Spark EV Technology

Intelligent Range Prediction

Accelerating EV Adoption

SPARK

Company Summary

- **Company established:** 2017

- **Who we are:** Spark's team have over 65 years developing and commercialising software to ISO9001 international quality standards with experience across EV vehicles, database software, machine learning and embedded software systems.

- **Intelligent software products for electric vehicles (EVs).**

- Over 10,000km of real-world trials, across a wide range of electric vehicle brands, terrains and driving styles. Spark typically 10x more accurate than EV in-vehicle systems.

- **4x patents** across China, Europe, UK and US covering system design for human driven and autonomous vehicles for personalised journey prediction using on/off vehicle data and machine learning algorithms

- **Working with leading Automotive OEMs and Tier 1's suppliers globally**

Partnerships:

Problem

Adoption of EVs is significantly impacted by **unreliable range prediction** leading to:

- **Brand Trust** – *Can I trust what this vehicle tells me?*

- **Range Anxiety** – *Will I get there or run out of juice?*

- **Time Anxiety** – *Can I go yet or carry on charging?*

*In-vehicle range predictions can be in error by **more than 100%** (e.g. driving 30km can see the range remaining drop by 60km)*
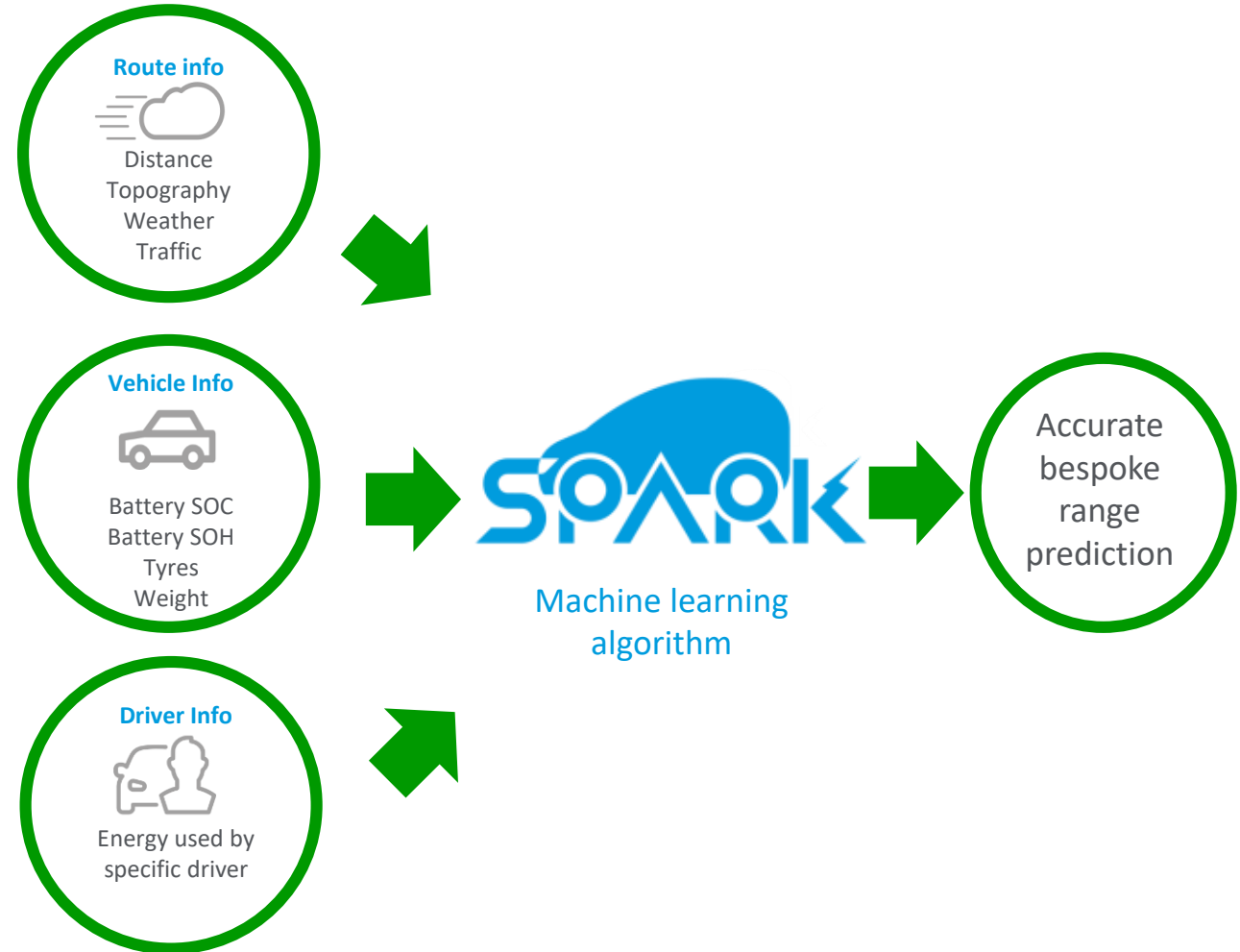
" Around 20% of our demo customers don't end up buying the vehicle because they lack confidence in the onboard range predictions, which can be erratic. "
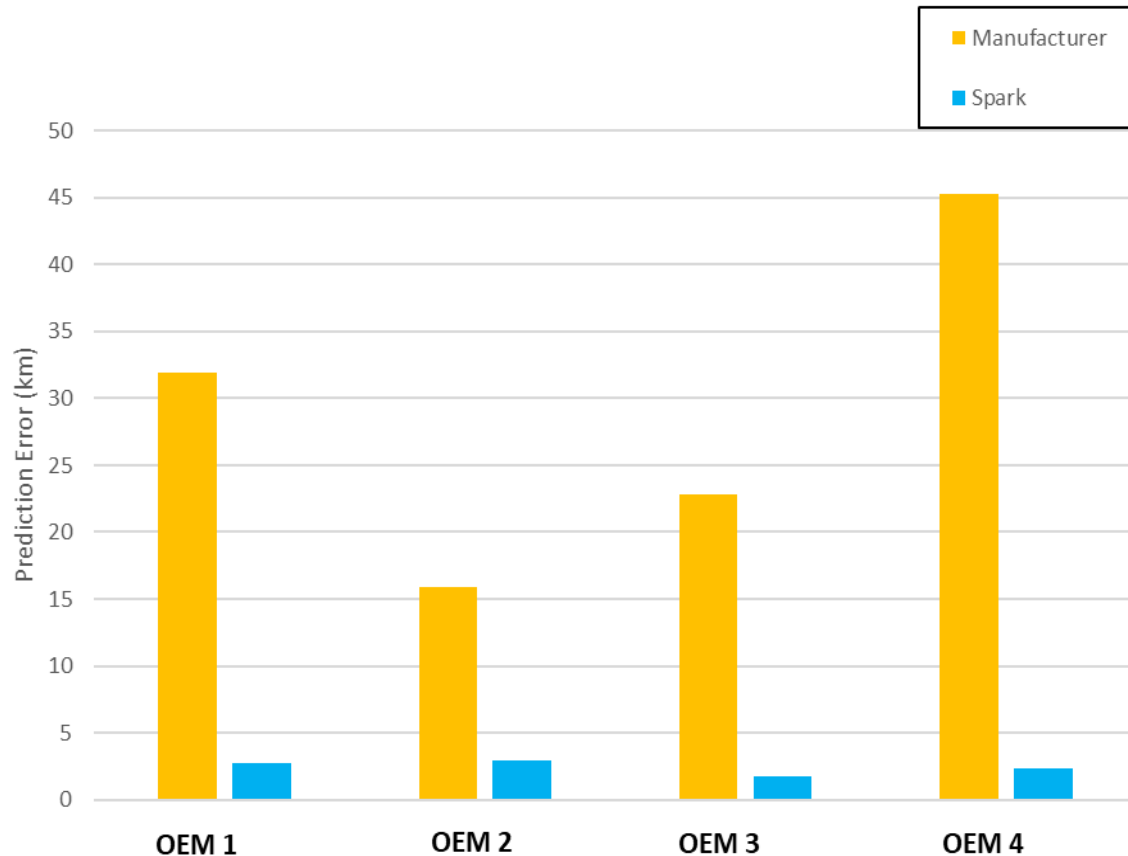
Manager, UK EV Dealership

SPARK

Product: Spark Assure

- Spark Assure provides **highly accurate, personalised journey predictions** for EV drivers.

- **Embed our technology** directly into vehicles via infotainment cluster as part of the SatNav.

- Our embedded solution is delivered as a **pre-compiled DLL with defined interfaces**.

- DLL can then be incorporated into any vehicle system, with the **OEM retaining control over the UI experience**.

