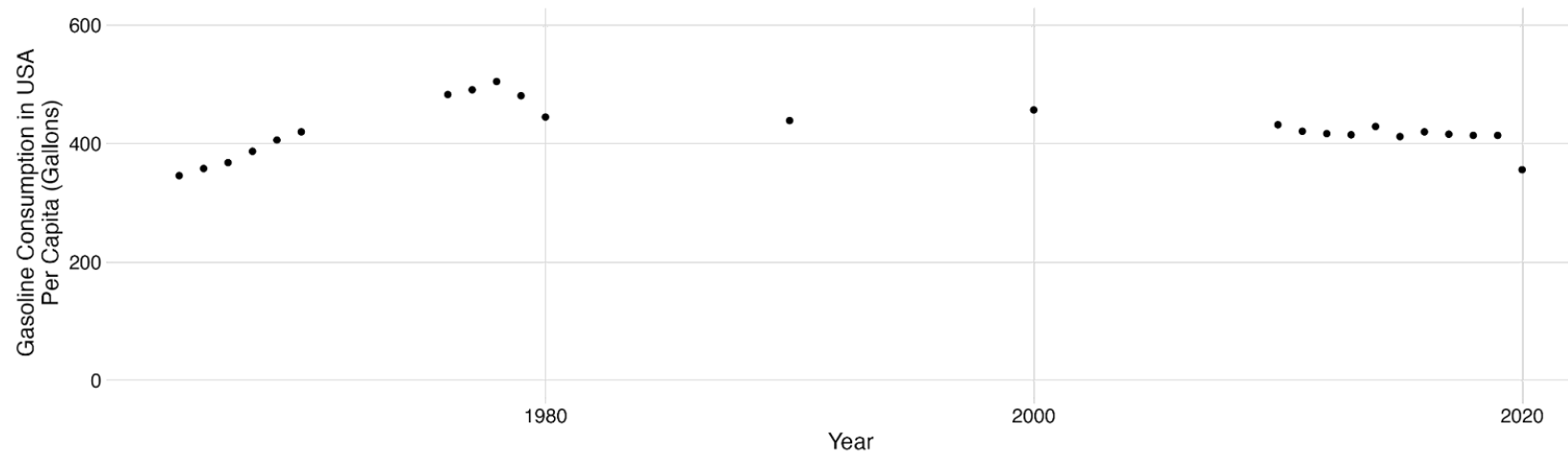
How it started



How it's going



Estimating rates of growth in gasoline consumption + data generation



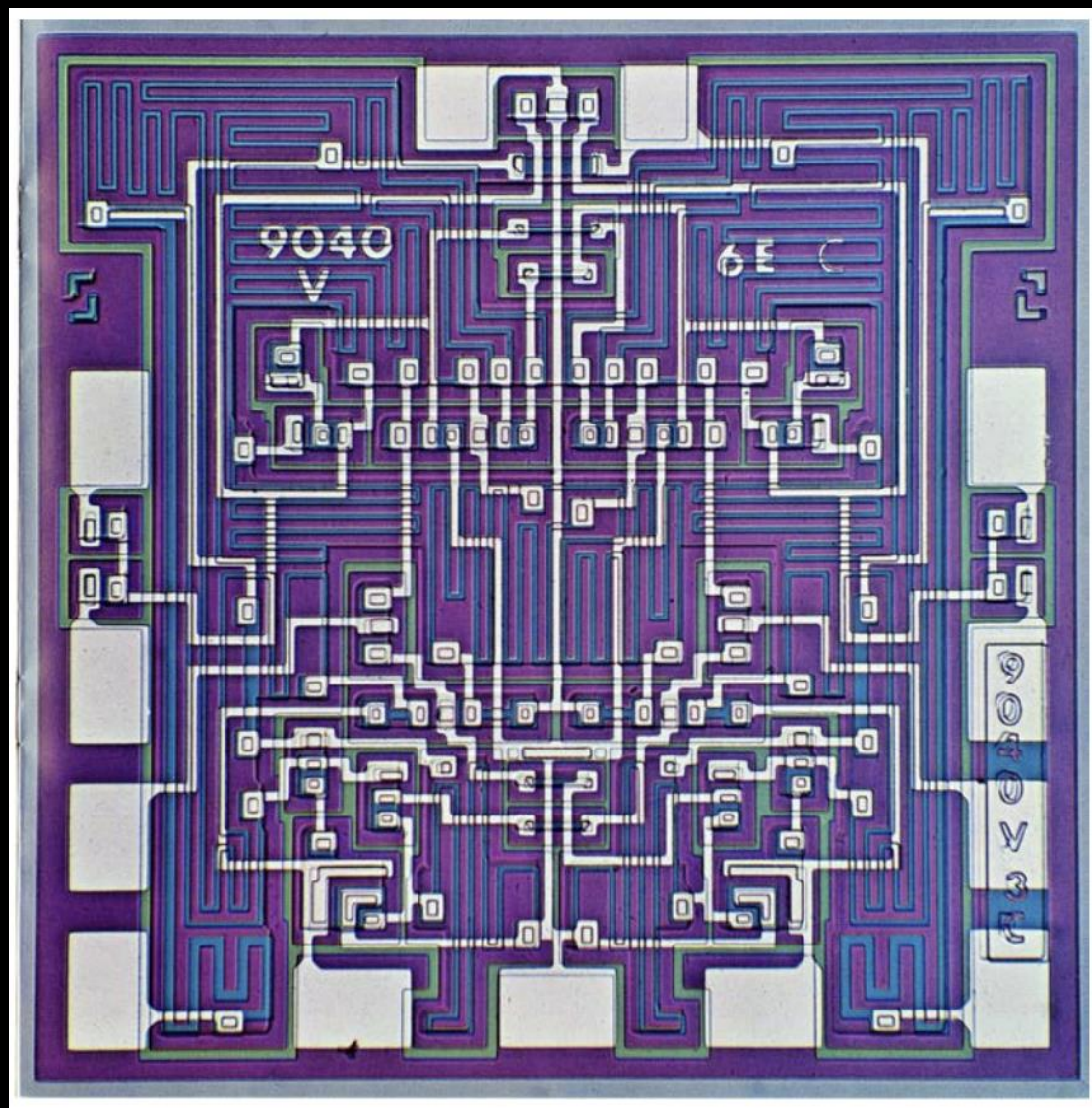


abundant intelligences

**Indigenous
Approaches to
Artificial
Intelligences**

↓ Get to know us

Abundant Intelligences is an Indigenous-led research program that conceptualizes, designs, develops, and deploys Artificial Intelligence based on Indigenous Knowledge systems.





We don't have to accept the narrative that AI must be extractive!

