

An **attachable, swappable, 'top up'** battery for EVs

Proudly supported by:



Future car-owning expectation



No new petrol / diesel cars by **2030** (UK Gov. Policy)

Urban car-owning reality



Roadside parking

Inner city car parks

... even new EVs in affluent areas with no overnight charging

41%
of UK residents concerned about practicalities of EV charging at home (Vensons, 2019)

'Battery Swapping' could solve this BUT...



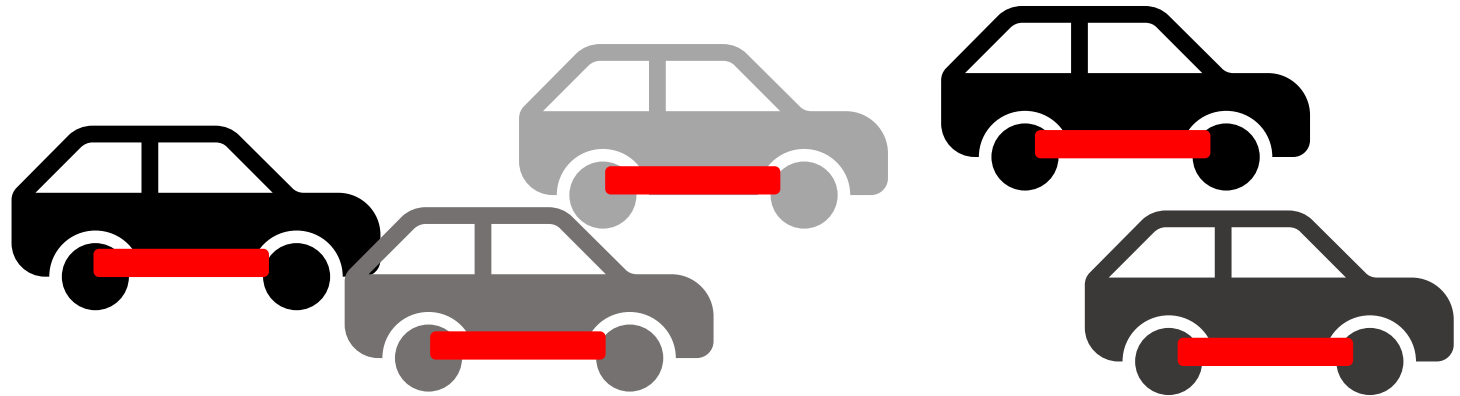
*"It is very seldom car manufacturers share the same opinion, but 95 per cent of us are in the same position ... **no one is interested** in having 'one size fits all' on the battery side"*

Prof. Kohler – Mercedes-Benz



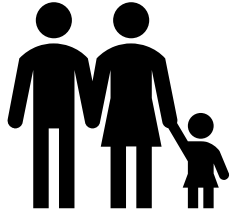
**Standard sized
swappable battery**

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**Homogenized car/battery
design, constraining innovation**

The challenges

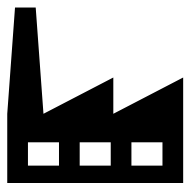


EV owners

“Charging anxiety”

“Queue anxiety”

Retaining private car ownership



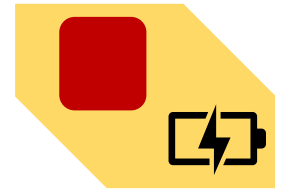
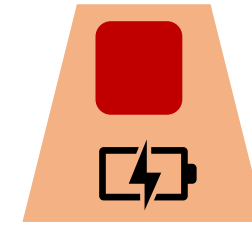
EV makers

Homogeneity of EVs

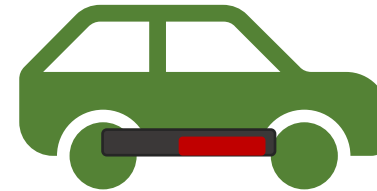
Standardisation

Constraining innovation

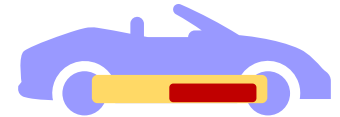
The solution...?