- Predictions can be made **on vehicle** or **cloud.**

- Easy to implement for mass production.

- Could be deployed on **new vehicles** or as an **aftermarket solution**.

Route info

Distance
Topography
Weather
Traffic

Vehicle Info

Battery SOC
Battery SOH
Tyres
Weight

Driver Info

Energy used by specific driver

Machine learning algorithm

Accurate bespoke range prediction
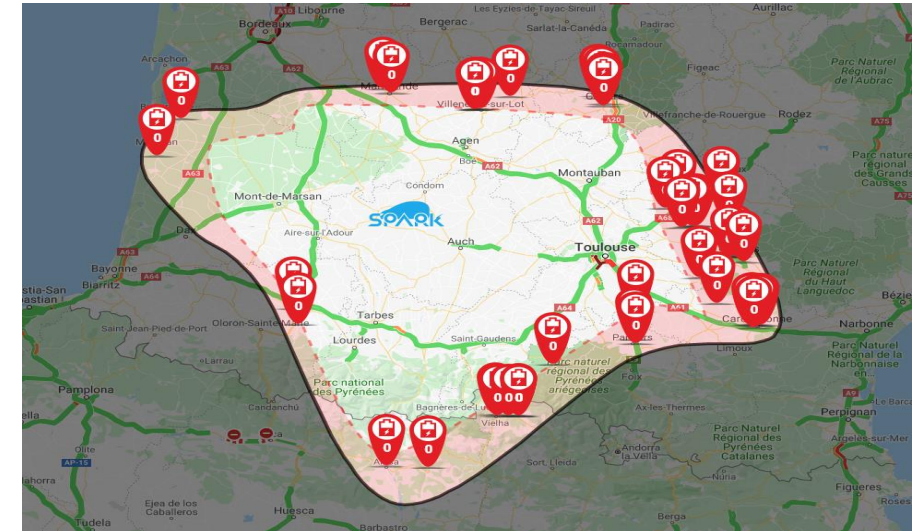
Success – How well it works

Spark Prediction Errors vs Vehicle Manufacturers (OEMs)

- Spark's prediction of energy usage for a journey is typically **accurate to 2km**.

- OEM's prediction of range remaining can be out **by over 45km**.

- Spark has outperformed every OEM in testing.

- The 4 OEM's represent **39% of global EV sales.**

- NB: Spark makes predictions in energy terms, and this is converted back into km using the overall efficiency of this vehicle across all journeys in a trial.
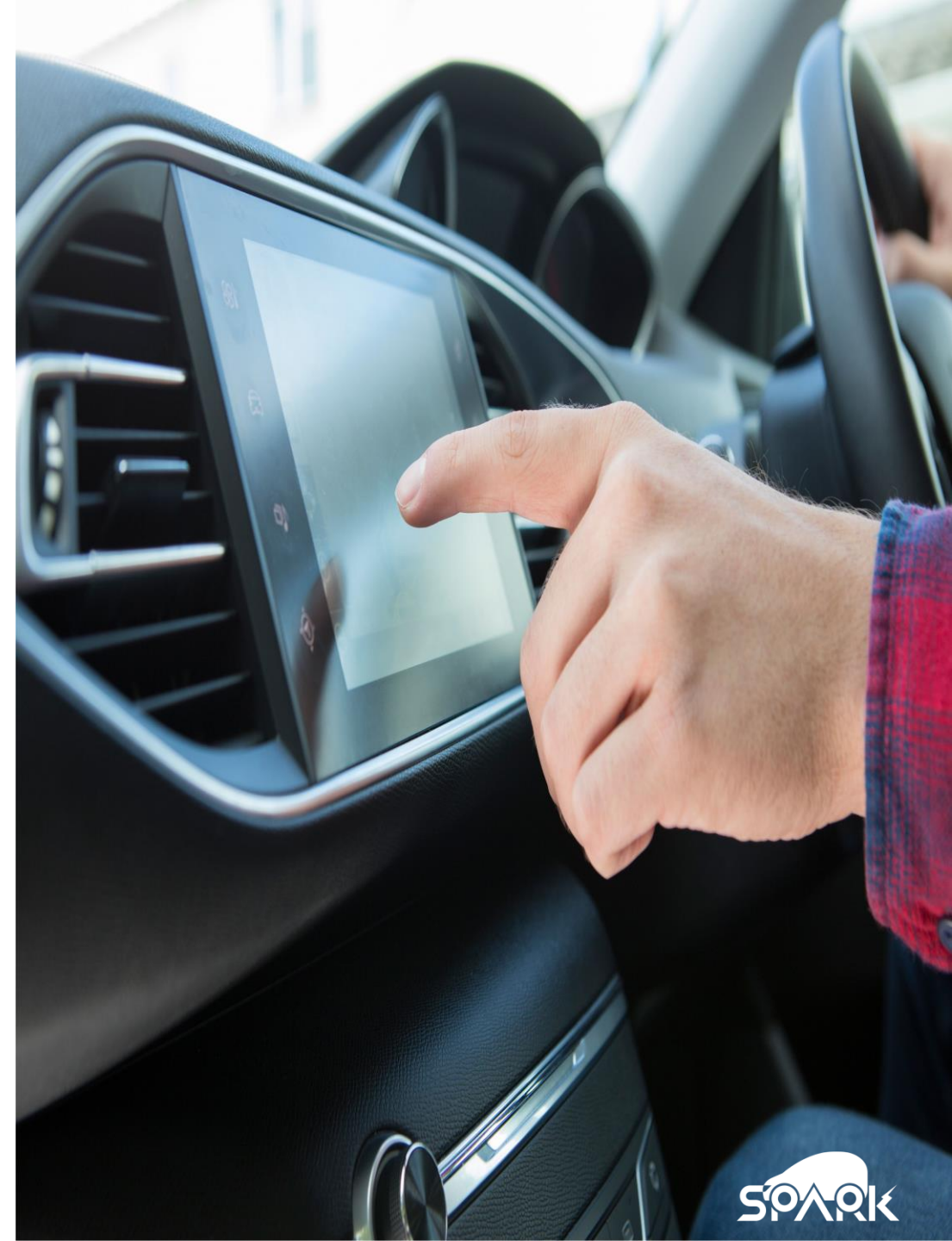
Product: Spark Flow

