

Powering a New Era of Electric Transportation on Land and in the Air with Li-Metal Batteries

Al for Manufacturing, Safety, and Science

Investor Presentation September 2024



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#### The SES Al Opportunity

#### Differentiated Battery Technology Platform

Leading Energy Density with Proven Safety Characteristics and Supported by AI

#### Validated by OEM Partners

Partnerships with Leading Auto and Urban Air Mobility OEMs

#### Designed for Manufacturing at Scale

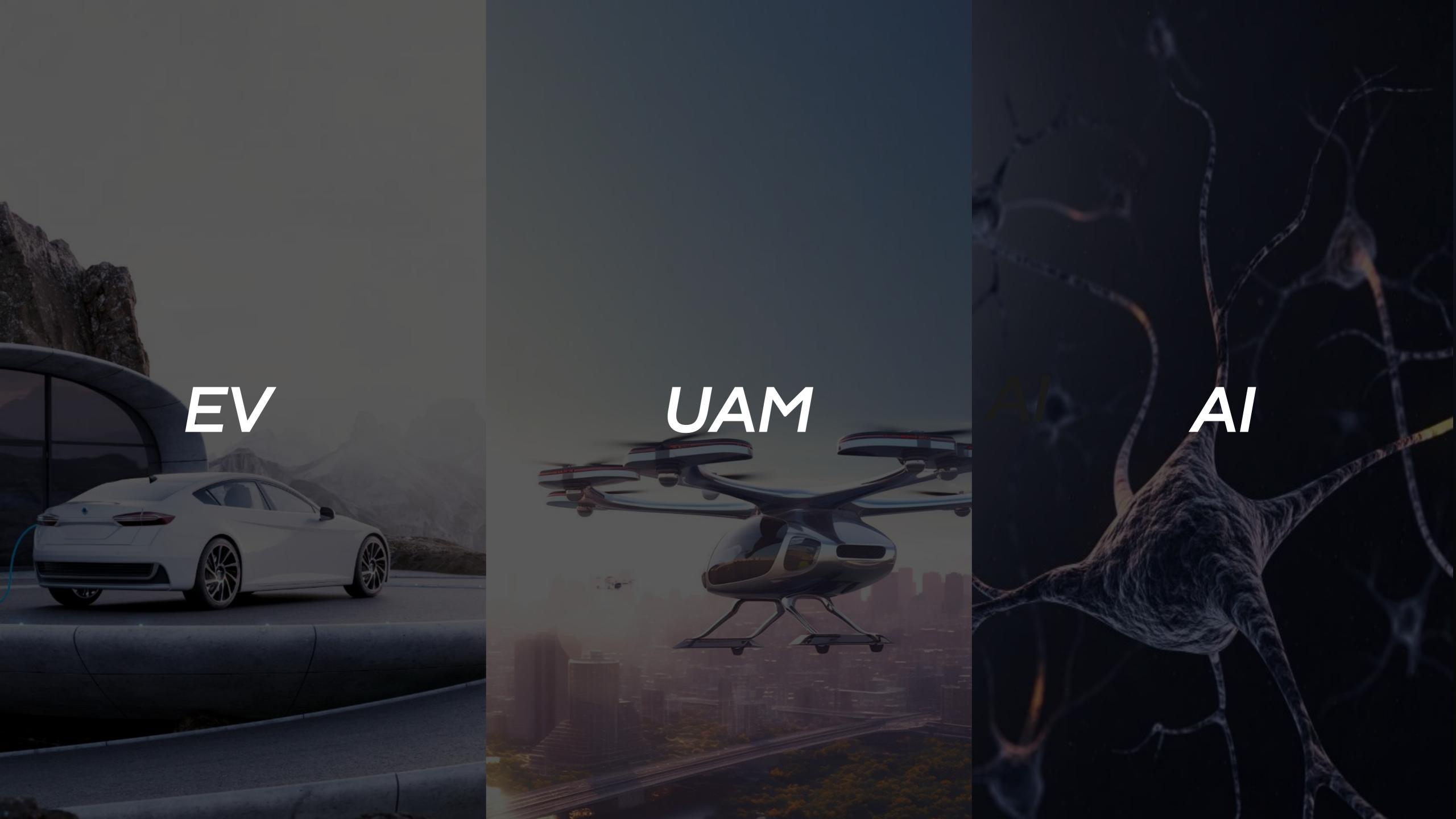
Industry-leading Manufacturing Maturity Among Li-Metal Cells Today

#### Large and Growing TAM in Both EV and UAM

Substantial Opportunity to Increase Market Share Today and Over Longer Term

#### World-class Management Team

SES Possesses Significant Thought Leadership in EV/UAM Battery and AI Development Experience



#### Battery <> Al for Science & Safety



Accelerates pipeline material discovery by mapping the vast universe of small molecules, and improves performance and safety.

