



tempo data services

Enabling smart management of home energy



Introduction

The world of domestic energy consumption is no longer relatively simple, with micro-generation, battery storage and time-of-use tariffs.

Consumer expectations have continued to evolve with pervasive internet connectivity, smart devices and low-cost sensors, whilst grid operators have also faced challenges, caused through renewable energy generation, electric vehicles increasing electricity demand, and electric heating, all of which require more effective demand-side response capability.

These challenges mean it's no longer about simply visualising energy consumption – today's challenge is about the smart management of energy in the home.

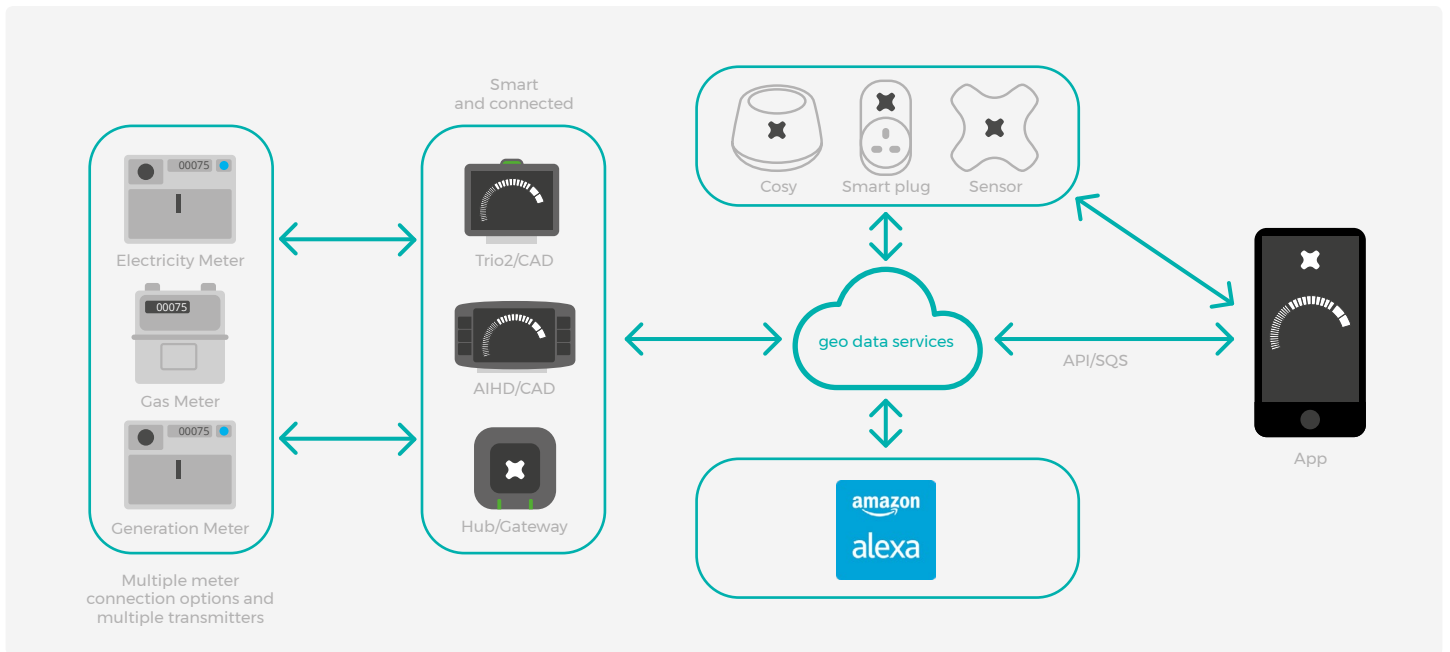
The combination of geo's connected energy displays and Tempo Data Services, provide utilities with the tools required to offer compelling solutions to consumers, which aid customer acquisition and retention, increase customer engagement, generate new revenue streams and ultimately encourage energy efficiency.

About

Our range of data solutions is designed to work with existing meters that are in use – be it electricity or gas, smart or pre-smart. We can reliably transfer valuable data out of the home and into the cloud, so that it can be used in new and innovative ways.

The Tempo Data Services platform is ideally suited to the stringent requirements of the energy industry:

- Security – the platform was built from the ground up with security in mind. It has been penetration tested by a qualified third-party cybersecurity company. The platform is covered by geo's ISO 27001 certification, and is compliant with all applicable UK and EU data protection regulations.
- Scalability – the Tempo Data Services platform is hosted inside the Amazon Web Services public cloud and scales to the required demand, which enables geo to handle large customer deployments seamlessly.
- Cost efficiency – geo understands the industry's cost constraints and has designed its data services to be highly cost efficient, both from a "cost to serve" point of view and in terms of end customer support.
- Flexibility – the services geo provides are flexible enough to meet the needs of a wide range of use cases, both in terms of data types and delivery methods (APIs, data queues, etc.).



Capabilities

Over the last 10 years, geo has developed unrivalled experience in domestic energy consumption and micro-generation monitoring, appliance control and smart heating management.

Data collected from all of geo's in-home systems can be ingested into the Tempo Data Services platform. Here it is stored, processed and made available in different forms and levels of granularity to suit a vast range of solutions and applications.

Examples of data types:

- Real-time electricity and gas consumption in kW
- Batched electricity demand samples at 10-second intervals for appliance insights and disaggregation
- Electricity consumption, generation, import and export (in kWh) and gas consumption (in kWh and/or m³) in epoch sizes ranging from 15 minutes to 24 hours
- Household energy profiles (normal usage profiles, key household characteristics, etc.)
- Indoor and outdoor temperature (in °C) and relative humidity (in %)

In addition to data accessibility, the Tempo Data Services platform provides access to in-home systems for control purposes, enabling consumer applications such as smart Heating Control or appliance scheduling via Smart Plugs, as well as residential demand management solutions.

Delivery methods

Customers wishing to integrate the geo offering with their own platforms, apps and 3rd-party services can do so using:

1. Data Queues

- Secure access to compressed, aggregated device data (live + historic, including batches of instantaneous electricity consumption for use in disaggregation analysis)
- Support for AWS SQS (other options available)
- Java library for queue client provided

2. REST APIs

- Programmatic secure access to per-device data, value-added functionality (profiles and budgets) and account management features (device/account association, password management, etc.)
- Documented using Swagger

Solutions supported

- Consumer apps including energy monitoring, visualisation and advice, smart heating control
- Peer comparisons and game-based engagement apps
- Appliance insights and disaggregation
- Residential demand management