



E-mobility Enabler



Mission

E-mobility Enabler

VDK stands for Vehicle Development Kit

Our goal: to revolutionize e-mobility by offering “Spark”, a ready-to-use modular light EV skateboard with certified battery and in-wheel motors

It is validated and industrialized by a major carmaker and aims to make a wide range of projects competitive and profitable from 1 to 5,000 units per year

VDK Spark is a catalyst lowering barriers to entry, by reducing R&D cost and allowing more ideas to be tested

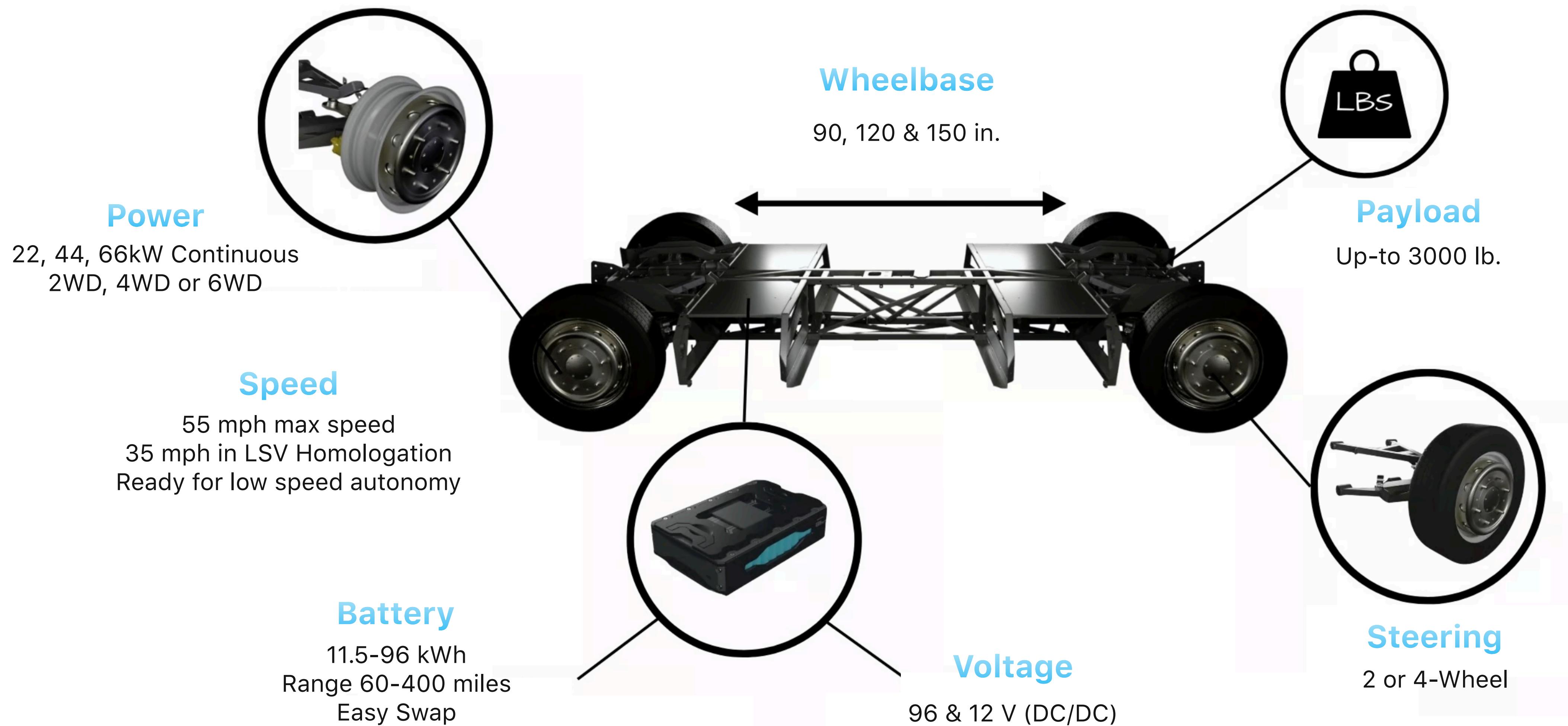
VDK Spark fast tracks niche projects by providing a flexible platform and tools to build around it