~ 10<sup>11</sup>

Access to the world's largest molecular database



#### Hermes

Human R&D

Formulates and tests electrolytes based on novel molecules recommended by Prometheus using high-throughput to develop next-gen battery materials.



Human Engineering

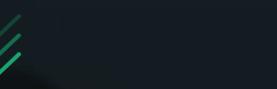
Detects manufacturing defects more comprehensively than traditional quality control, reduces manufacturing cost, and improves product safety.



#### Avatar

AI for Safety

Monitors battery state-ofhealth and predicts incidents more accurately than conventional battery management system.



> 99.6 %

Considered to be the world's highest Coulombic Efficiency on Li-Metal

1st

World's first automotive
A-sample and B-sample JDA
in Li-Metal



> 92 %

Currently the world's
highest incident prediction
accuracy
for Li-Metal

#### Battery <> Al for Science & Safety (Our Team)



DR. QICHAO HU
Founder, Chairman & CEO





Forbes 30 Under 30
MIT Technology Review Innovators Under 35
PhD in Applied Physics from Harvard
BS in Physics from MIT



JING NEALIS

Chief Financial Officer

VIEW SUNPOWER'

18 years of finance experience, including at public companies.

Previously worked at View, SunPower, Shunfeng, Suntech Power and Deloitte.



DR. HONG GAN

Chief Science Officer

BROOKHAVEN ENEVATE

25 years of battery R&D experience.

Key contribution in silicon-based Li-ion and Li-S technologies.

PhD in Chemistry from Uni. of Chicago and PostDoc from Uni. of Rochester.



DANIEL LI

Chief Manufacturing Officer

A123

SYSTEMS

15 years of experience working in the lithium-ion battery industry, including in senior roles at A123.

Rich experience and perspective in cell engineering, manufacturing, quality, management and operation.



**DR. KANG XU**Chief Scientist



MRS Fellow, ECS Fellow, emeritus ARL Fellow and one of the world leading researchers in electrolyte materials and interfacial science.

Published more than 350 papers in this field, with an h-index of 118, and has been recognized with many awards for the discovery of new electrolyte materials and understanding of the fundamental mechanisms.



DR. WINSTON WANG

SVP of Product Development

Managed battery R&D at DJI. Responsible for DJI's key drone smart battery and power systems launch.

PhD in Mechanical Engineering from the University of Hong Kong.



KYLE PILKINGTON
Chief Legal Officer



SULLIVAN & CROMWELL

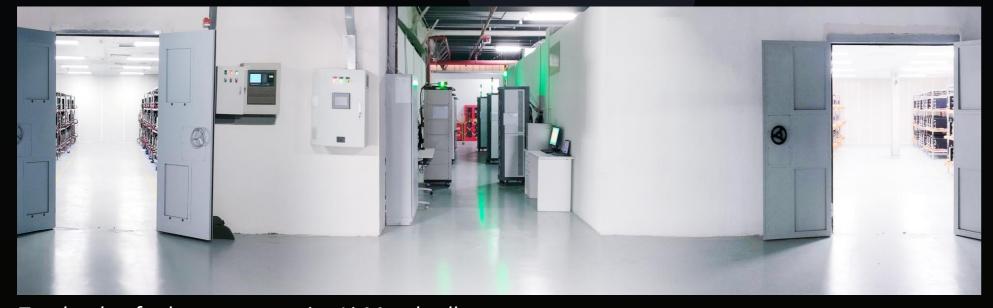
16 years of international legal experience, including in capital markets, securities law, corporate governance and M&A.

Previously worked at International Game Technology, Sullivan & Cromwell, Gibson Dunn and Baker McKenzie.