- 1. Circularity:** Designing systems where nothing is wasted.
- 2. Technology Shocks:** Challenging the status quo and repurposing what already exists.
- 3. Community Sovereignty:** Empowering all communities — especially those historically left out — to shape and benefit from AI.

Circularity:
Designing systems
where nothing is
wasted.



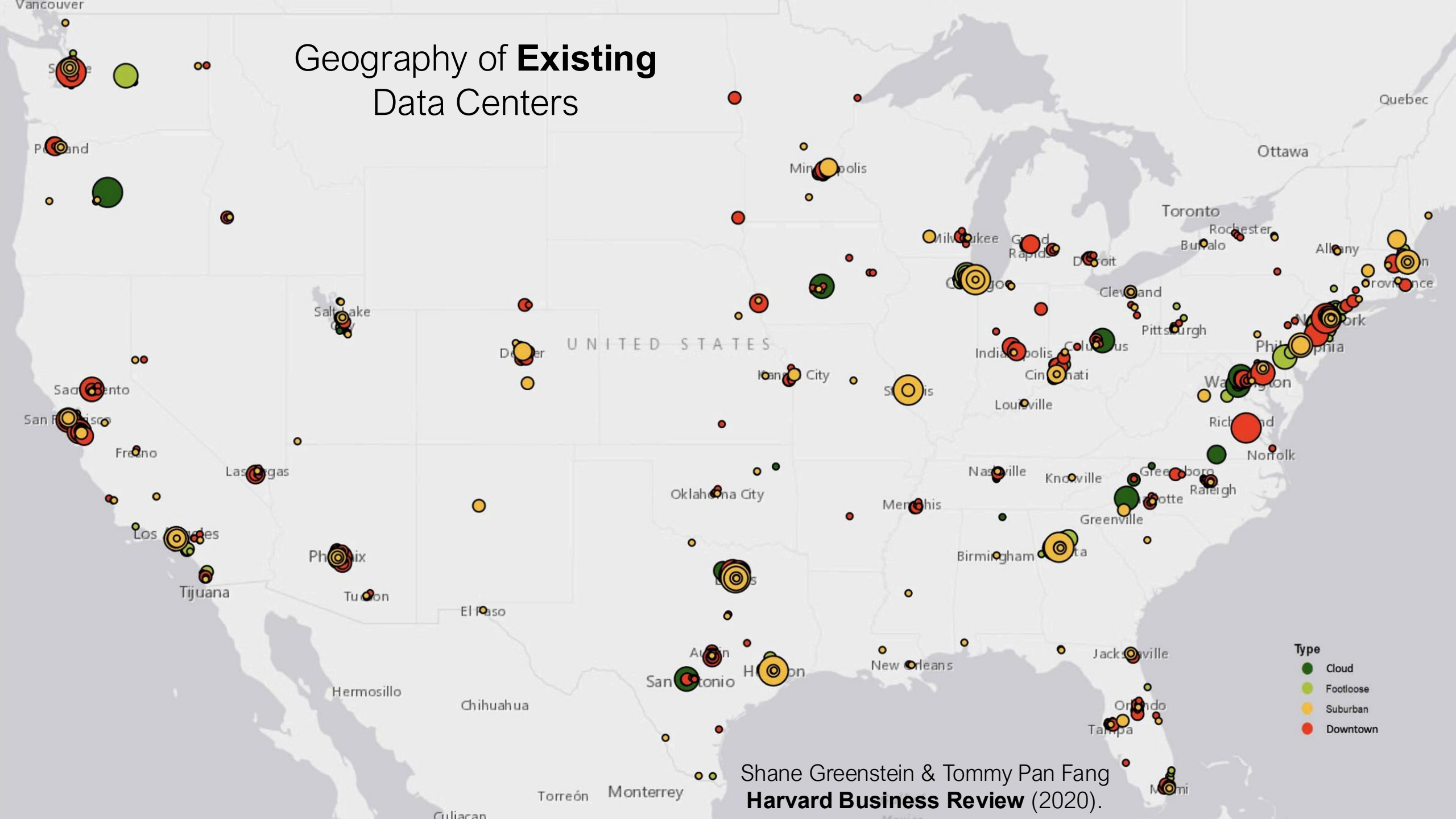


Ahupua'a land management system
National Geographic Magazine, (*Indigenous Futures Issue*)