A standard sized small battery module

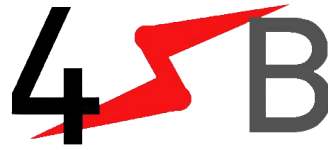


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67% of low / middle income individuals either ‘open’ or ‘slightly open’ to the idea of shared EV batteries

1,000,000 new EVs per year – size of estimated addressable UK market in 2030



*(This slide is a video – Please view it at:
<https://vimeo.com/455509403>)*



Where the value is

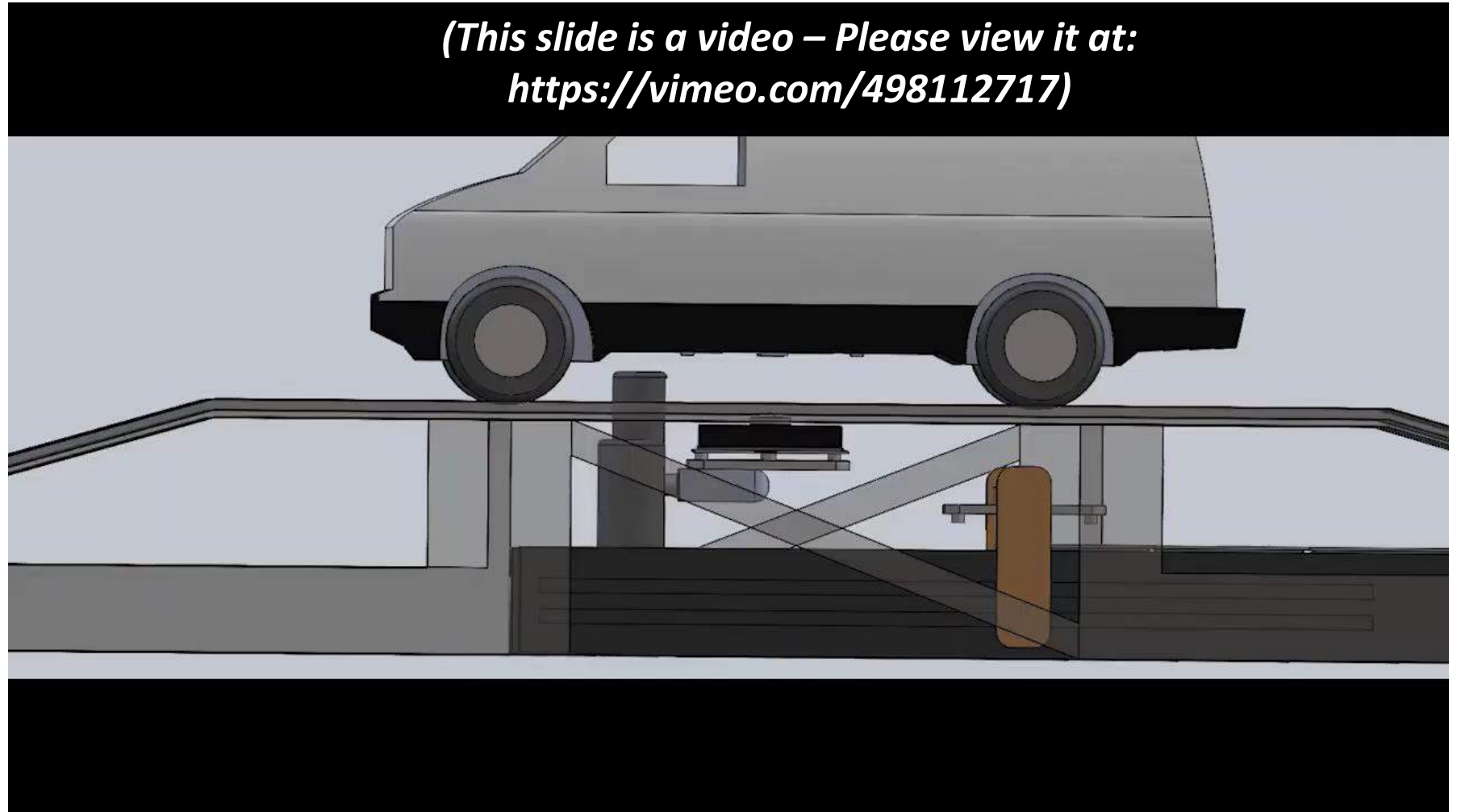
What 4SB will do

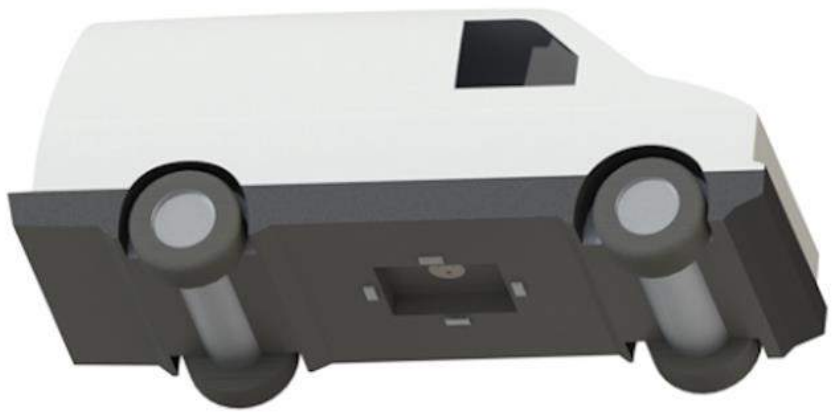