VDK develops hardware & software services that will generate recurring revenue

SPARK

Unique Technology

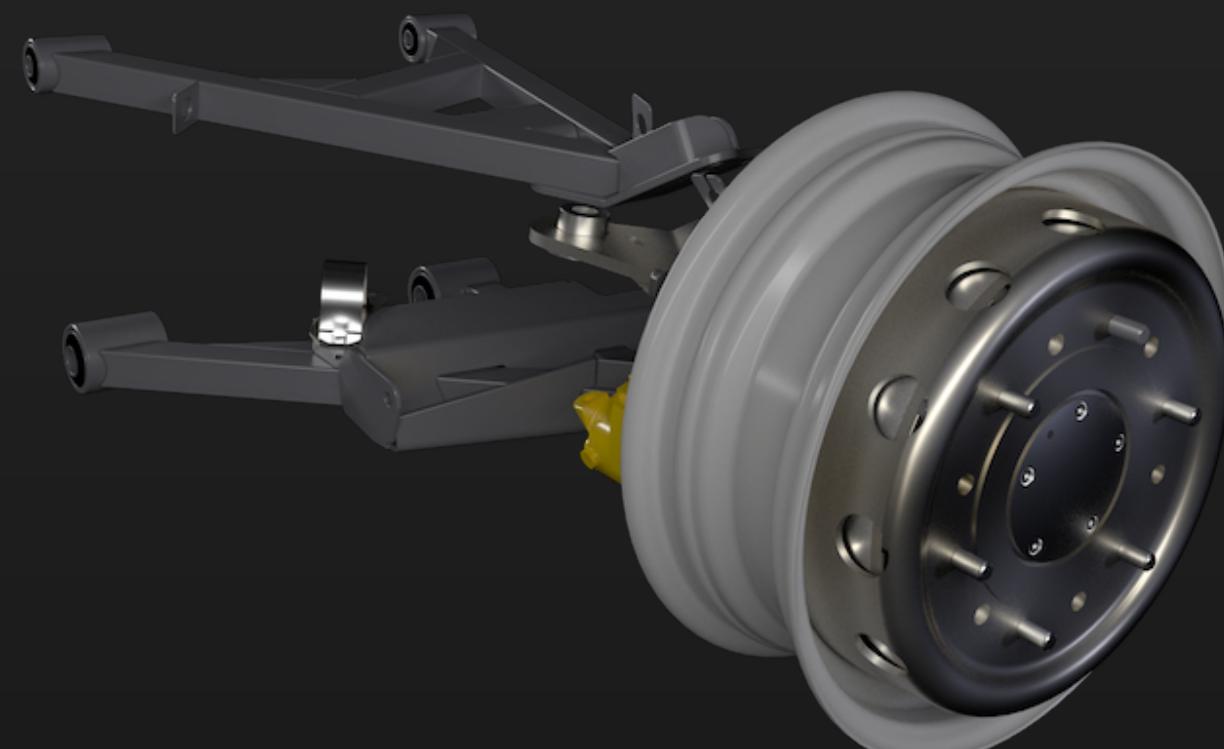
SPARK



SPARK

Certified & Validated

SPARK



In-Wheel Motor
R85 Certification



Battery packs
R100-2 & UN38.3 Certification

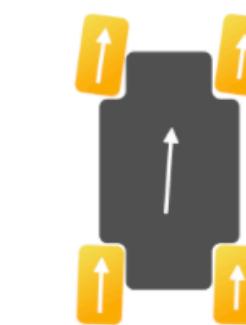


2 & 4-Wheel Drive
>100,000 Validated Road-Miles

SPARK

Certified & Validated

SPARK



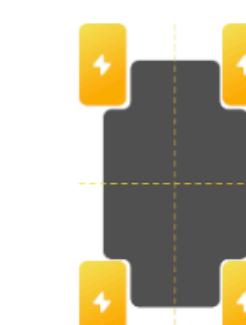
Torque vectoring (proprietary)