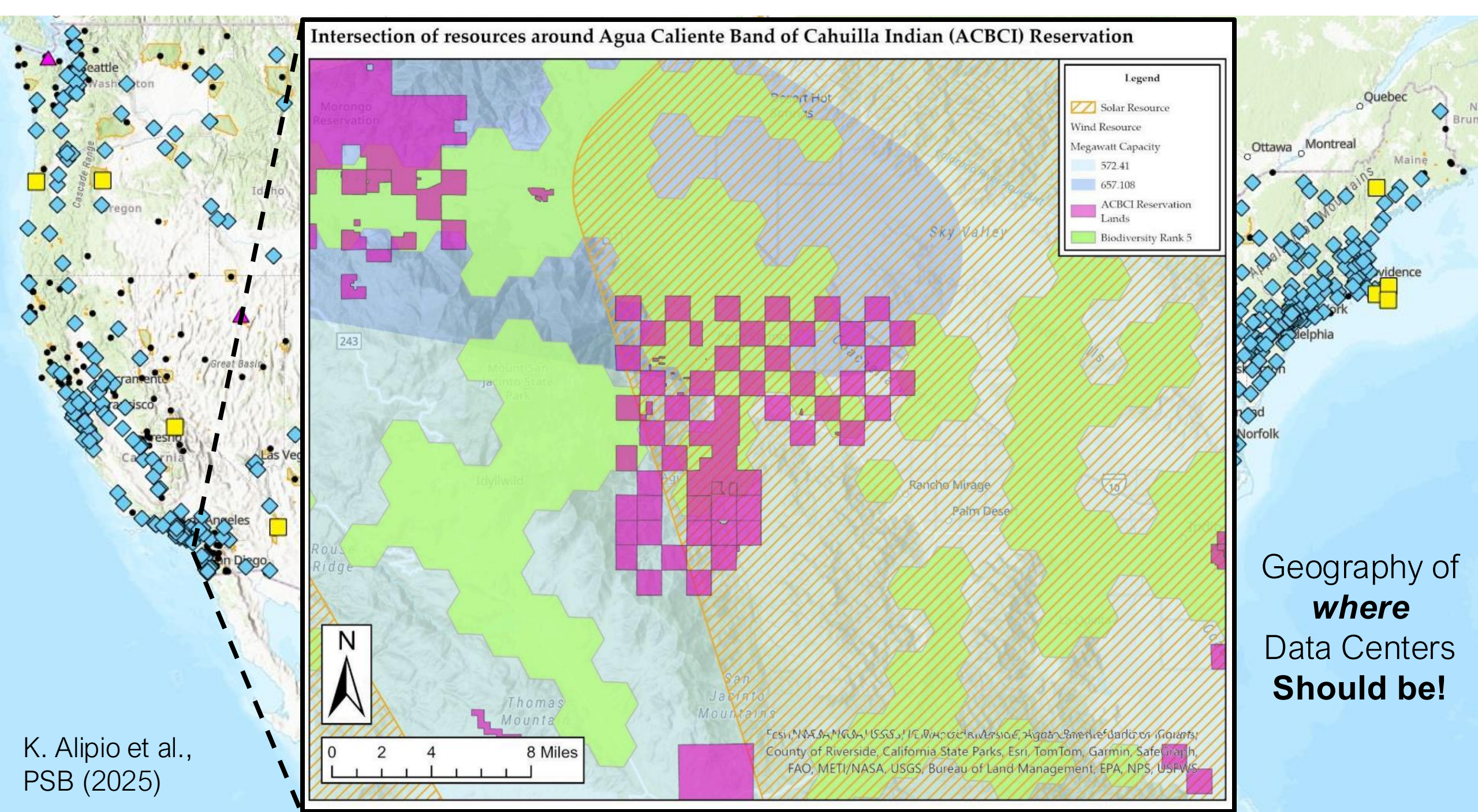
**What if we use
knowledge from
circular systems
to design data
centers?**