How 4SB will do it

Commercial Product Vision:

- 80 - 90 miles
- ~ 100 kg, ~ 26kWh
- Station holds **14 units**
- Station footprint roughly **two car lengths**
- Station can be **above / below** ground

*(This slide is a video – Please view it at:
<https://vimeo.com/498112717>)*

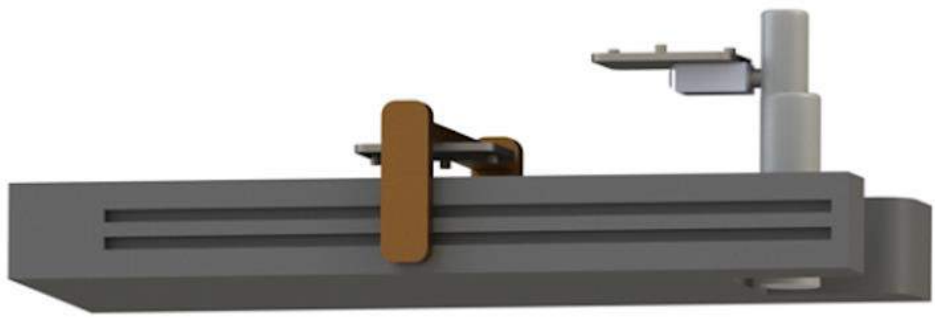




EV with main, dedicated battery, and 4SB attachment



4B
Battery pack and interface



4SB swap and charge station. Can be above or below ground

What will we do?