# Battery <> Al for Science & Safety (Our Sites)







Test bunker for large automotive Li-Metal cells

Est. (MIT Start Sign NYSE Sign world's Build Sign world's Sign world's spinoff)  Avatar world's first listing first EV 2 EV B- first EV C- first EV SOP  EV (NYSE: SES) B-sample sample  Innes and  Hermes (GM, Start 1 UAM line Ship UAM cells and Honda)  Hyundai, Prometheus cells and modules  Start  Apollo	2012	2017	2021	2022	2023	2024	2025	2026
EV (NYSE: SES) B-sample sample sample  Start A-sample lines and  Hermes (GM, Start 1 UAM line Ship UAM cells and honda)  Honda) modules  Start	Est. (MIT	Start	Sign	NYSE	Sign world's	Build	Sign world's	Sign world's
Start  A-sample  Ilines and  Interpolation (GM, Start 1 UAM line Ship UAM cells and modules  Honda)  Start  Start  Start  Start	spinoff)	Avatar	world's first	listing	first <b>EV</b>	2 EV B-	first EV C-	first <b>EV SOP</b>
Hermes (GM, Start 1 UAM line Ship UAM Hyundai, Prometheus cells and Honda) modules  Start			EV	(NYSE: SES)	<b>B-sample</b>	sample	sample	
Hyundai, <b>Prometheus</b> cells and modules  Start	Start		A-sample			lines and		
Honda) Start	Hermes		(GM,		Start	1 UAM line	Ship <b>UAM</b>	
Start			Hyundai,		<b>Prometheus</b>		cells and	
			Honda)				modules	
Apollo			Start					
			Apollo					

#### Partner with Leading Automakers



- \$50MM+ JDA (March 2021)
- \$60MM equity investment (since 2015)
- Joint pre-production facility (going forward)
- GM's CTO serves as a director on our Board



- JDA (May 2021)
- \$50MM equity investment (May 2021)
- \$50MM PIPE commitment (June 2021)
- Joint pre-production facility (going forward)



- JDA (January 2022)
- Largest single investor in PIPE financing -- \$75 million
- 6<sup>th</sup> major global car manufacturer to invest in SES