1. Resource Flow and Reciprocity
2. Self-Sufficiency and Closed-Loop Systems
3. Adaptive Management

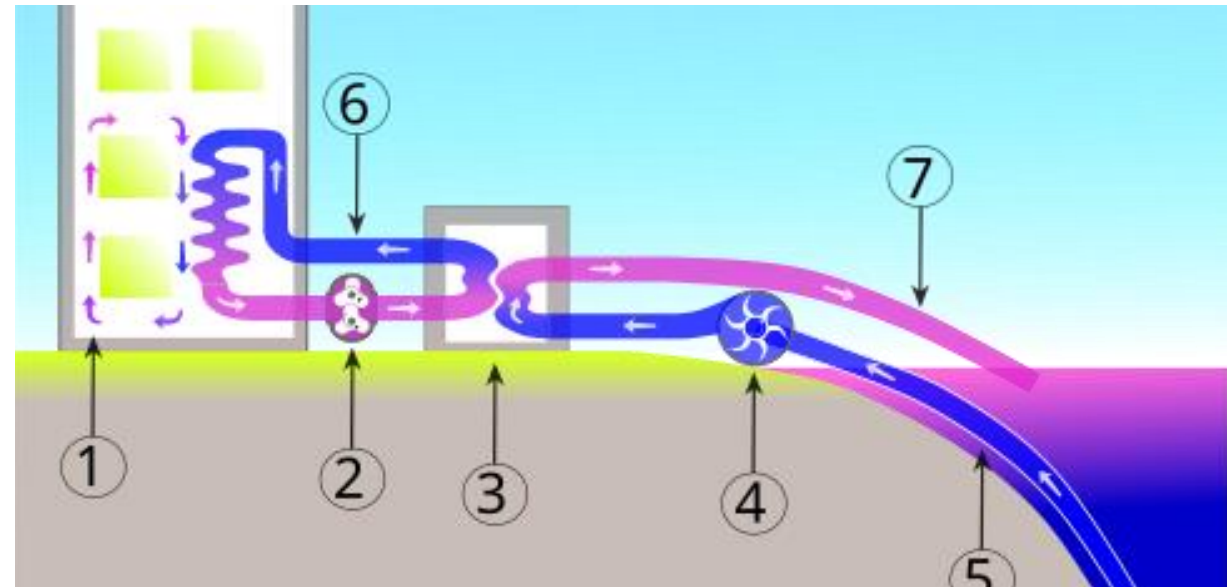
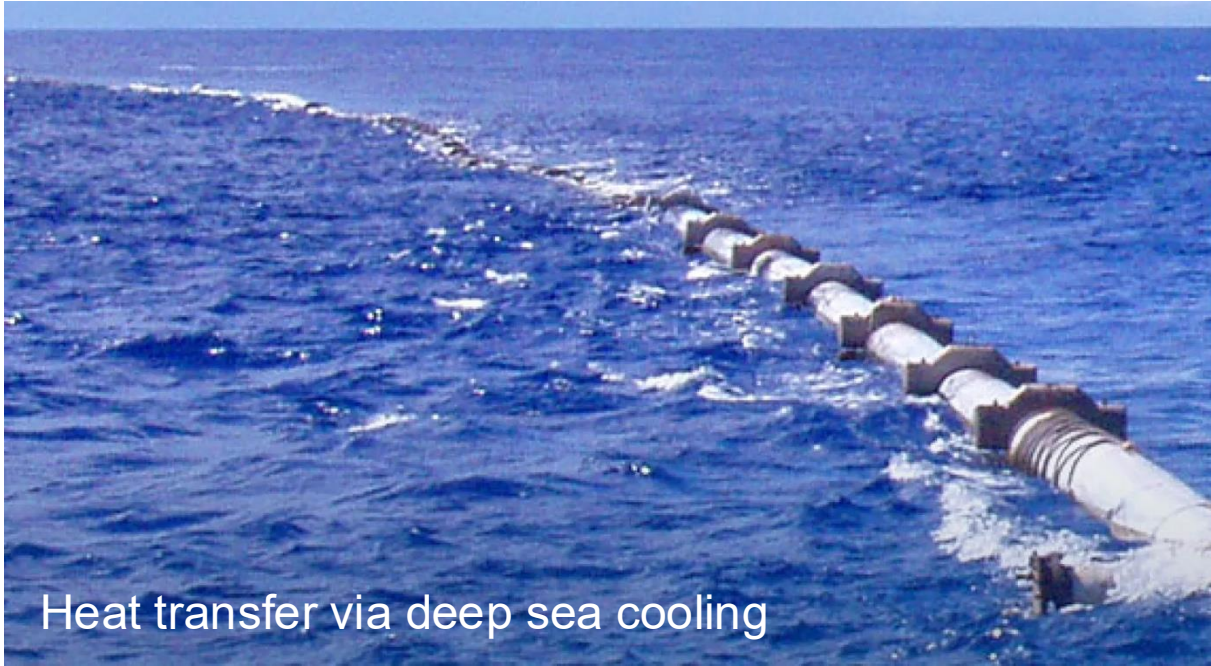
Geography of **Existing** Data Centers



Shane Greenstein & Tommy Pan Fang
Harvard Business Review (2020).

