Google Cloud | WESTMINSTER ENERGY FORUM

# Technology & Data-driven Innovation for Optimal Energy Management & Accelerated Cross-Sector Decarbonisation
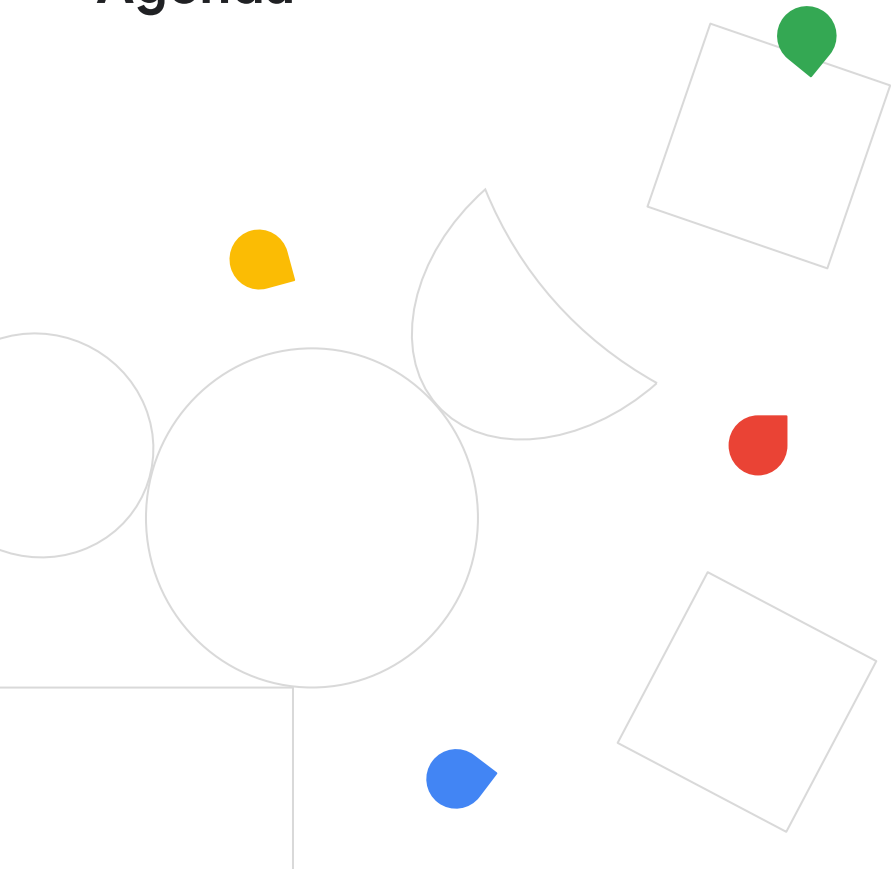
## Google

October, 2022

# Agenda

1. Why data and tech are crucial to net zero goals

2. Where is tech seeing success in decarbonization?
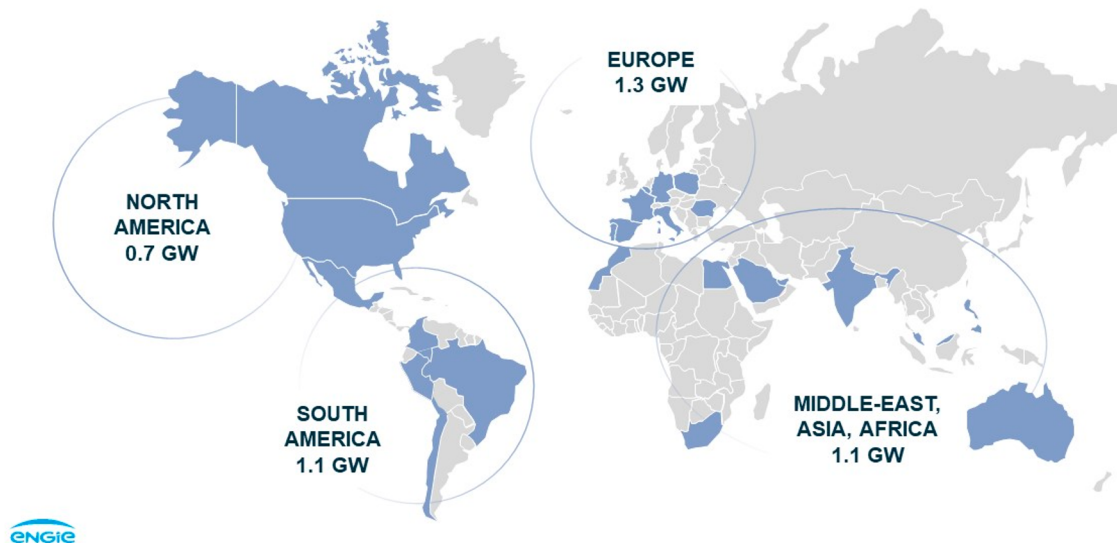
3. Where next for the space?