Other Investors





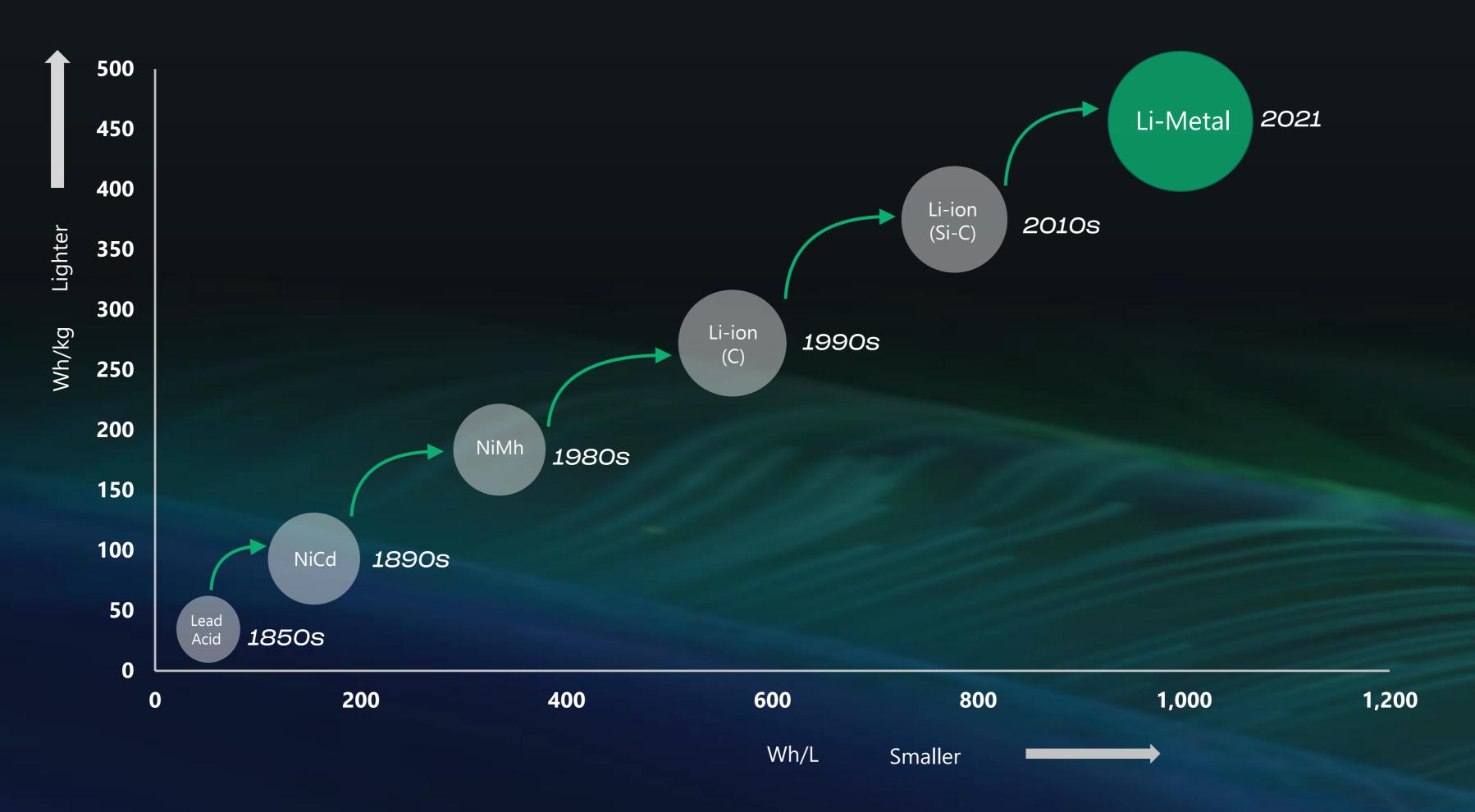




TEMASEK



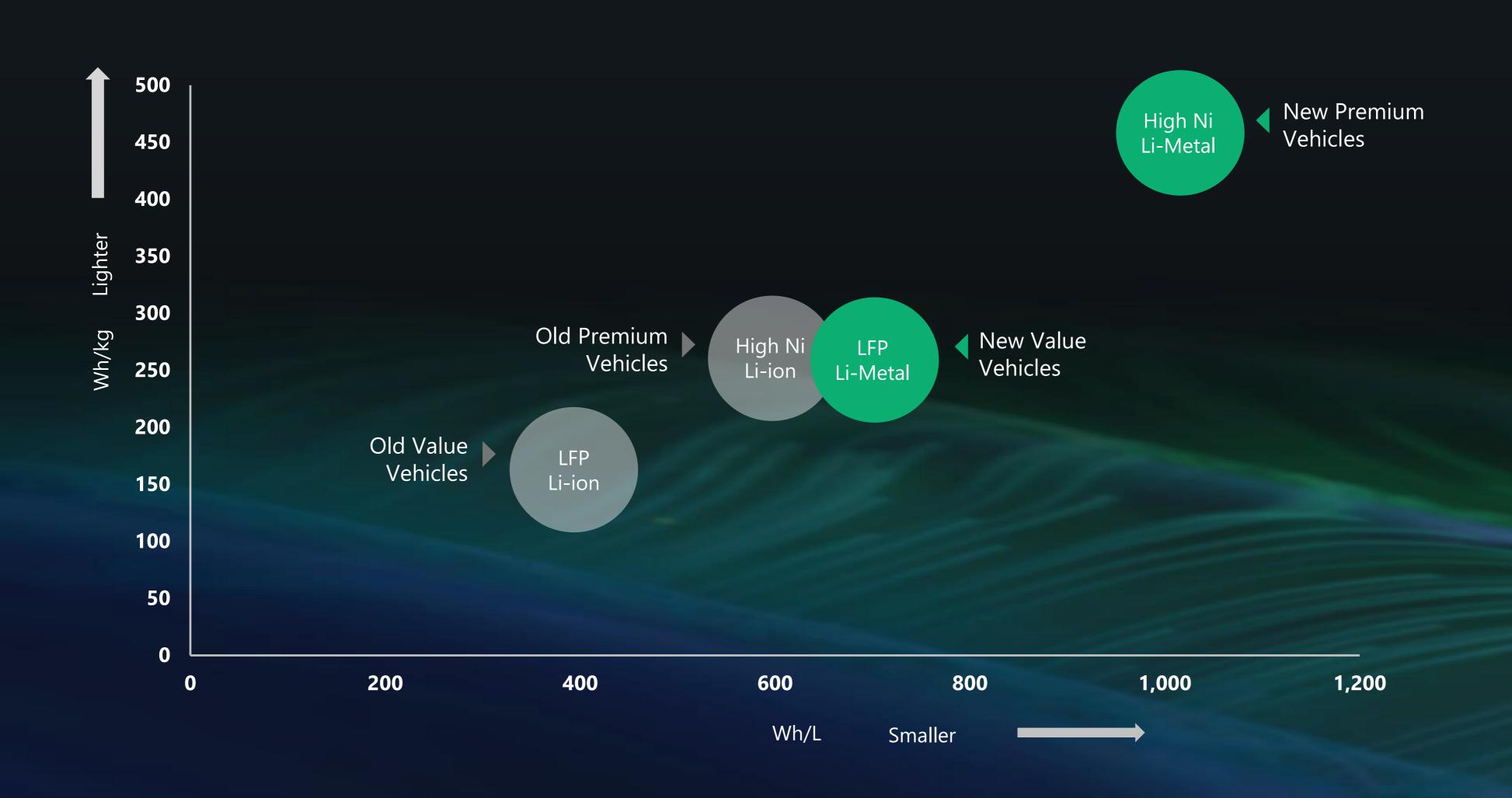