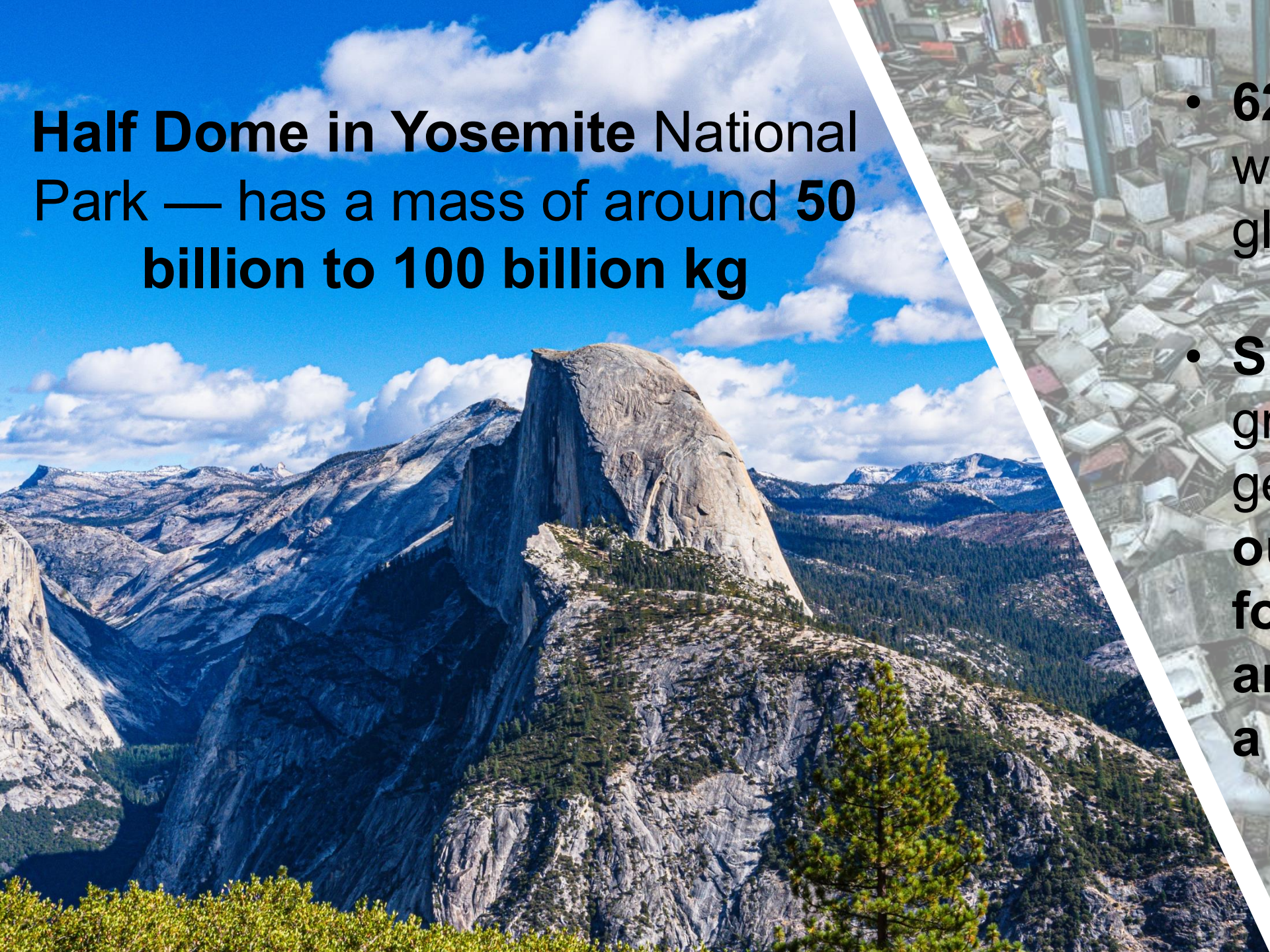


PROJECT MOANA: Sea Water Air Conditioning (SWAC) Data Center



A black and white photograph of a large crowd gathered on a city street, likely during a protest or public demonstration. In the foreground, a DJ setup is visible on a table, with a person operating it. The crowd is dense, filling the street and surrounding areas. Police tape with the words "POLICE LINE" and "DO NOT CROSS" is visible, separating the crowd from the foreground. The background shows city buildings and trees.

**Technology Shocks:
Challenging the status
quo and repurposing
what already exists.**



Half Dome in Yosemite National Park — has a mass of around 50 billion to 100 billion kg