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# Why data and tech are crucial to net zero goals

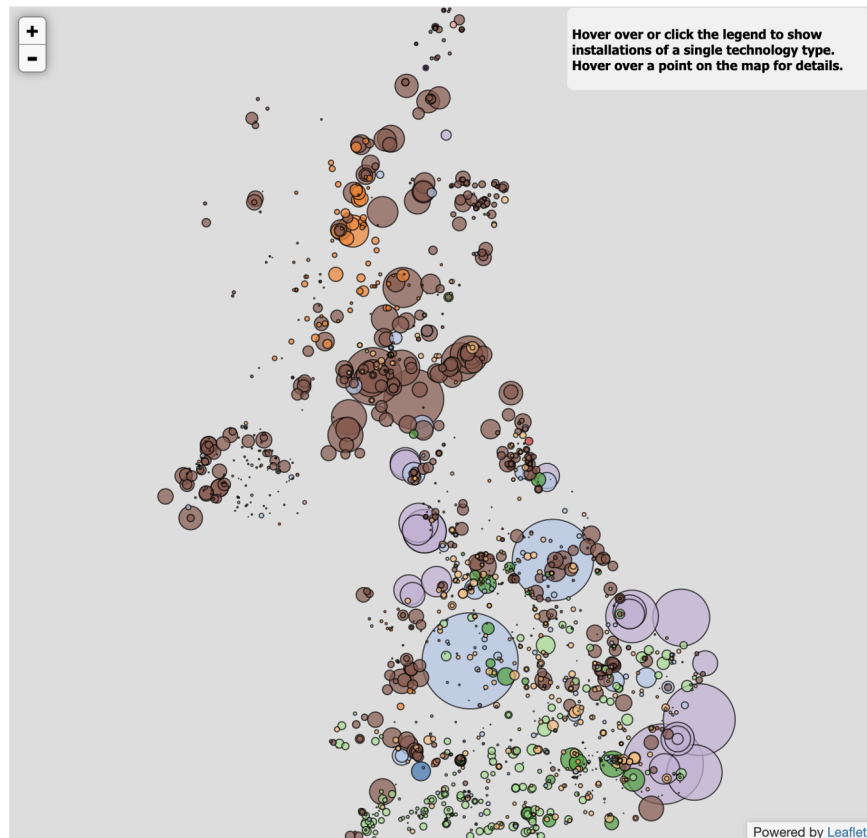**01**

# Small, intermittent, distributed - and numerous


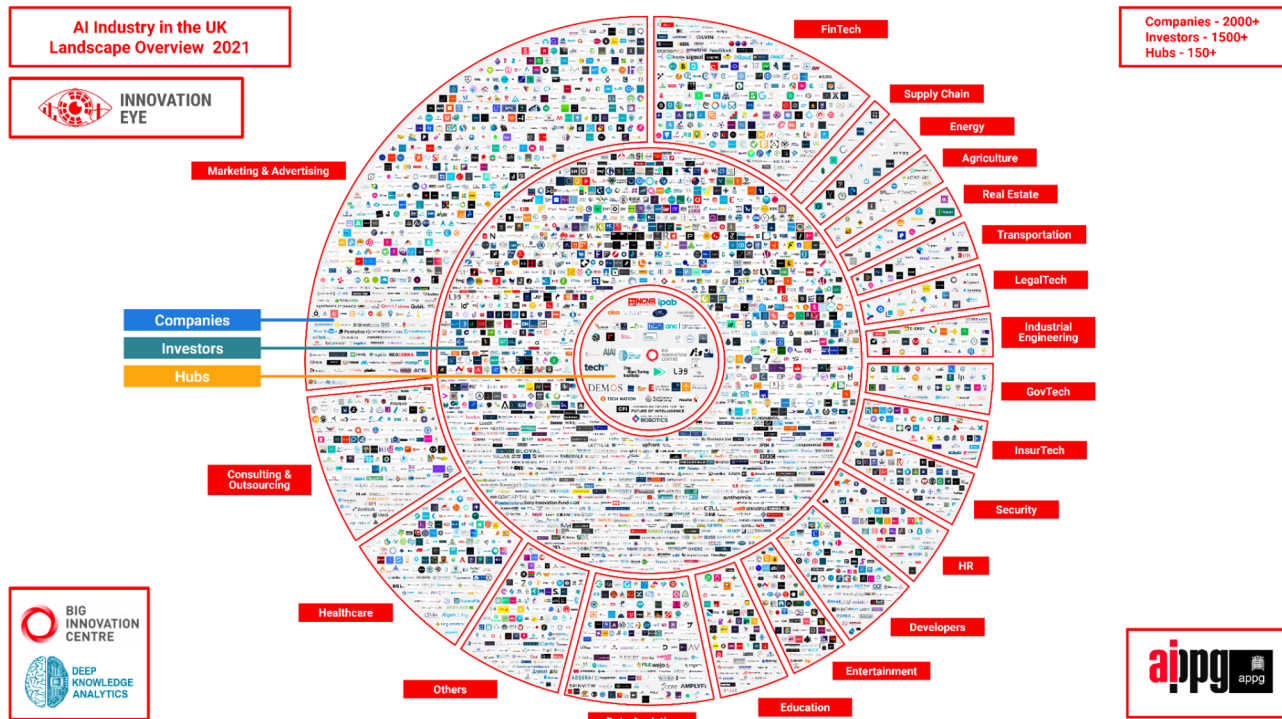
**ENGIE solar installed capacities**
As of Dec. 31, 2021

EUROPE
1.3 GW

NORTH
AMERICA
0.7 GW

SOUTH
AMERICA
1.1 GW

MIDDLE-EAST,
ASIA, AFRICA
1.1 GW

ENGIE

# Small, intermittent, distributed - and VERY numerous



Hover over or click the legend to show installations of a single technology type. Hover over a point on the map for details.

Powered by Leaflet

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# Cambrian Explosion

**AI Industry in the UK Landscape Overview 2021**

INNOVATION EYE

Companies - 2000+
Investors - 1500+
Hubs - 150+

FinTech
Supply Chain
Energy
Agriculture
Real Estate
Transportation
LegalTech
Industrial Engineering
GovTech
InsurTech
Security
HR
Developers
Entertainment
Education
Data Analytics
Others
Healthcare
Consulting & Outsourcing
Marketing & Advertising