- Real-time electronic torque management for in-motors
- **Plug and play** to shorten the development of any EV optimized for in-motors



In-motor (proprietary)

- Optimizes the surface and **interior volume** of the vehicle
- Simple, robust, and with **high torque density**
- Excellent **regenerative braking efficiency** to extend range



Distinctive **Chassis** (Industrial asset)

- Double symmetry plane to simplify manufacturing
- Optimized around the in-motor, **reducing the size and weight** of the vehicle
- Industrialized using standard **automotive tools** by Yulon Motor Group
- Compatible with dimension modifications at **no additional cost** for EV projects
- **4-wheel steering**



Distinctive **Batteries**

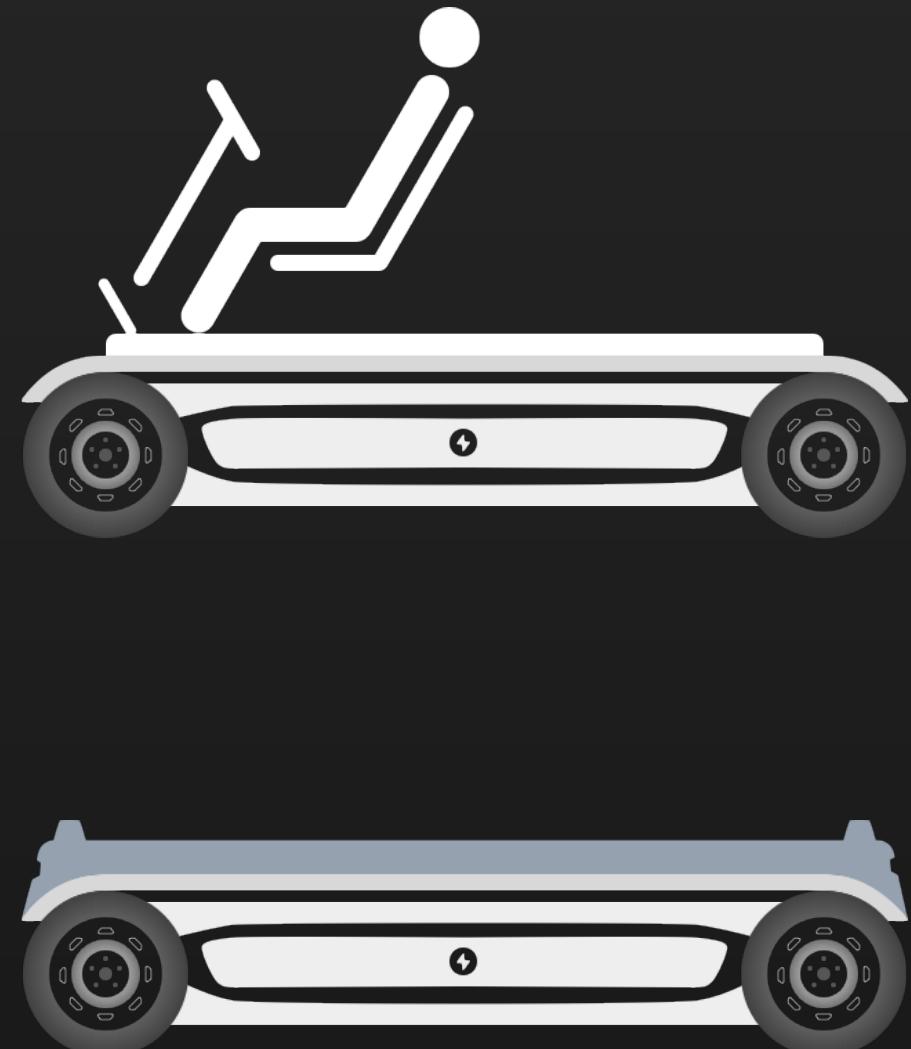
- Lightweight, low voltage, and swappable
- Enables **low complexity battery swapping**, reducing dependence on **fast charging** costs
- Facilitates vehicle updates in the used market, **improving its resale value**