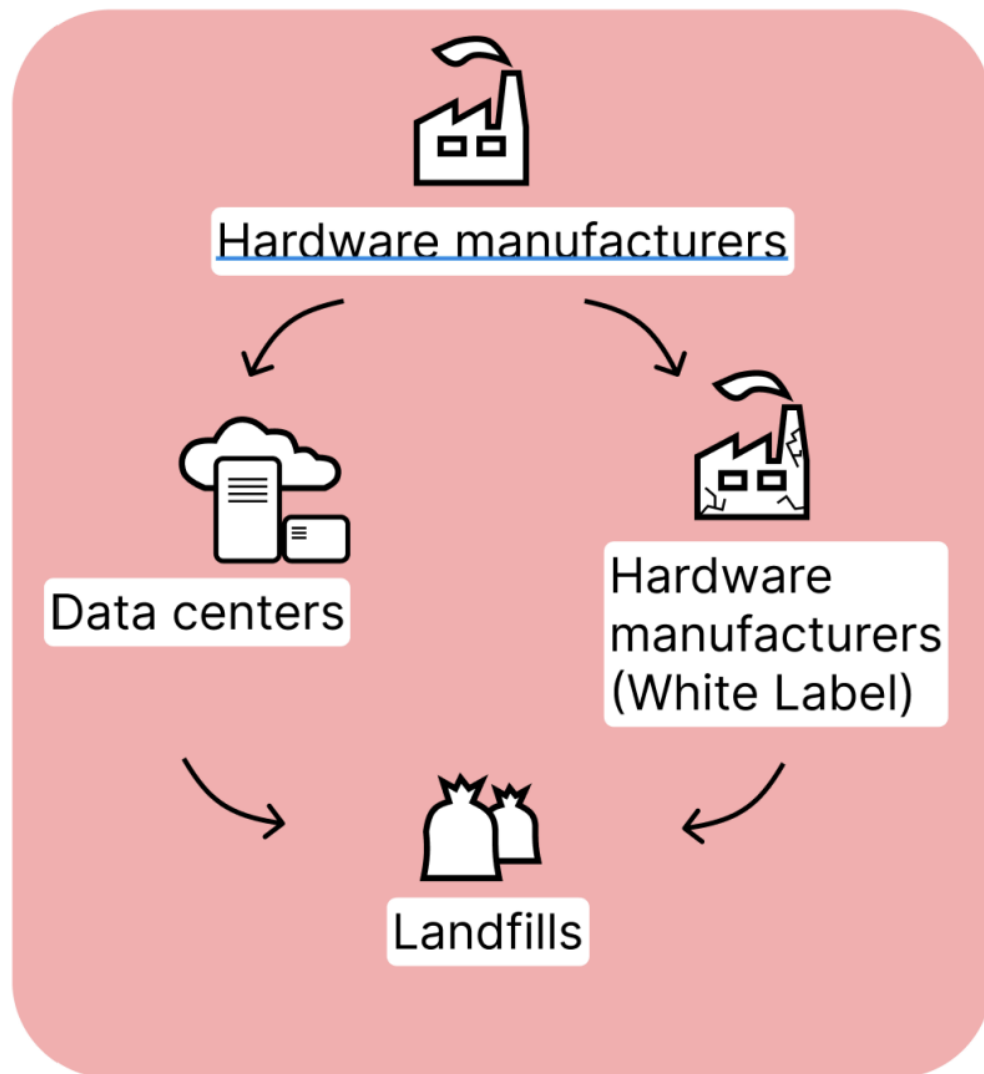
- 
- **62 billion kg of e-waste generated globally in 2022**
 - **Since 2010, the growth of e-waste generation is outpacing the formal collection and recycling by a factor of 5**

Graveyard of "Zombie GPUs"