### A Step-change from Li-ion Batteries



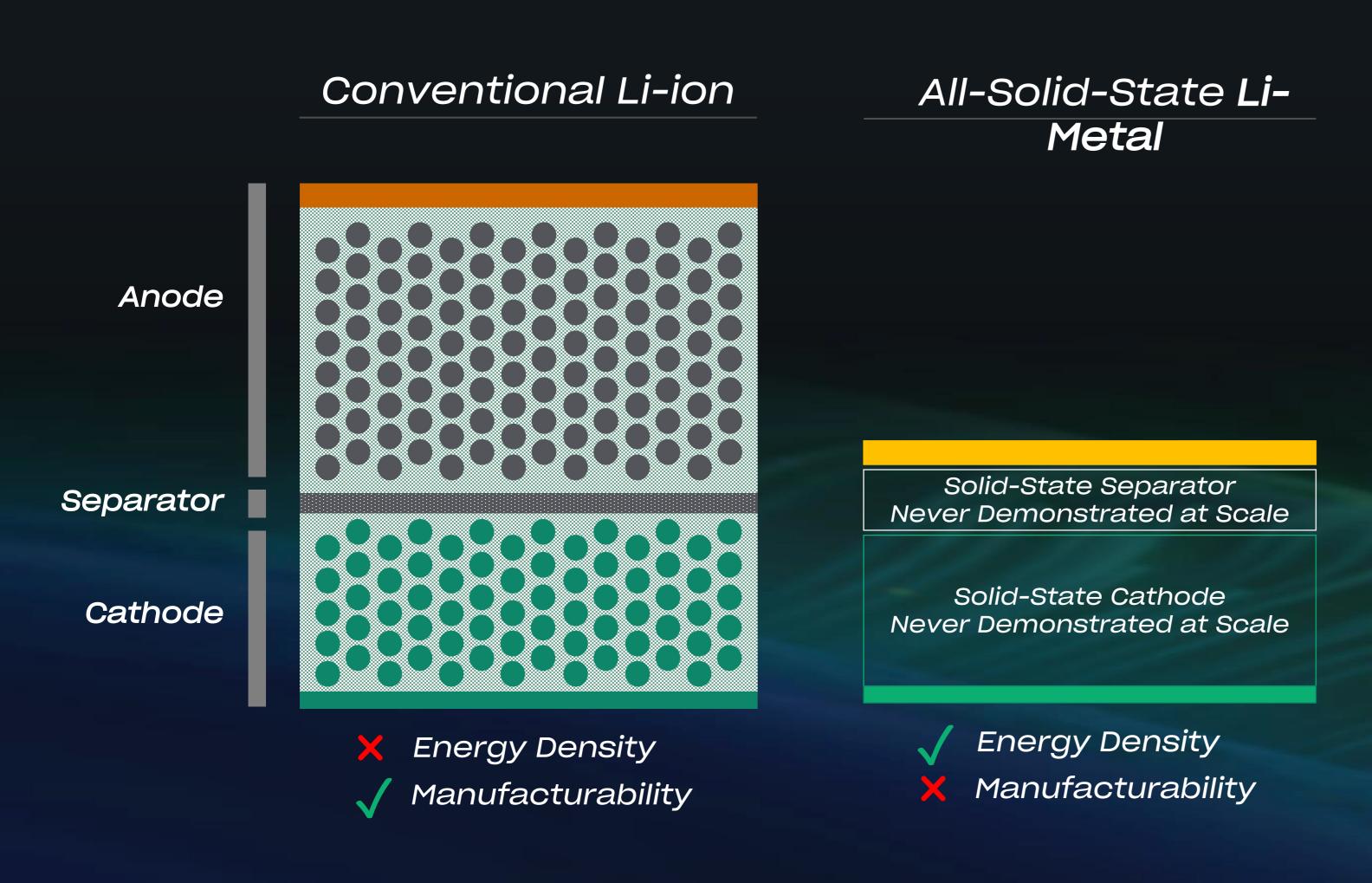
Transistor areal density: 2X every 18 months every 30 years

