WHO OWNS THE INTERNET?

Data Centres: Power, Water & People

Part 2

Based on Business Insider investigation · Class project: Data Centres in Europe

THE CLOUD IS NOT A CLOUD.

It is a building. In a field. Near your house.

Every photo you upload, every AI query you run, every video you stream — it lives on physical servers inside a warehouse.

Today's activity

Go to
http://tiny.cc/jjl0101

After watching, you'll answer:

How would you operationalise water stress as a feature in your model? Is it a predictor of where data centres are, a flag for where they shouldn't be — or both?

17:40 to 23:20


Google | Maxar | Airbus | Landsat | Copernicus

WATER

43%

OF LARGE US DATA CENTRES IN HIGH OR EXTREME WATER-STRESS ZONES

More than half of Microsoft's and nearly half of Amazon's data centres are in high water-scarcity areas.

PHOENIX, ARIZONA — A DESERT GETTING HOTTER EVERY YEAR.

Microsoft planned:

1.83B

GALLONS / YEAR — ENOUGH FOR A CITY THE SIZE OF SANTA CRUZ, CA

The Colorado River has shrunk 20% since 2000. Companies offset via "water credits" — paying others to save water on their behalf.

"THERE'S NO REAL WIN HERE."

USE WATER COOLING
→ less electricity
→ stressed aquifers

USE AIR COOLING
→ less water
→ much more electricity

Engineering is a trade-off, not a solution.

YOUR PROJECT — PART 2: WATER

Your water variables at NUTS3 level:

1. *Water Exploitation Index (WEI / WEI+)*
2. *Drought: SPEI, SPI, soil moisture (EDO)*
3. *Heatwaves & extreme temperatures (Copernicus CDS)*

Is water stress a predictor of where data centres are — or a warning sign of where they shouldn't be?

CHUNK 3

DISCUSS:

How would you operationalise water stress as a feature in your model? Is it a predictor of where data centres are, a flag for where they shouldn't be — or both?

After watching, you'll answer:

Some states are reversing green commitments to power data centres. Who bears responsibility — engineers, companies, regulators, or consumers? Can your energy variables detect this signal?


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POWER

600 TWh

PROJECTED US DATA CENTRE ELECTRICITY USE BY 2028

More than Poland used in all of 2023. Share of US electricity: 4% in 2023 → up to 12% by 2028 (DoE estimate).

STATES ARE REOPENING COAL PLANTS.

In Nebraska, utilities had committed to net-zero electricity by 2050. Then a single Meta campus in Springfield changed the maths — equivalent to powering 400,000 homes.

TWO COAL PLANTS KEPT OPEN. TWO NEW GAS PLANTS APPROVED.

Green pledges rely on carbon credits — paying others to deliver renewables — not direct decarbonisation.

YOUR PROJECT — PART 2: ENERGY

Your energy variables:

1. *Electricity cost & consumption (NUTS3)*
2. *Actual generation & grid capacity (ENTSO-E)*
3. *Solar potential (PVGIS)*
4. *Wind potential (Global Wind Atlas)*

Can your model distinguish cheap dirty power from genuine renewable abundance?

CHUNK 4

DISCUSS:

Some states are reversing green commitments to power data centres. Who bears responsibility — engineers, companies, regulators, or consumers? Can your energy variables detect this signal?

After watching, you'll answer:

Your model will identify which NUTS3 regions are most likely to attract data centres. What responsibility does that model carry? Should engineers advocate for different siting criteria — and what would that look like in practice?


Google | Maxar | Airbus | Landsat | Copernicus

PUBLIC MONEY. PRIVATE BENEFIT.

$1B

IN TAX SAVINGS FOR 56 VIRGINIA DATA CENTRE PROJECTS — IN ONE FISCAL YEAR

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37 states offer incentive programmes. Meta's Ohio campus hid behind "Sika LLC" to secure 100% property-tax abatement for 15 years — worth at least $60 million.

THE JOBS PROMISE.

How many permanent jobs does a large data centre create?

< 150

PERMANENT WORKERS — SOME SITES HAVE AS FEW AS 25

MASSIVE TAX CONCESSIONS. MINIMAL LOCAL EMPLOYMENT.

YOUR PROJECT — PART 3

TRAIN A MODEL TO PREDICT DATA CENTRE LOCATION.

LOGISTIC REGRESSION

Explainable — which variables matter most?

BEST-ACCURACY MODEL

Can you beat the baseline?

INTERPRETATION

What does the model tell us about Europe?

WHOSE BACKYARD?

The NSPE Code of Ethics requires engineers to hold public safety and welfare paramount.

Does that include the people living next to your data centre?

CHUNK 5

DISCUSS:

Your model will identify which NUTS3 regions are most likely to attract data centres. What responsibility does that model carry? Should engineers advocate for different siting criteria — and what would that look like in practice?

YOUR MAP IS NOT JUST AN EXERCISE.

The first comprehensive map of US data centres was built by journalists filing 50 state records requests.

YOU ARE BUILDING THE EUROPEAN EQUIVALENT.

Where data centres cluster, how much power and water they consume, and who bears the cost — these are engineering and policy questions that need your data to be answered.