SPARK

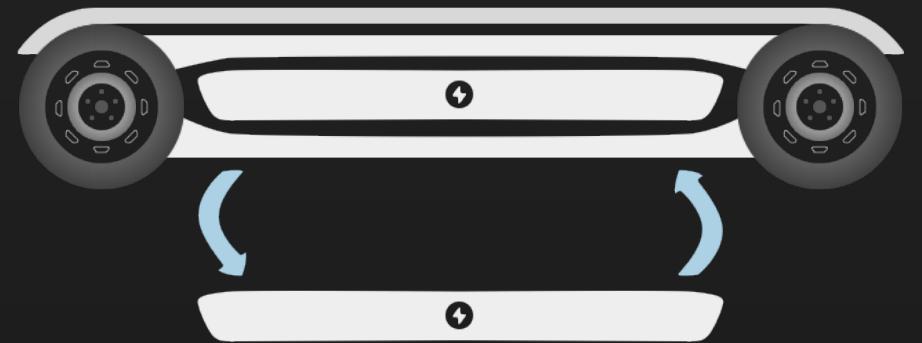
Platform Highlights

SPARK

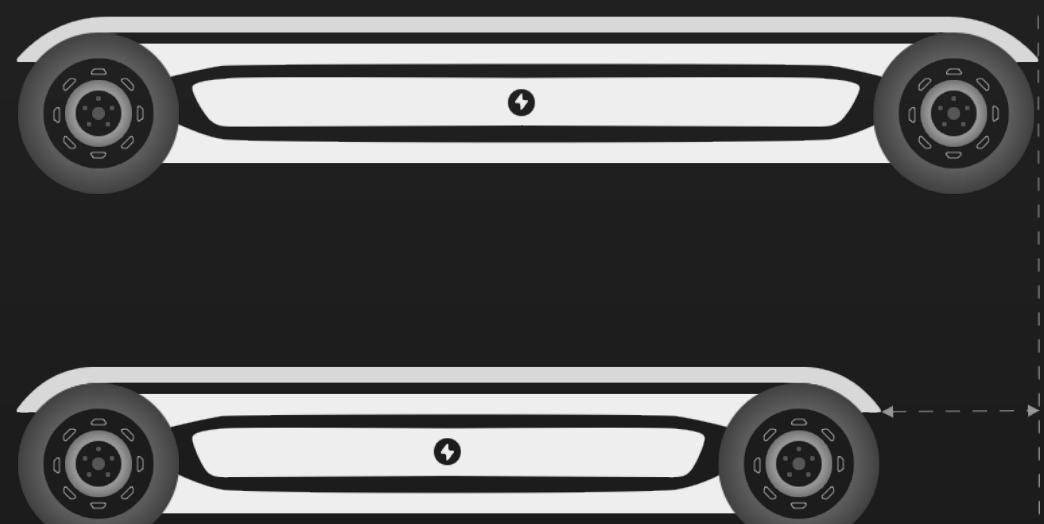
VDK



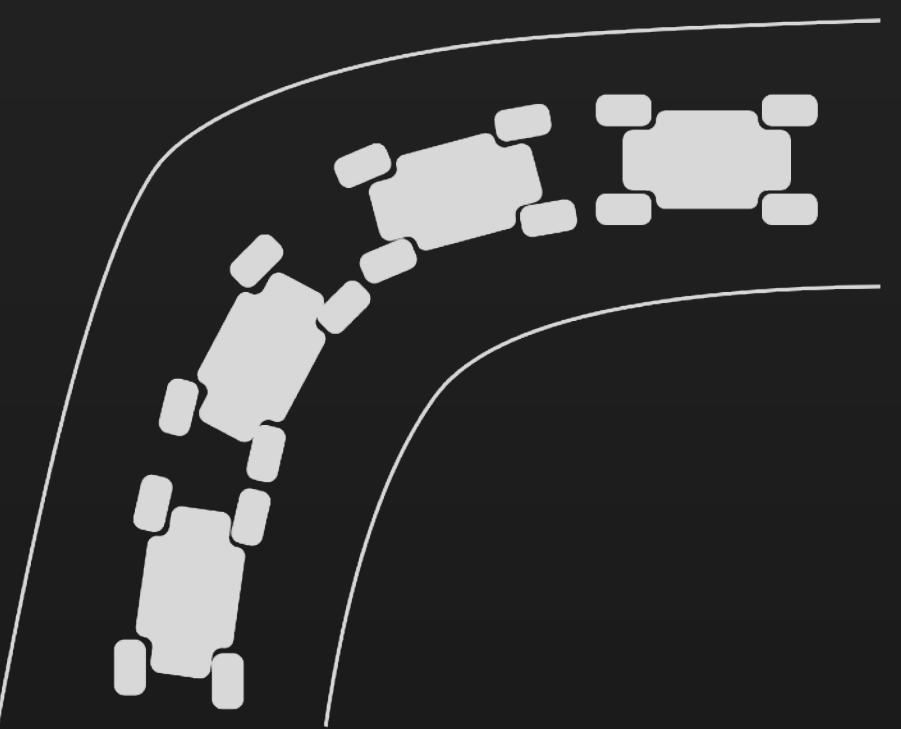
Human or Autonomous
Driving Compatibility



Fast Swappable
Battery Pack