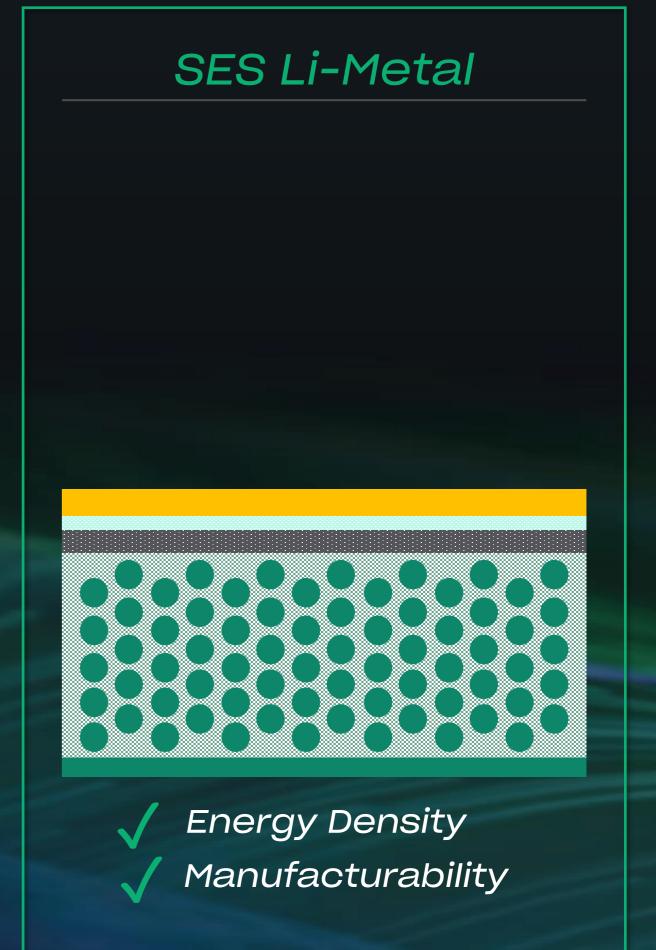
Battery energy density: 2X

#### Li-Metal is the "End-Game" for EV



### Why Liquid Li-Metal





#### Li-Metal Batteries



#### DENSER

>400 Wh/kg and 1,000 Wh/L, providing longer range for EVs and eVTOLs



#### SCALABLE

Manufacturable at scale using existing Li-ion processes



#### LIGHTER

Ultra-thin Li-Metal anode reduces battery weight



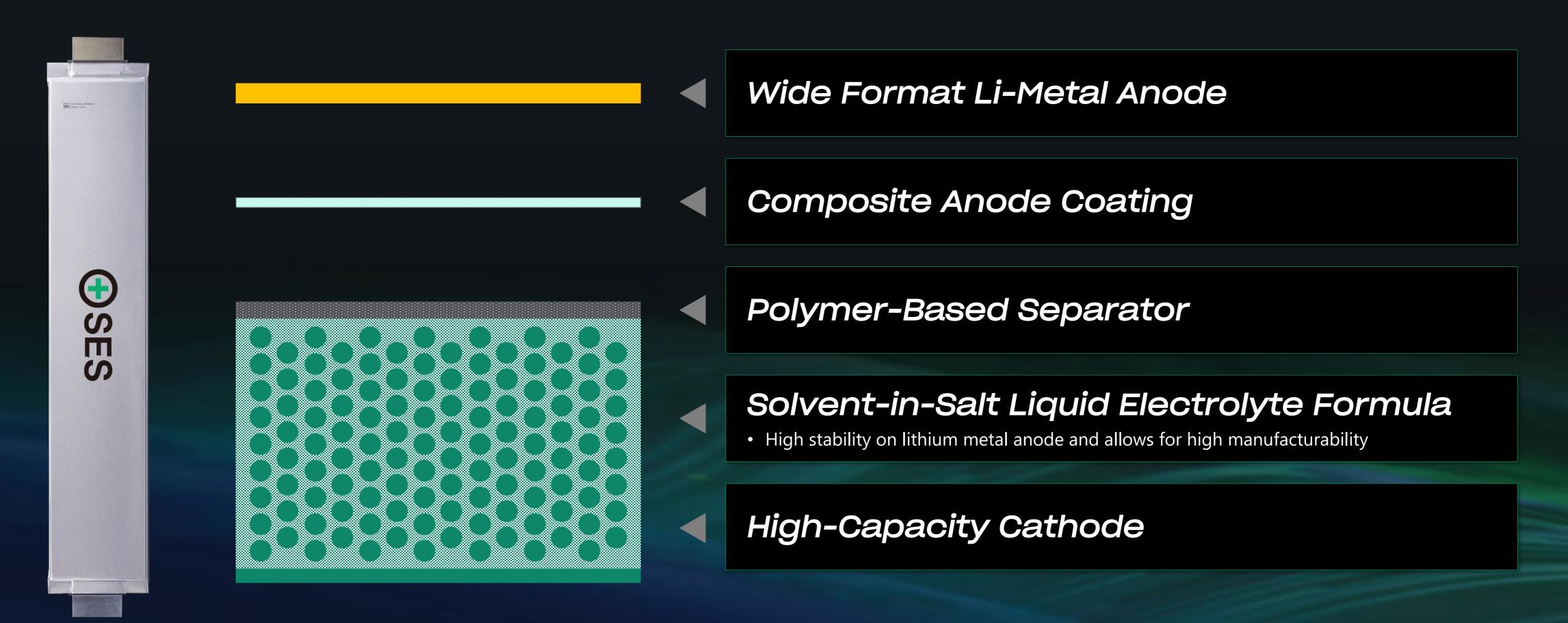
#### SMARTER

AI-powered algorithm monitors battery health

Superior Technology, Safety and Manufacturability



#### Li-Metal Batteries



Combined in a Proprietary Cell Design for Optimized Performance and Safety