Integration support

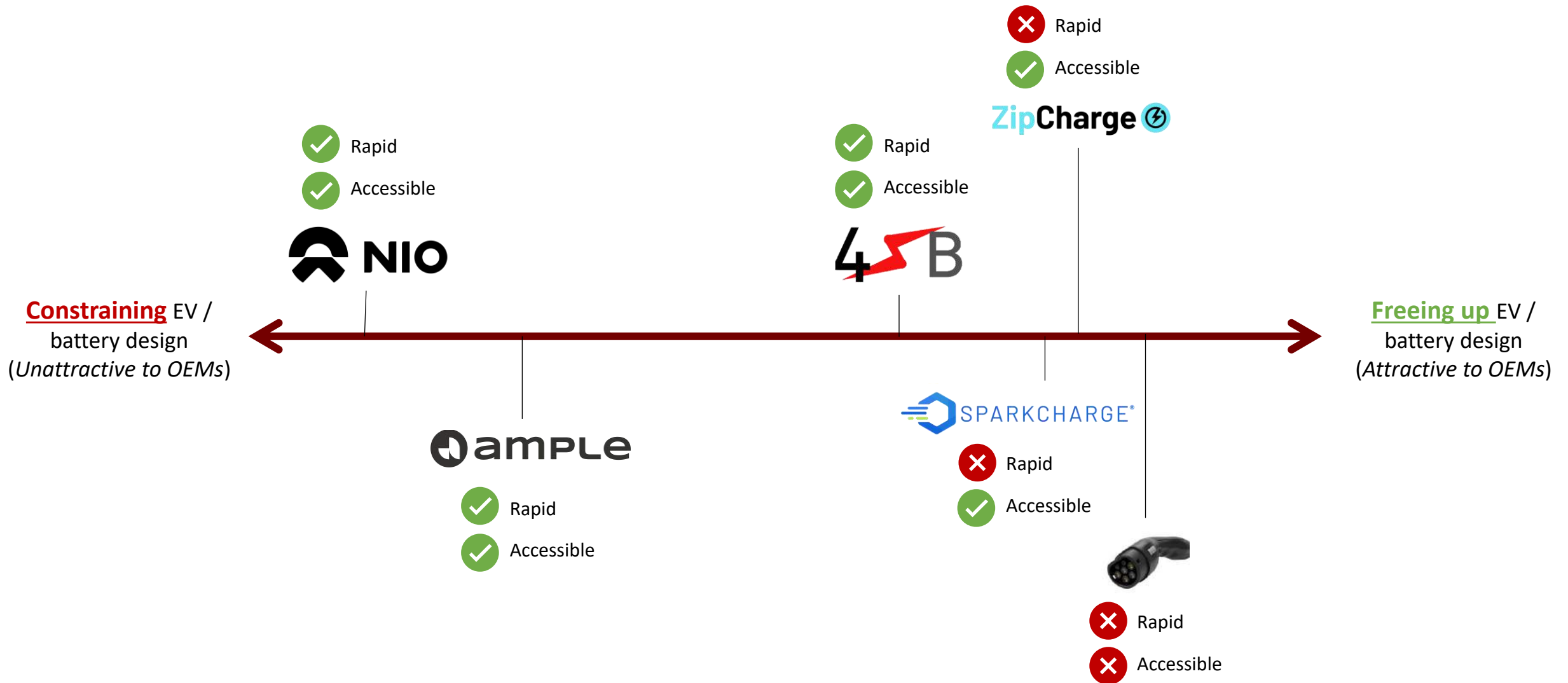


Build, license and sell



Co-deliver

Competitive Landscape



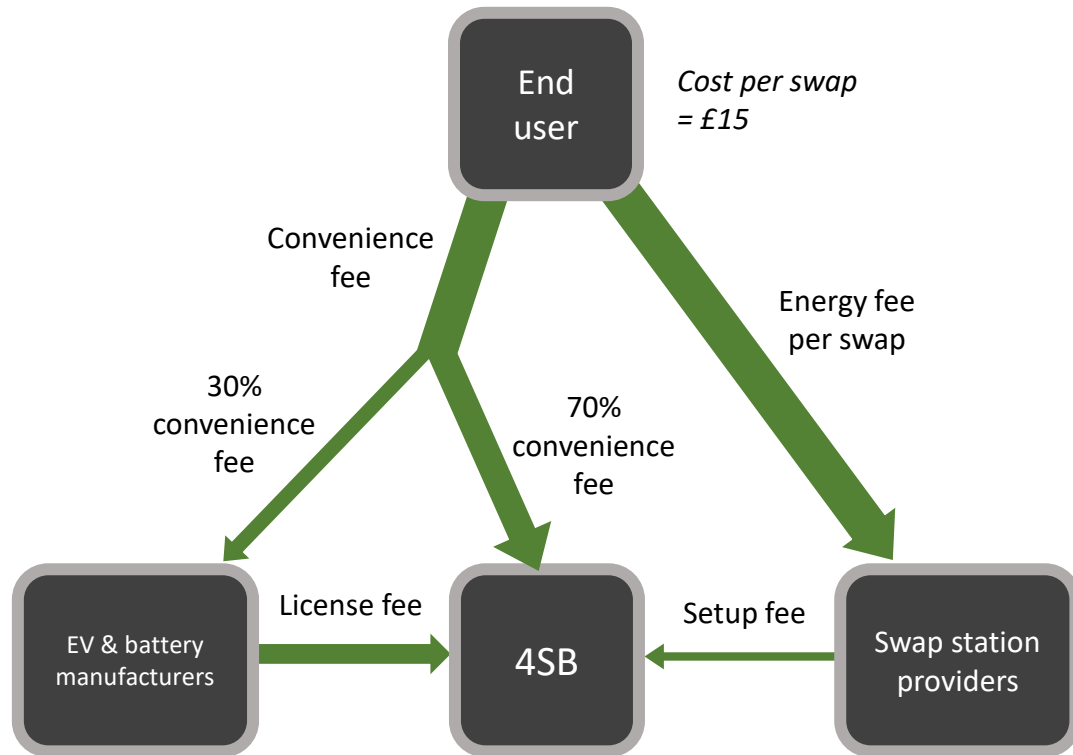
Where the value is

What 4SB will do

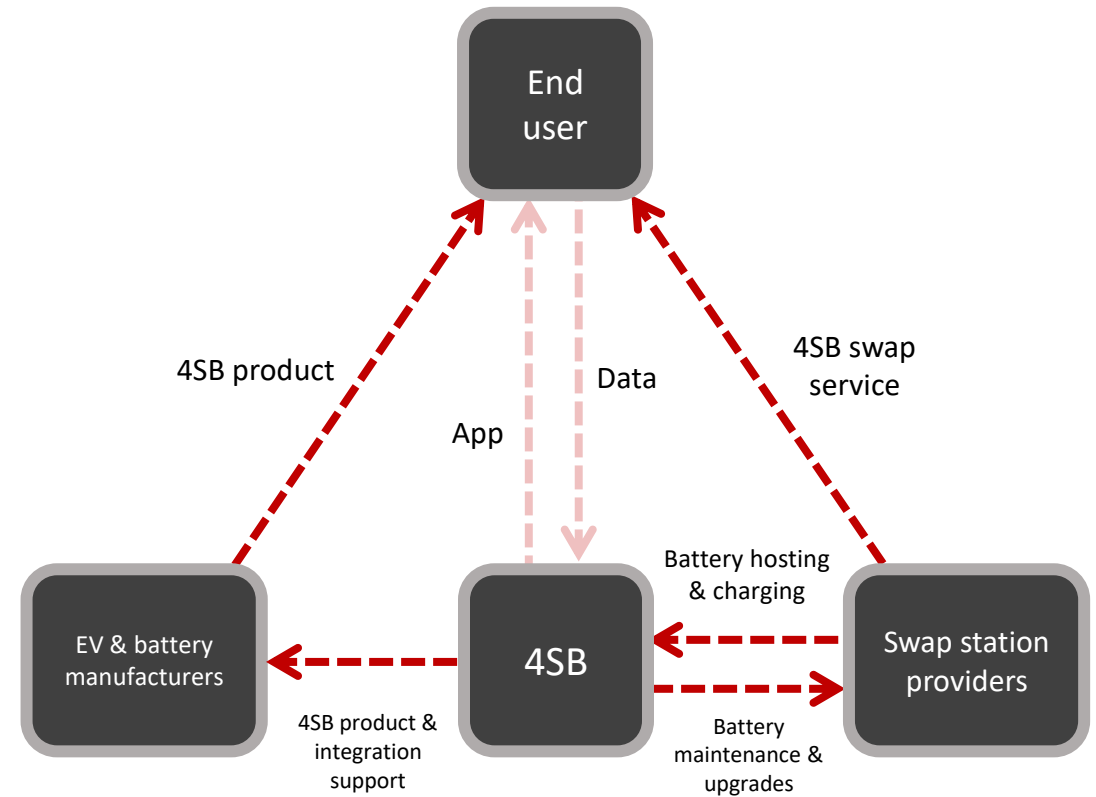
How 4SB will do it

Business Model

Flow of Money



The Product / Service Offer



Where the value is

What 4SB will do

How 4SB will do it

Financial Benefits



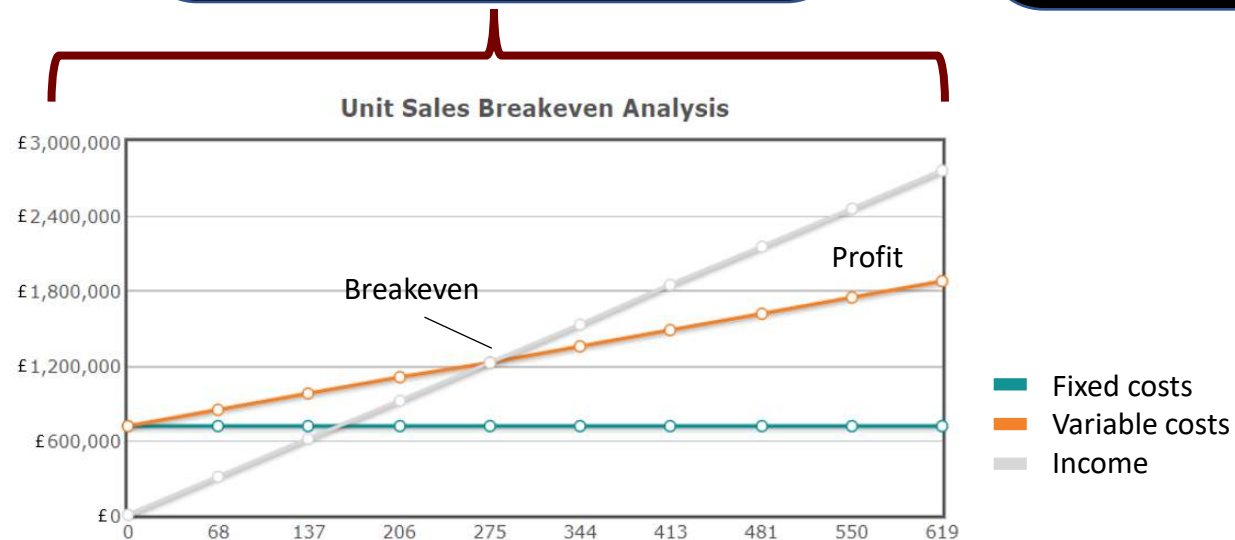
- 30% of swap convenience fee
- Increased EV sales - urban areas
- B/E @ ~1100 EVs

4B

- 70% of swap convenience fee
- License fee for every EV sold
- B/E @ ~300 EVs, or ~150k swaps



- **Increased / maintained** customer footfall (90%+ of profits from shop, next to no profit on fuel)