Companies
Investors
Hubs

BIG INNOVATION CENTRE

DEEP KNOWLEDGE ANALYTICS

appg

*Source: BusinessWire*

Google Cloud

# "How 1% Performance Improvements Led to Olympic Gold"

*Source: HBR*

Google Cloud

# Where is tech seeing success in decarbonization?

**02**

Menu ☰

E&T ENGINEERING AND TECHNOLOGY

**Google and UK Power Networks develop digital map of electricity cables**
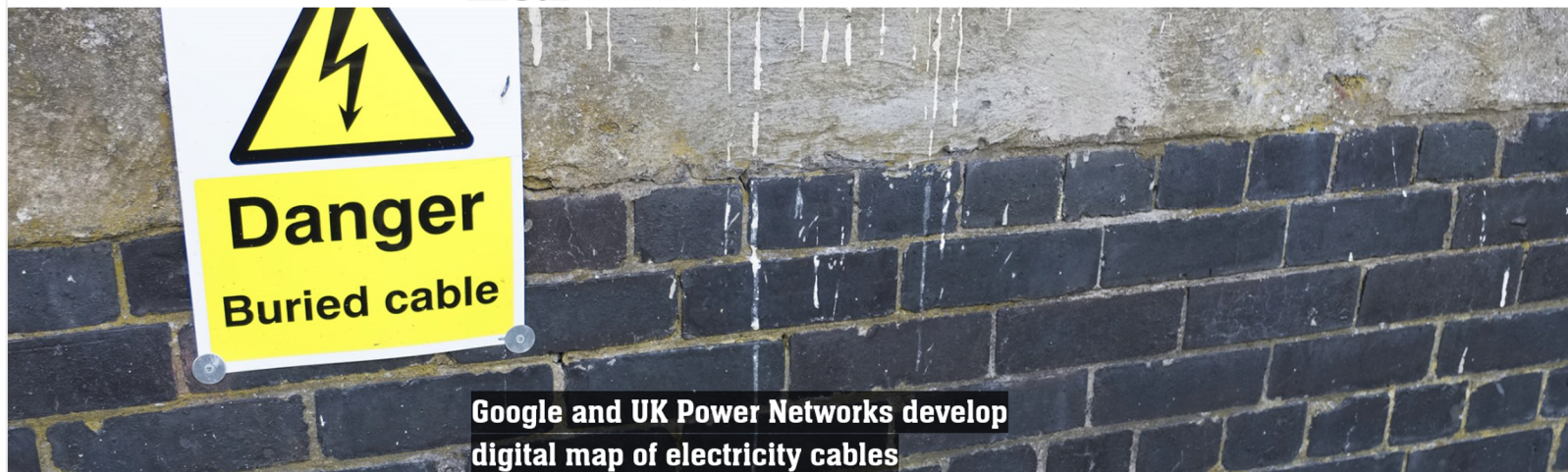
By E&T editorial staff

Published Tuesday, May 24, 2022

Google Cloud engineers have partnered with UK Power Networks to create digital versions of maps covering more than 180,000km of electricity cables

Google Cloud and UK Power Networks want to transform the global utility industry with the creation of digital maps of electricity cables.

Green
Sparklines

# How Wind-Prediction Tech Will Change Clean Energy

French utility Engie is using artificial intelligence software from Google to optimize its wind power — and potentially change how it does business.



Turbines at the Energias Renovables Mediterraneas, S.A. (Renomar) Folch wind farm in Villafranca del Cid, Spain, in October 2021. *Photographer: Angel Garcia/Bloomberg*

By Nathaniel Bullard
June 9, 2022 at 3:30 PM GMT+5:30

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▶ 4:46

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Last week, French utility Engie SA announced that it will use Google's AI-powered wind-prediction capabilities to optimize operations of its German wind assets. The pilot program is an extension of Google's in-house work that it says allows it to capture higher revenues by scheduling hourly wind-power commitments to the grid up to one day in advance. A Google executive calls this offering "a trading recommendations tool," which it is – but it is also a source of intriguing and important strategic questions for Google, Engie, and Big Tech in energy in general.

Google Cloud

# We can help companies in their quest for fleet electrification with Electric Vehicle Suitability Assessment

We can help simplify your fleet's transition to electric vehicles with an EV Suitability Assessment. Get the answers you need to make the switch with our assessment that also covers:

- Will an EV be able to perform the required tasks and meet range requirements?

- Which vehicles are the best candidates for replacement by an EV?

- What will the impact be on my fleet's operational budget to switch to EVs?



Google Cloud
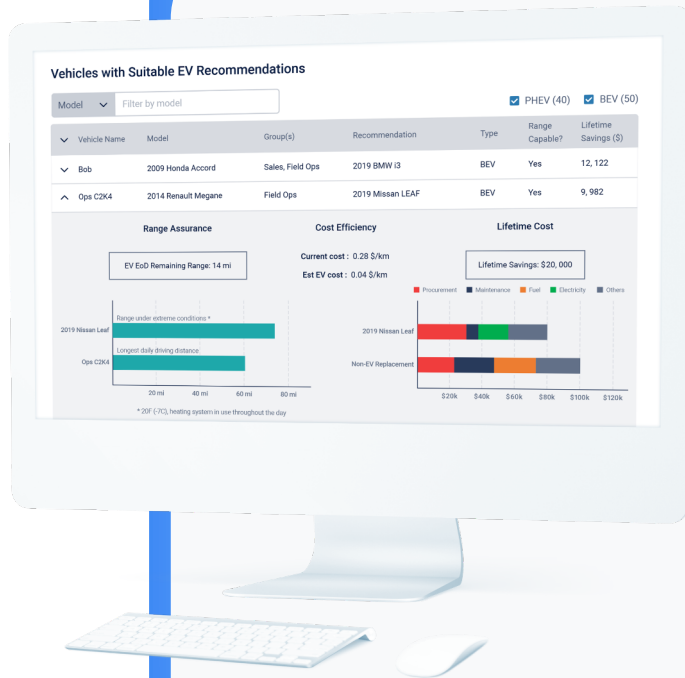
# Your switch to Electrification made easy:
## Electric Vehicle Fleet Management