### Our Intellectual Properties





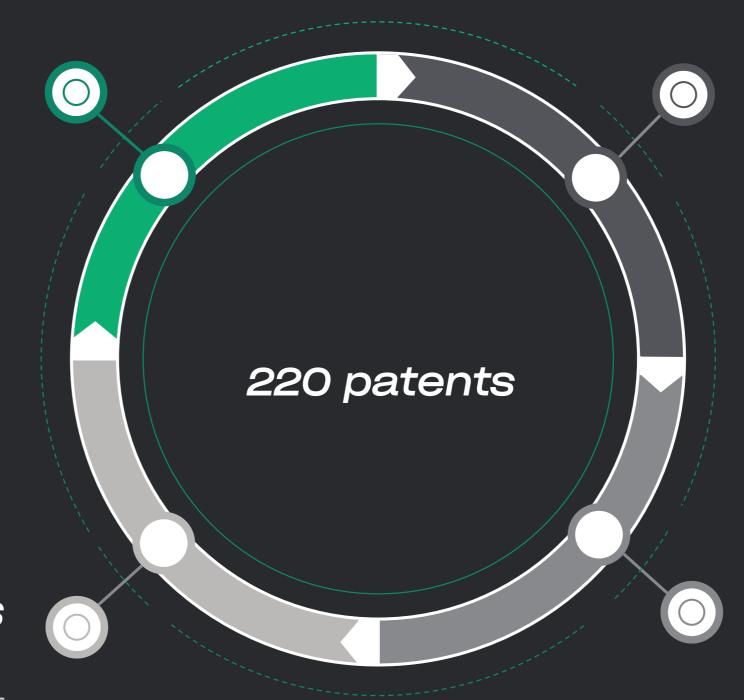
#### Materials

- Electrolyte
- Salt
- Anode
- Separator



#### Al Powered BMS

- Safety Algorithm
- Monitoring & Diagnostics





#### Cells/Packs/Modules

- Anode-Free
- Anode-Light
- High Energy Density
- Packs / Modules (Expandable & Constrained)



#### Recycling

- Mossy Lithium Recovery
- Lithium Metal Extraction

#### Hyundai Partnership Enters Next Phase



Hyundai has announced it will spend \$51 billion over three years to bolster is growth potential in EVs and new mobility business. More than half of the investment will be for R&D infrastructure and assembly lines for EVs, including software and battery technology.

