Company overview

Where we’ve come from and where we’re heading
A bit about us

- **Founded in 2006**
- **Cambridge, UK**
  - HQ in Cambridge
  - ODC in Romania
- **100+ Employees**
- **Award Winning**
  - Queens Award for Innovation
  - Tech Track 100 three years running
  - IDA Silver Award
  - Shell Springboard
  - European Smart Energy Awards
- **Unique Positioning**
  - A data company at the nexus of smart metering, solar and smart home energy management

- Multi-disciplinary team, c. 60% in research and development
geo profile – smart energy management and data services

1. Number 1
   55% market share in UK Home Energy Display sector

2. 5m Delivered Systems
   Installed on Solar, Heating, electricity, gas and water smart metering

3. £2,300,000+
   Spent on consumer research and trials involving geo in 13 countries

4. 3 Years Running
   100 growing technology companies in the UK

5. Multiple Awards
   23 Competition and prize awards for innovation and entrepreneurship

6. Scale in delivery
   100 developers and staff in UK & Romania
   500 production in China

7. Blue chip customers
   Customer base including: Big6 and challenger providers

8. Advanced IoT platform
   Scalable, flexible, secure cloud platform

9. 25%
   Up to 25% reduction in energy bills from geo products

10. £15,800,000
    Order book value¹ with signed commitments
Our energy landscape

What’s happening to our energy industry?
Diverging requirements: Rising industry complexity

Carbon emissions falling:
468 MtCO$_2$e in 2018
167 MtCO$_2$e in 2050

Peak electrical demand rising:
59.1 GW in 2018
82.7 GW in 2050

more demand flexibility is needed:
5 GW in 2018
up to 35 GW in 2050

http://fes.nationalgrid.com/fes-document/
A look ahead

Diverging requirements: Consumer simplicity and price sensitivity

Growing green purchasing: 38% would consider a green tariff

Low trust amongst consumers: 7% trust energy companies to find them the best deal

Need for hassle-free simplicity: 53% avoid switching because of perceived hassle, risks or lack of confidence

https://yougov.co.uk/topics/science/articles-reports/2014/04/11/british-attitudes-household-energy-market
Energy consumption in average UK homes

- Space heating: 34%
- Water heating: 9%
- Cooking: 7%
- Lighting: 6%
- Appliances: 46%
- Transport: 2%
- Solar generation: 9%
- Energy brain: 9%
- Smart battery storage: 9%
- Smart/V2G EV charging: 9%
- Smart electric heating & HW: 9%

A look ahead

The solution:

@17:45 Critical grid event. Signal transmitted.

“my EV will automatically postpone charging until the critical event has passed”

“I need to heat my home, my heaters automatically take it in turns to heat the required rooms.”

Industry complexity

AUTOMATED FLEXIBILITY

Consumer simplicity
geo Technology
Our consumer product strategy in response to the energy system
Segmenting the Internet of Energy (IoE)

- **IoT – Lifestyle**
  - Lighting
  - Cameras
  - Sensors
  - Security
  - Appliance controls

- **IoE - energy efficiency**
  - **Exploring** energy data from smart meters, appliances etc.
  - **Controlling** appliances, heating systems, EV charging etc.
  - **Relaxing**: integrated automated demand management for energy storage, self generation, electric and hydronic heating, etc.
  - **Extending**: to cover EV charging, V2G, LED lighting, essential services UPS etc.
Our product strategy

Providing added value via visibility, control and automation of domestic energy
The Hybrid Home™
A geo solution to automated flexibility at home
Our response – the Hybrid Home™

...the integration of smart energy systems, managed by geo’s Core energy brain

vehicle charging | smart heating control | self-generation and storage
Our response – the Hybrid Home™

Homes are future-proofed, cost less to build, and add value to end-customers.

Home buyers get cheaper bills, hassle-free sustainability and an automated lifestyle upgrade.

Enable system decarbonisation and reduce network reinforcement cost
Core energy brain

*Smarter, greener, affordable lifestyle – delivered simply*

- **Smarter**: automatically matching home energy needs with the greenest and cheapest energy available.
- **Greener**: maximising home generation from integrated solar panels to provide the most local green energy, collectively reducing the grid carbon emissions.
- **Affordable**: moving home grid demand, via flexible load shifting, to low-cost times of the day.
- **Simply**: all managed and enabled through a single app interface, and working seamlessly in the background to bring households uninterrupted benefits.