Effective performance monitoring of both EVs and traditional vehicles in one platform for the first time

- Compare **fuel consumed vs energy consumed** in the fleet

- A **complete charging history** of all your electric vehicles in the fleet similar to fuel fill ups

- Real-time notifications for **charging status and battery charge %**
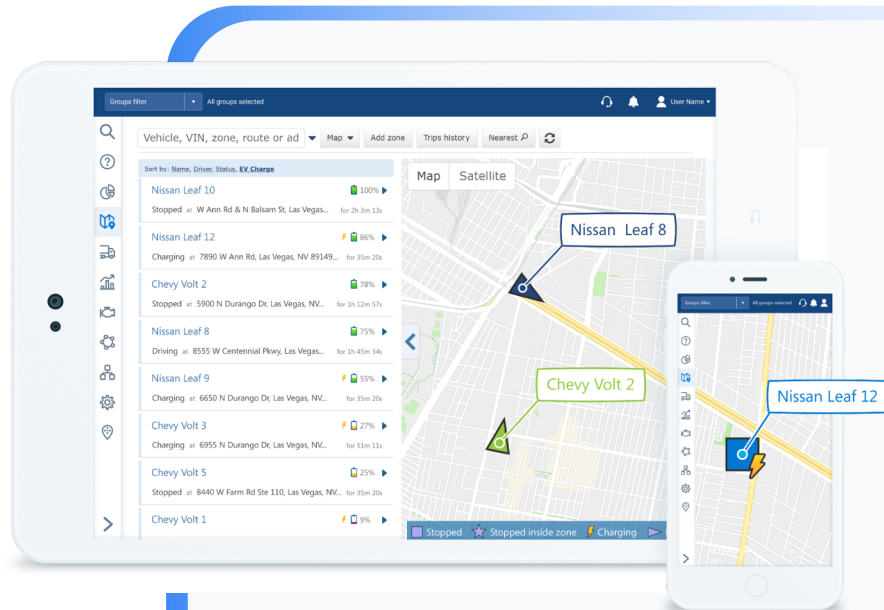


\* EV charging report
and real-time notifications

Google Cloud

# How British Gas Optimised Its Parts Supply with Google App Engine

Written by **Ignotas (Iggy) Turskis**
Solution Lead

**Country**

UK

**Date Implemented**

2018

**GCP Products:**

Google Maps
Google App Engine

## THE CHALLENGE

British Gas store parts at Royal Mail depots around the UK. Details of what is kept at each depot was managed in a series of spreadsheets at individual locations, making it impossible to see which parts were available where – particularly when out on the road.

## THE SOLUTION

We built a highly visual web app which integrated Google Maps with Google App Engine. The app shows British Gas engineers' locations and identifies the closest Royal Mail depots stocking relevant parts. The app can be accessed by both parties.

## THE RESULTS

- We delivered the customer's solution in just six weeks
- Developed an app tracking 6,000 engineers' locations for full visibility
- Rolled out a highly visual, user-friendly map to optimise parts supply

Google Cloud

# Fleetminder: mapping and tracking the locations of vehicles

Tell us your challenge. We're here to help.

**Contact us**

**fleetminder**

## About Fleetminder

fleetminder is an Australian owned and operated company supplying vehicle and asset tracking solutions in 12 countries. fleetminder's parent company Neltronics has been in the vehicle electronics industry for over 25 years. Its products and services include GPS tracking solutions for businesses and individuals, including vehicles and assets for transport, services, construction, mining and marine applications.