Modular
Wheelbase



Virtual Tramway
for narrow streets

SPARK

Built to enable

SPARK



Free From Constraints
Your Creativity
Your Product



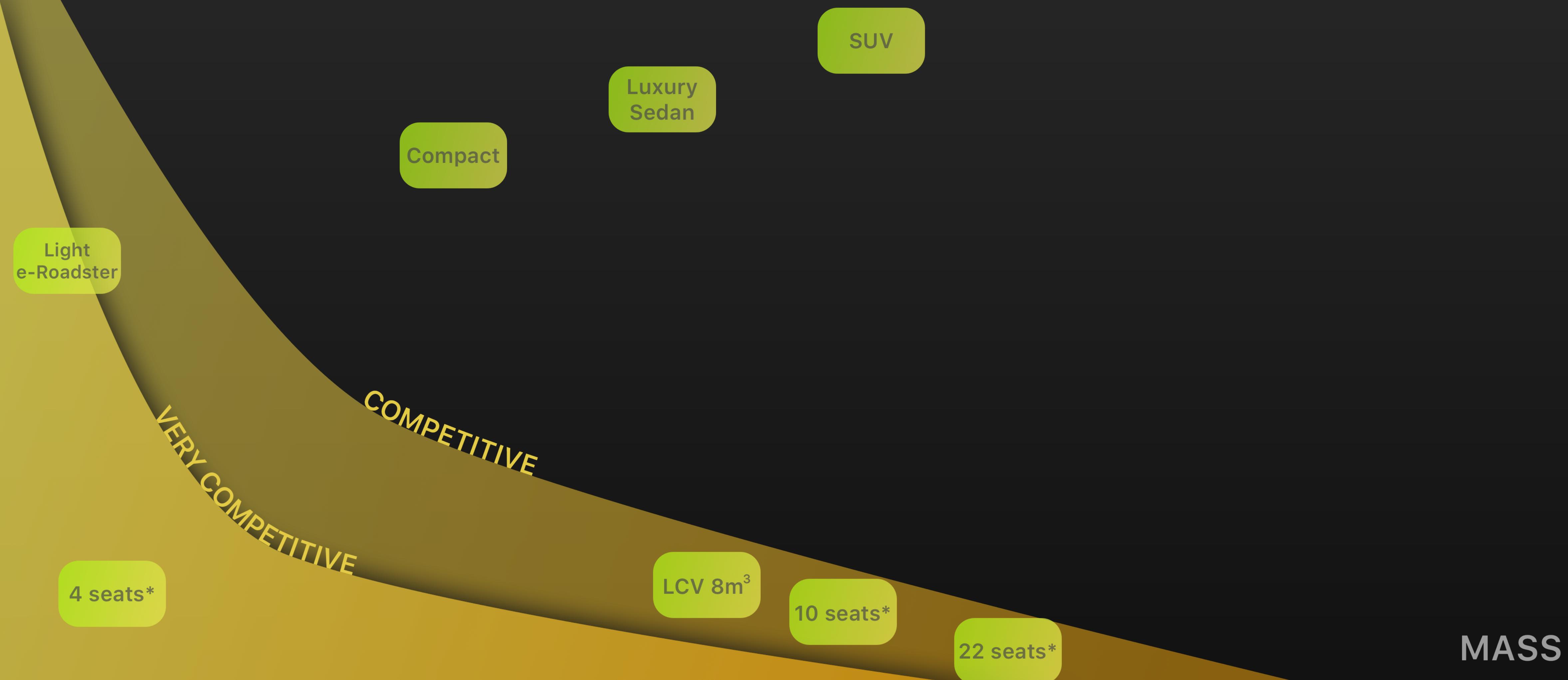
Our Development Kit
Certified & Validated