**Key proposition**: cheaper bills, hassle-free sustainability and an automated lifestyle upgrade
Unified in the Hybrid Home

Our active home ecosystem, with Core energy brain at the heart

It’s made up of 4 geo product families:

1. Energy monitoring
   - Household usage
   - Solar generation
   - tempo
   - trio
   - solo

2. Energy management
   - Cloud
   - Home hub
   - core

3. Control of flexible loads
   - Home battery system
   - Cosy heating control
   - EV charger
   - HYPERDRIVE
   - cosy
   - + Partners

4. made visible via UI
   - geo App
   - Voice Skills
   - + alexa
Running cost analysis
## Hybrid Home Analysis

### Energy costs

<table>
<thead>
<tr>
<th>Saving scenarios</th>
<th>Type 1: Standard</th>
<th>Type 2: Electric</th>
<th>Type 3: ASHP</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Economy 7</td>
<td>£910</td>
<td>£1,291</td>
<td>£885</td>
</tr>
<tr>
<td>B) Hybrid Home</td>
<td>N/A</td>
<td>£827 - £976</td>
<td>£552 - £722</td>
</tr>
<tr>
<td>C) +RHI (for 7 years)</td>
<td>N/A</td>
<td>N/A</td>
<td>£89</td>
</tr>
<tr>
<td>D) +3kWp solar PV</td>
<td>£650</td>
<td>£621</td>
<td>(-£266)</td>
</tr>
</tbody>
</table>

- Hybrid Homes save an estimated 18-38% from energy bills, depending on the operational efficiency of the technology (without solar).
- Up to £633 annual subsidy is available from RHI for 7 years, depending on system efficiency and thermal load of the property.
- 3kWp solar installation is estimated to save £260 without, and £355 with managed battery technology as found in Hybrid Homes, per year.
Conclusions

- We estimate Type2 (direct electric) homes will cost £29 less than a Type 1 (standard) homes to run per year
  [under current market conditions, a direct-electrically heated new-build Hybrid Home with 3kW of solar (battery + DSR + solar) (D2) will cost £30 less to run than an equivalent new-build gas property on Economy 7 with solar (D1)]

- We estimate, due to the benefits of RHI, households in a Type3 (ASHP) homes (D3) could earn money annually from their Hybrid Home.
  [They would be paid more from incentives, subsidies and market revenues than they would have to pay for the energy they import for their first 7 years.]
Core4Grid

Testing our energy brain – the heart of the Hybrid Home
Project aims

Demonstrate [market and household] acceptance of [and engagement in] the [domestic, flexible] future grid [via Hybrid Homes], today.

Demonstrate acceptance of the future grid, today.
Project hypotheses:

1. Flexible grid technology [in-home, grid, market place (inc. policy and finance) and cloud] is ready to deploy affordably, with a net economic benefit at scale

2. Households are positive about becoming active consumers [automatically participating in demand flexibility] via in their Hybrid Home™

3. Aggregated Hybrid Homes can provide reliable, sizeable flexibility in key stress areas
Activity

- 2 year, 7 partner project, started Nov 2018

- Industrial research:
  - Flex platform integration and test
  - AI feature development and test
  - UI upgrade and test
  - User acceptability and market testing
  - Marketing videos and campaigns

- Recruit and install 24 Hybrid Homes™, mid-2019, with:
  - Core energy brain
  - Domestic energy storage
  - Solar PV panels
  - Smart EV charge points
  - Cosy smart electric heating control
Householder questions

Enough from me, time for some audience participation...
Warm up #1: Do you have solar PV at home?

5 = YES
3 = Getting soon
1 = NO
Warm up #2: Do you have an electric vehicle at home?

5 = YES
4 = Getting one soon (on order)
3 = Thinking about getting one
2 = No, waiting for improvements
1 = NO – unlikely to ever
Warm up #3: Do you have electric heating at home?

5 = YES
3 = Getting soon
1 = NO
Question #1: Do you think you would benefit from a battery?

5 = YES

3 = Somewhat

1 = NO
Question #2: Would you like a Hybrid Home?

5 = YES
3 = Maybe
1 = NO
Question #3: How would you like to check your Hybrid Home?

5 = Web
4 = App
3 = Device
1 = Wouldn’t like to check
Question #4: How would you like to control your Hybrid Home?

5 = Web
4 = App
3 = Device

1 = Wouldn’t want to control
Question #5: How would you pay for a Hybrid Home?

5 = Buy outright
4 = Buy as part of your mortgage (when you buy a new home)
3 = Other finance
2 = Lease from tech provider
1 = Bundled as part of your energy tariff
Many thanks

https://www.geotogether.com/core4grid/

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