Industries: Other

Location: Australia

Fleetminder wanted a simple and intuitive way to visualise the locations of all vehicles in its fleets that use Fleetminder GPS devices. Dispatchers needed to display the current locations of all vehicles, and see the actual surroundings of each vehicle, including the streets on its route. Fleet managers wanted to improve efficiency by updating driving routes in real-time, based on data coming in from the vehicles. They were also looking to reduce costs by using GPS to locate vehicles that would soon require maintenance, and scheduling them for service when they were closest to maintenance shops.

### Google Maps Platform Results

- Drivers spend less time on the road, with employee overtime reduced by 25%
- Customers can track details about driving habits, which led to a 50% decrease in inefficient driving
- Companies have been able to reduce the number of deliveries to incorrect addresses by 20%

**50% decrease in inefficient driving**

Google Maps Platform

Google Cloud

# Aramco team wins first place in Google Cloud Emissions Hackathon

Houston, September 29, 2022
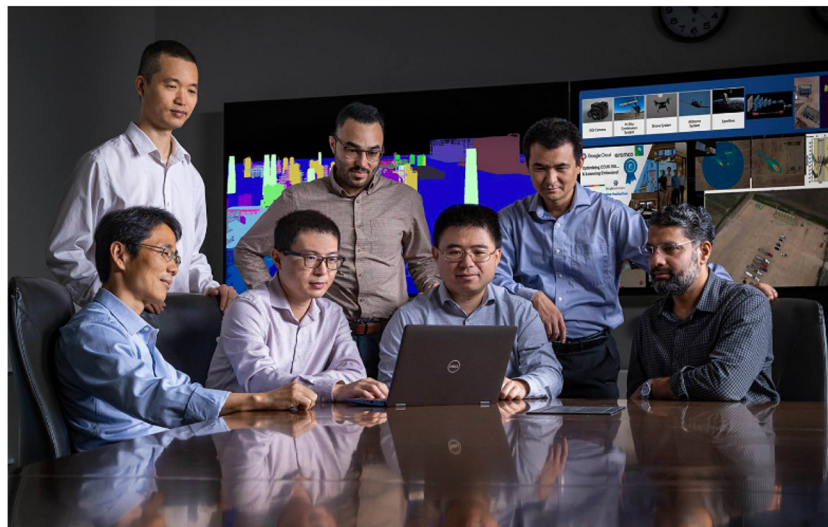


Aramco used geospatial analytics and integrated machine learning from Google to develop deep learning models applied over satellite and air-borne imagery to detect and map methane plumes to better identify fugitive emissions and optimize carbon capture, utilization, and storage (CCUS) projects. (left to right) Weichang Li, Team Lead, Artificial Intelligence Group, Aramco Research Center-Houston, with winning team members Lei Fu, Yong Ma, Ali Almadan, Tao Lin, Chicheng Xu, and Farhan Naseer.

Google Cloud

# Where next for the space?

03

# Project Sunroof

Enter a U.S. or Puerto Rico address          **CHECK MY ROOF**

Search for your home. Discover your solar savings potential.

See what's possible with solar in your U.S. or Puerto Rico community.