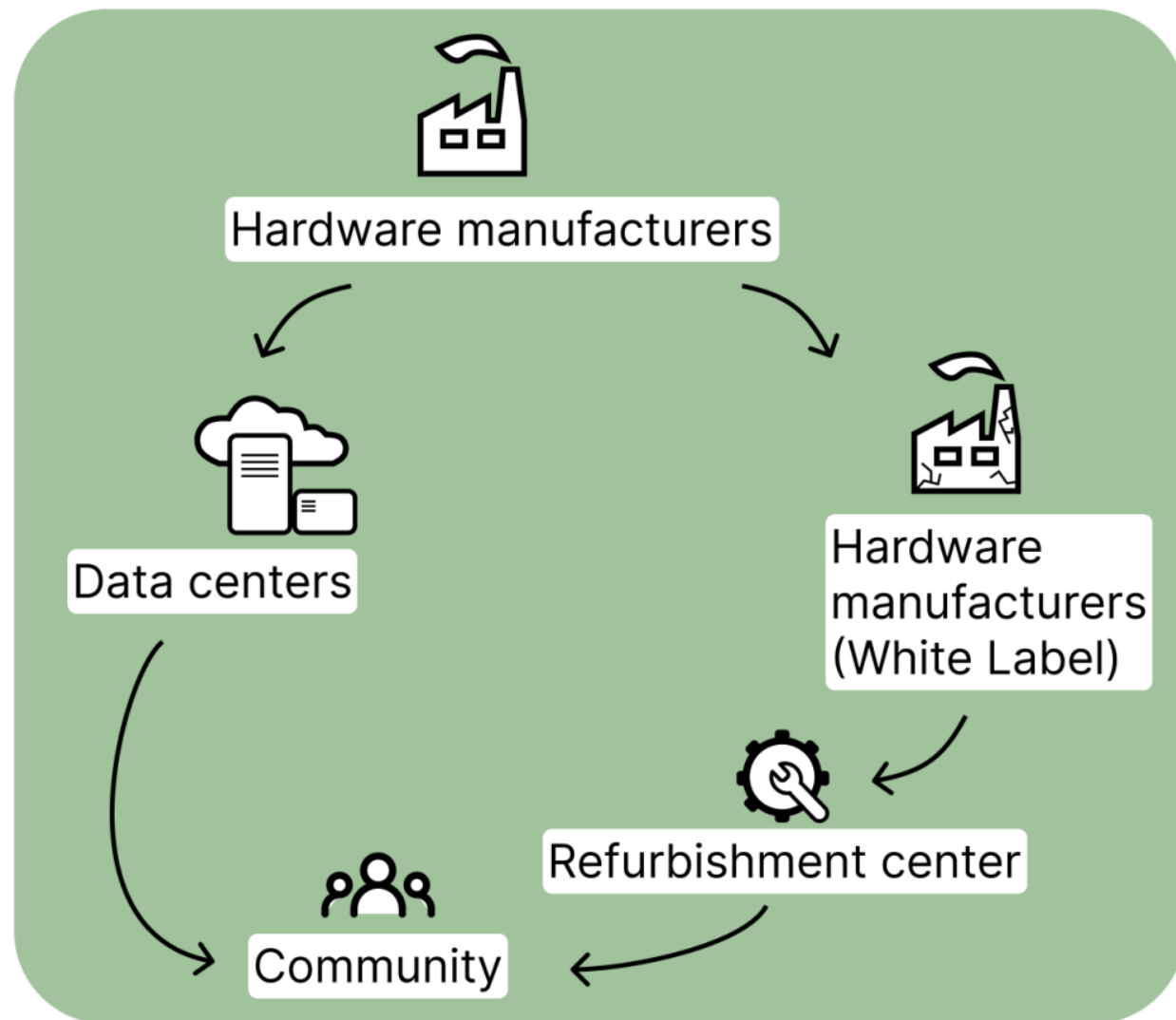


Category	Annual Shipments	Relevant Timeframe	Total Units
Consumer Discrete GPUs	50million units	5 years (2019–2023)	250 million units
Data Center GPUs	1 million units	5 years (2019–2023)	5 million units
Total Estimate			255 million units

Current Framework



Proposed Zombie GPU Framework





Small facilities serving secondary locations
for service providers



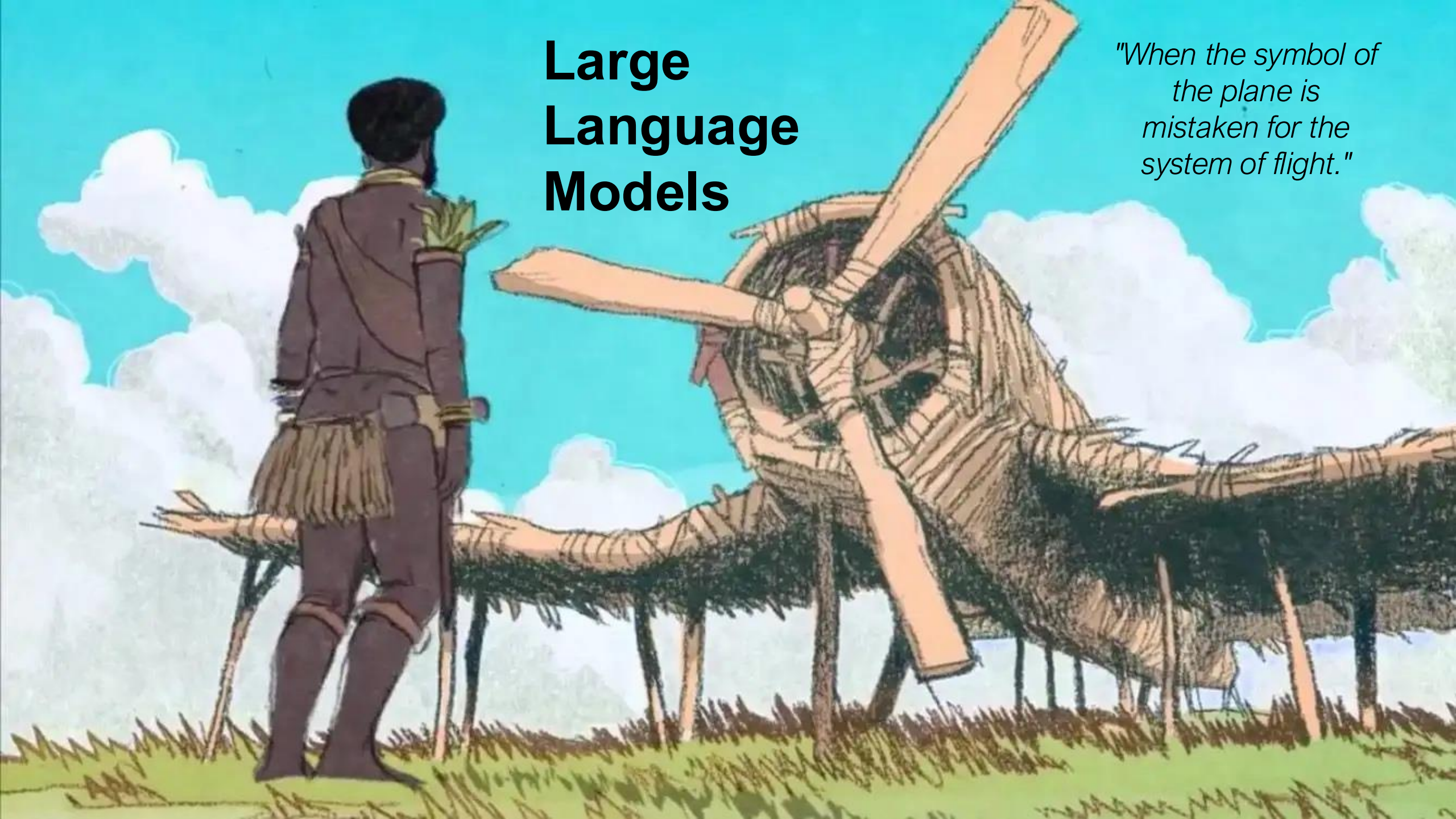
Modularized sites near an organization's network edge