SPEED

VDK COMPETITIVENESS ZONES

Carbon footprint + TCO

- * low speed light efficient 4 seats city car
- 10 seats autonomous shuttle
- 22 seats autonomous shuttle



THE DEATH VALLEYS OF EV PROJECTS

1st valley

STAGE	From idea to vehicle CAD	Materializing a functional prototype and first tests	Validating a vehicle to meet expectations, industrialization	Commercialization beyond initial partner clients
WHO	Projects at tier1s, OEMs, startups, enthusiasts, city planners	+ small manufacturers and engineering companies	+ small manufacturers and engineering companies	+ small manufacturers and engineering companies
GOAL	CAD & renderings to spark awareness on a project	Prototype to test investors and target audience reaction	Low volume pre-serie and first serie for first sales	Production in the 1,000s
INVESTMENT	>>\$10,000s	\$500,000-\$3,000,000	\$50,000,000-\$500,000,000	Very complex and uncertain
INVESTMENT WITH VDK	FREE chassis CAD AI automated design	\$50,000 for functional chassis \$50,000 for 3D printed top hat with AI	\$1,500,000-\$10,000,000	Mutualized networks
VDK OFFER	From idea to CAD	Functional chassis tailored for customer	Fast track homologation for low volume, chassis already industrialized, client focuses on top hat	Series production with enabling environment allowed by better economics/efficiency
SALES PROSPECT	AI automated design service	3-5 prototypes x 1000s	10-20 pre-series x 10s	100-5000 series vehicles x 10s

SUCCESS RATE

SPARK

Customization & Specialization. Unleashed

- VDK provides the tools to spark new projects that were previously impossible to fund or execute technically
- A new vehicle project can be profitable under 100 units per year
- This opens the door to specialized vehicles for very targeted applications



Light e-roadster



Wheelchair Vehicles



Autonomous Delivery



Autonomous Shuttles



All Terrain



All Terrain

Yulon Tobe

A strong and reliable industrial partner

- Yulon is a \$3bn revenue Taiwanese carmaker manufacturing vehicles in numerous facilities in Asia including its legacy factory Miaoli since 1953
- Yulon manufactures vehicles for other carmakers and for its own brand Luxgen
- Yulon Motors invested in Yulon Tobe, a joint-venture with Electramobilys, to industrialize skateboards for Muses Light Commercial Vehicles
- VDK Spark already industrialized by Yulon Tobe in Taiwan
- Yulon can supply the fully assembled skateboard until the customer is ready to take over
- Miaoli factory with 300,000 yearly capacity
- With VDK Spark, Yulon Tobe manufactures a unique automotive compliant adaptable chassis