**EXPLORE YOUR AREA**

## How Project Sunroof Works

Your own personalized solar savings estimator, powered by Google Earth imagery.
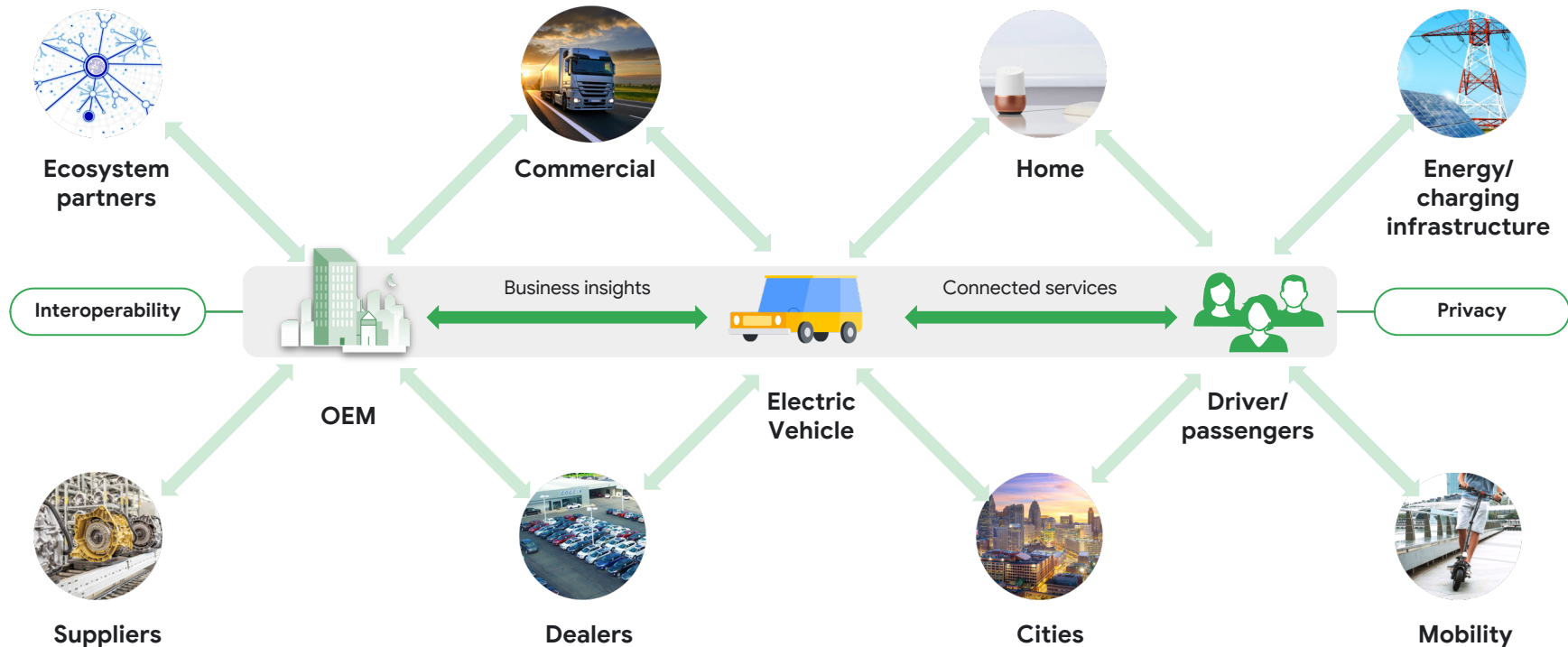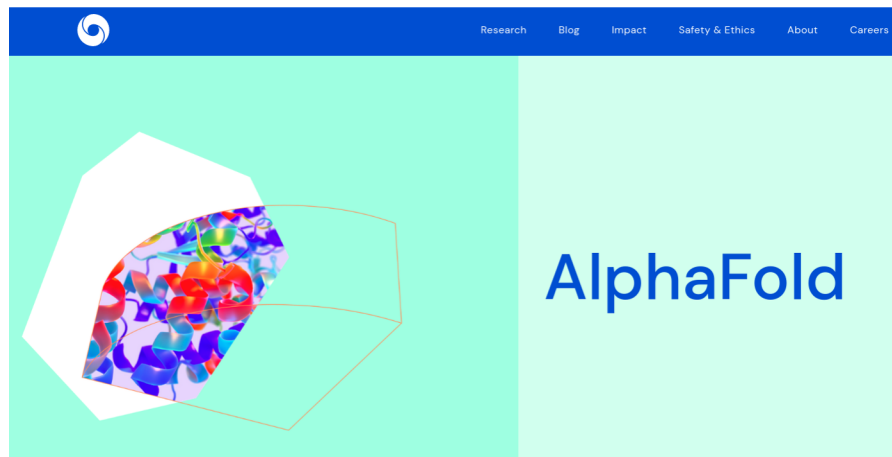
ACTIVE

## Tapestry

Weaving together the technologies, information, and partners needed for clean, reliable, and affordable electricity

# The electric vehicle is the key device in a broad digital ecosystem connecting users, enterprises and cities

Ecosystem partners

Commercial

Home

Energy/ charging infrastructure

Interoperability

Business insights

Connected services

Privacy

OEM

Electric Vehicle

Driver/ passengers

Suppliers

Dealers

Cities

Mobility

At the Centre for Enzyme Innovation (CEI), researchers are discovering and engineering enzymes for breaking down single-use plastics.

Google Cloud

# Thank You