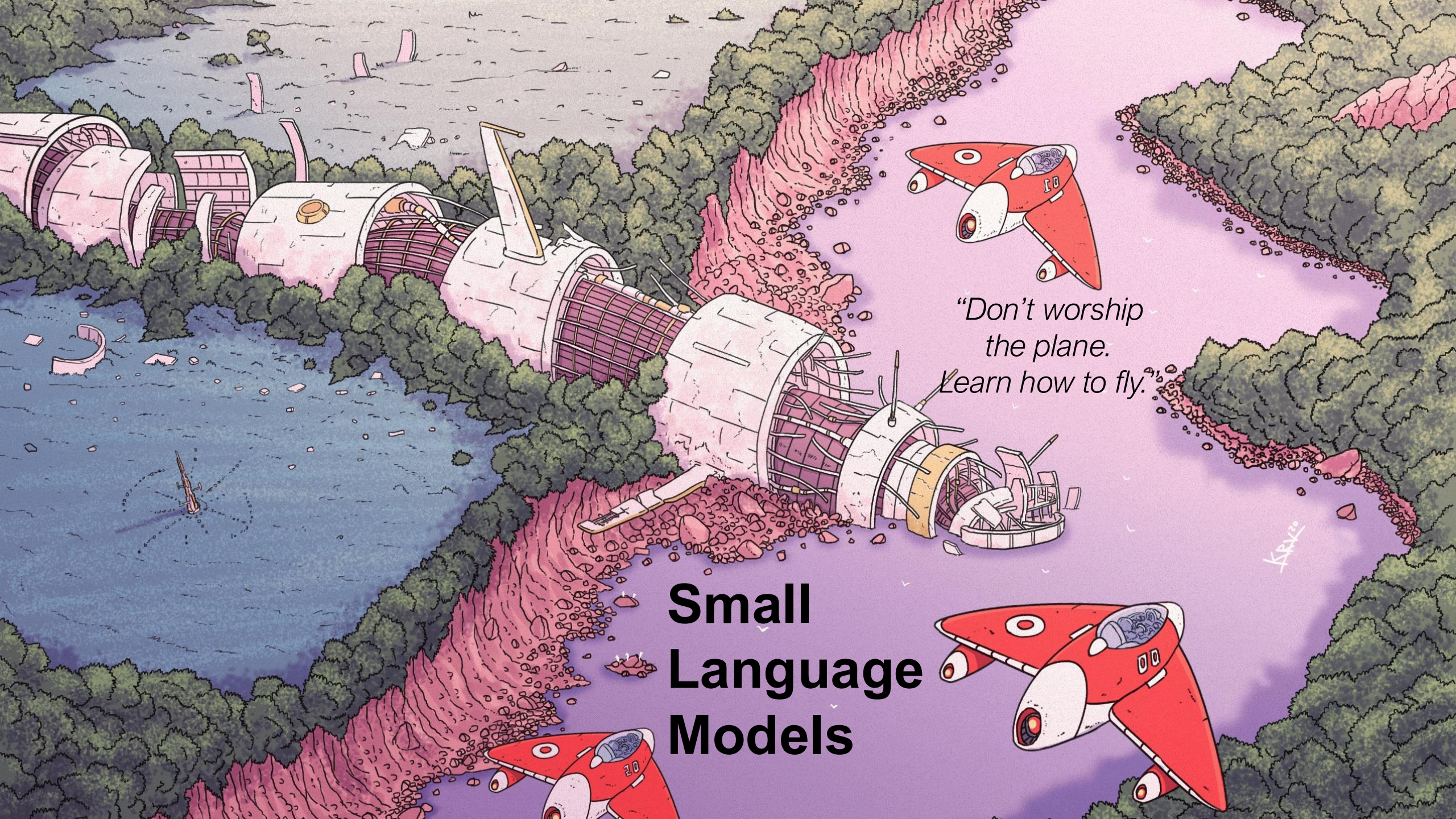


Community Sovereignty:
Empowering all communities
— especially those
historically left out — to
shape and benefit from AI.

Large Language Models

*"When the symbol of
the plane is
mistaken for the
system of flight."*





*“Don’t worship
the plane.
Learn how to fly.”*

Small Language Models

We don't have to accept the narrative that AI must be extractive!

We can choose a trajectory guided by Indigenous values:

- 1. Circularity:** Designing systems where nothing is wasted.
- 2. Technology Shocks:** Challenging the status quo and repurposing what already exists.
- 3. Community Sovereignty:** Empowering all communities — especially those historically left out — to shape and benefit from AI.



1872



2020



Mahalo nui ☺ – Questions?