PARTNERS

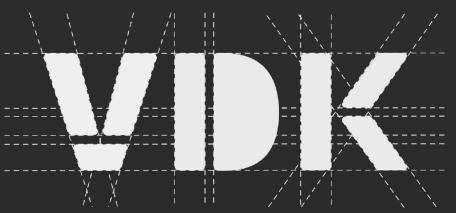
Hurtan T2 (contract signed)

Light EV roadster





ANNEX



Markets

Case Study: 17 m³ eLCV

Category	With VDK Spark	With VDK Ultra	Competition
Vmax	90 km/h	110 km/h	130 or 150 km/h
Weight	2000 kg	2000 kg	3000 kg
Payload	1500 kg	1500 kg	500 kg
Leasing Value	\$1000/month	\$500/month	\$1300/month
Power Consumption (WLTP)	20 kWh/100 km	20 kWh/100 km	30 kWh/100 km
Energy Cost for 1000 miles/month	\$150/month	\$150/month	\$300/month
Total cost	\$1150/month	\$650/month	\$1600/month
Fast Charging	5 minutes battery swap to 100%	5 minutes battery swap to 100%	20-30 minutes to 80%

Markets

Targeted Markets

Market Segment	Micro vehicles (L6/L7e in Europe, LSV in America/China)	Mini vehicles (Kei cars in Japan)	Individual approval kit car replicas	Long, slow vehicles (off-road)	Long, slow vehicles (on-road)	Autonomous shuttles	Wheelchair accessible vehicles
Market Size	> 250,000 units per year	1,800,000 units per year	A few hundred units per year	A few tens of thousands of units per year	A few hundred thousand units per year	A few hundred units per year	A few tens of thousands of units per year
Areas of Interest	Europe, Americas, China	Japan, increasingly in other countries	Europe, USA, UK	Worldwide	Worldwide	Worldwide	Worldwide
EV impact on market	Significant	Moderate	Low	Significant	Significant	Significant	Low
Technical and Regulatory Barriers	Very low	Low, adaptation of safety features (ABS, ESP)	Very low	Very low	Fairly low	Fairly low	Quite low
Competitiveness of VDK Spark	Very good (compact wheel motor)	Very good (compact wheel motor)	Very good (no industrial offer in this segment)	Very good (possible battery swap stations)	Very good (alternatives are quite expensive)	Very, very important (no validated platform)	Very, very important (enables ideal products between motorized wheelchair and adapted shuttle)
VDK Spark Outlook	A few hundred units per year	A few thousand units per year	A few units per year	A few hundred units per year	A few thousand units per year	A few dozen units per year Licensing	A few hundred units per year
Competitiveness of VDK Ultra	Much improved by cost reduction	Much improved by cost reduction	Improved by lower cost and design flexibility	Similar to Spark	Similar to Spark	Much improved by accessibility	Much improved by accessibility
VDK Ultra Outlook	A few thousand units per year	A few tens of thousands of units per year	A few dozen units per year or more with 3D printing	A few hundred units per year	A few thousand units per year	A few hundred units per year	A few thousand units per year
Advantages of Drive-by-Wire Versions	Weak	Weak	Weak	Very strong, the "follow me" function improves performance	Very strong, the "follow me" function improves performance	Very strong	Strong in case of driver issues
Interests for VDK	Standardized market, good volume prospects	Huge market, potential for over 10 million annual sales by 2030	Easy to start, good demonstration of customization capabilities	High gross margin on platform, strong service revenue	High gross margin on platform, very large potential market	Very high, large budgets with these customers, upfront license payments possible	Very strong, creation of a new market, potentially large volumes (17 million people in Europe, 45 million in China, 40 million in the USA)
Priority for VDK	+++ Promote by communicating about Hurtan project	+++ Launch necessary safety studies	++ Promote	++++ Studies needed to adapt longer/higher derivatives	++++ Studies needed to adapt longer/higher derivatives	++++ Promote	++++ Studies needed to adapt Kimsi product for specialized players