○ Personalised, dynamic maps without entering the route into a SatNav

○ Red section highlights range available within 20% reserve of battery

○ EV Recharging points clearly shown to enable reliable journey planning

○ Flow considers all live route, driver, atmospheric and previous journeys for the map

Benefits to OEM / Tier 1

- **Supports strategy** speeding up Electrification plans and Mobility as a Service (MaaS)

- Supports EV powertrains and vehicle development

- **Complimentary software addition**

- Gives **speed to market over competition**

- Build **brand trust**

- Increasing **sales** and **customer retention**

  - Provide **highly accurate, personalised journey predictions** for drivers.

  - Enable customers to have **full confidence and trust** in the information their vehicle
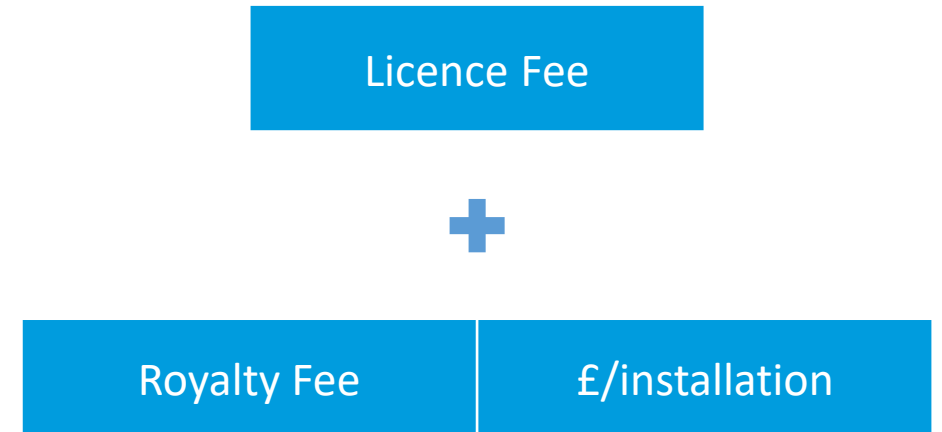
License Model and Process

Sales process:

1. Proof of Concept
   (project fee, support, (4-6 weeks))

2. Evaluation License
   (license fee, support (6 months))

3. Production License
   (license fee per EV model, tiered lifetime royalties)

Description:

- Licensed as a software development kit (SDK) through license fee and royalty model.

- Freedom to deploy our technology and IP within their applications/situations.

Revenue model breakdown

Licence Fee

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Royalty Fee	£/installation

Contact

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