Where the value is

What 4SB will do

How 4SB will do it

Team & Resources

NMIS (National Manufacturing Institute Scotland) – Product design and manufacturing support and working agreement

MSIP – Factory space, network, resources, mentoring

MEP Tech. – Experts in battery technology, part of MSIP community

Strathclyde Inspire – Office space, community, mentorship and network

Adam Beveridge – CFO & Commercial Lead. Founded a travel and hospitality platform, scaling to over 10 countries. Supported and mentored founders from 70+ companies

Conor Melens – Design and Technical Lead. Degree in Aeronautical Engineering. Experience as engineer at Rolls Royce

Rory Bone – Company Director and Strategic Lead. Degree in Product Design Engineering. Experience as engineer at Jaguar Land Rover, improvement lead at the NHS

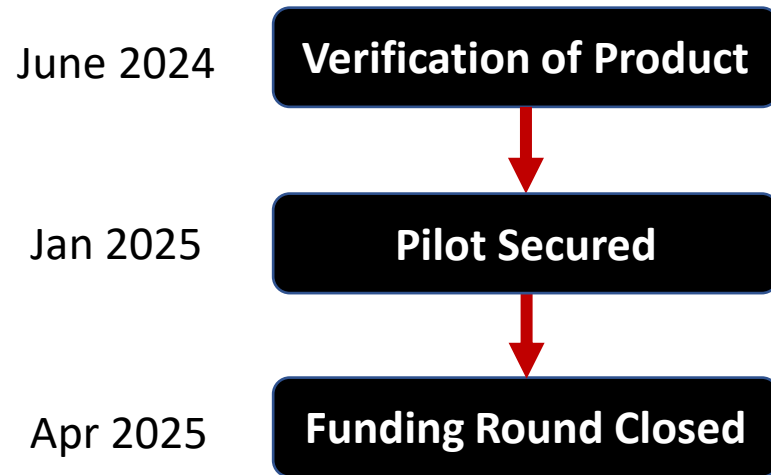
Heriot-Watt – 10 mechanical engineering students working on 9-month projects with us

Partners secured through Interface



Traction & Plans

- **Won** an INSPRIE 100 prize (Nov 23), and investment from SFC Capital
- Dedicated **IP** attorney, won an IP-specific grant, 3 patents ongoing
- Using our MSIP Innovation Lab **facility**, and intent on using MSIP network to contribute to **local** skills and industry



Seeking



**Critique / Advice –
Potential Board Members**



**Pilot project partner –
SME or OEM**



**Investment /
Collaboration**

*A huge thank you to all involved
to help 4SB get this far*



Thank you
Scan to connect