Source: Reuters, March 27, 2024

# (H) SES

SES AI, Hyundai and Kia enter next phase of joint development

Two firsts for SES AI>>

- First time a Li-Metal battery manufacturer agree to build a line within an automotive OEM's facility.
- Only Li-Metal battery company to have two B-sample development JDAs underway.

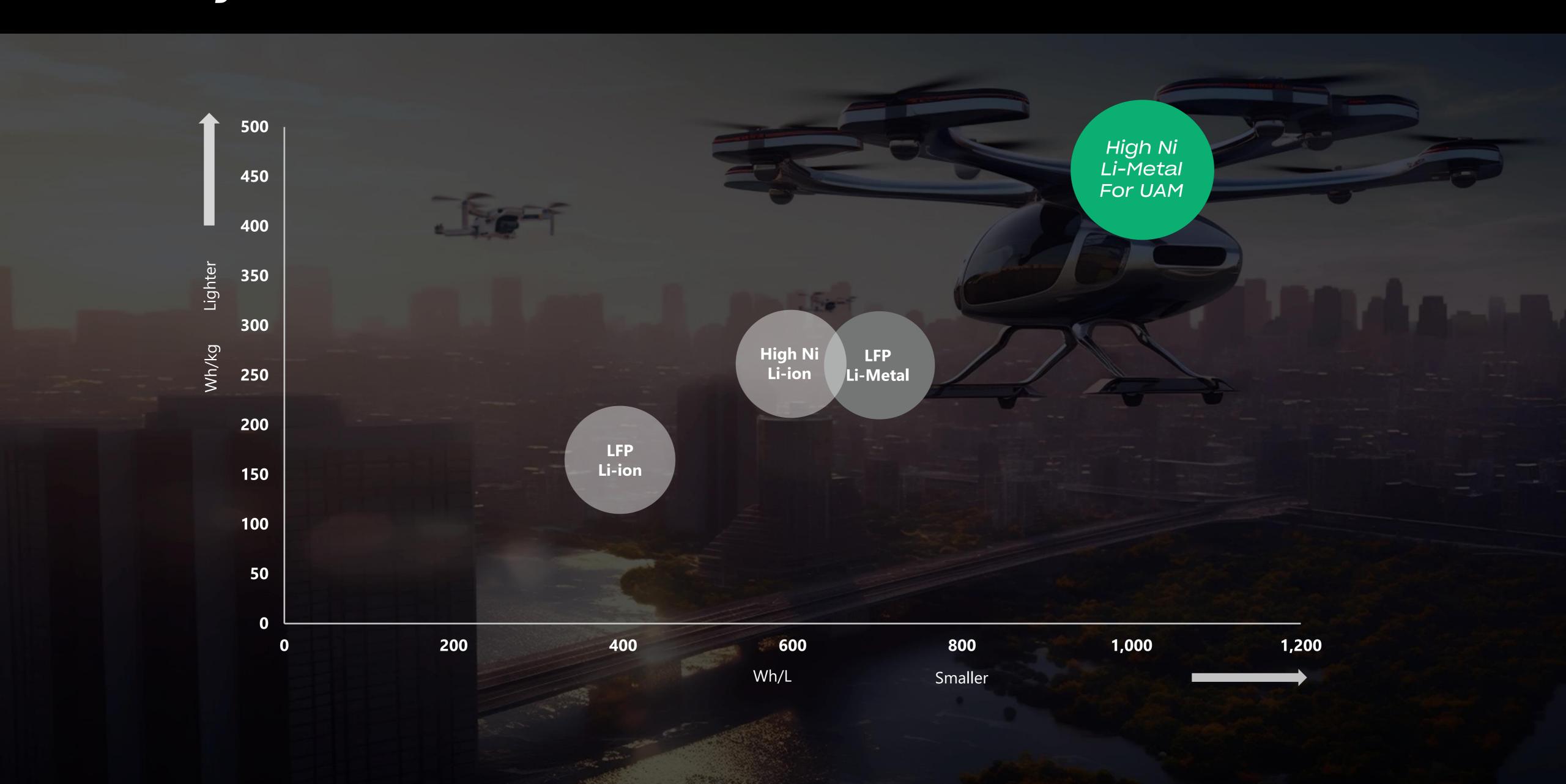


#### UAM is an Adjacent Growth Opportunity

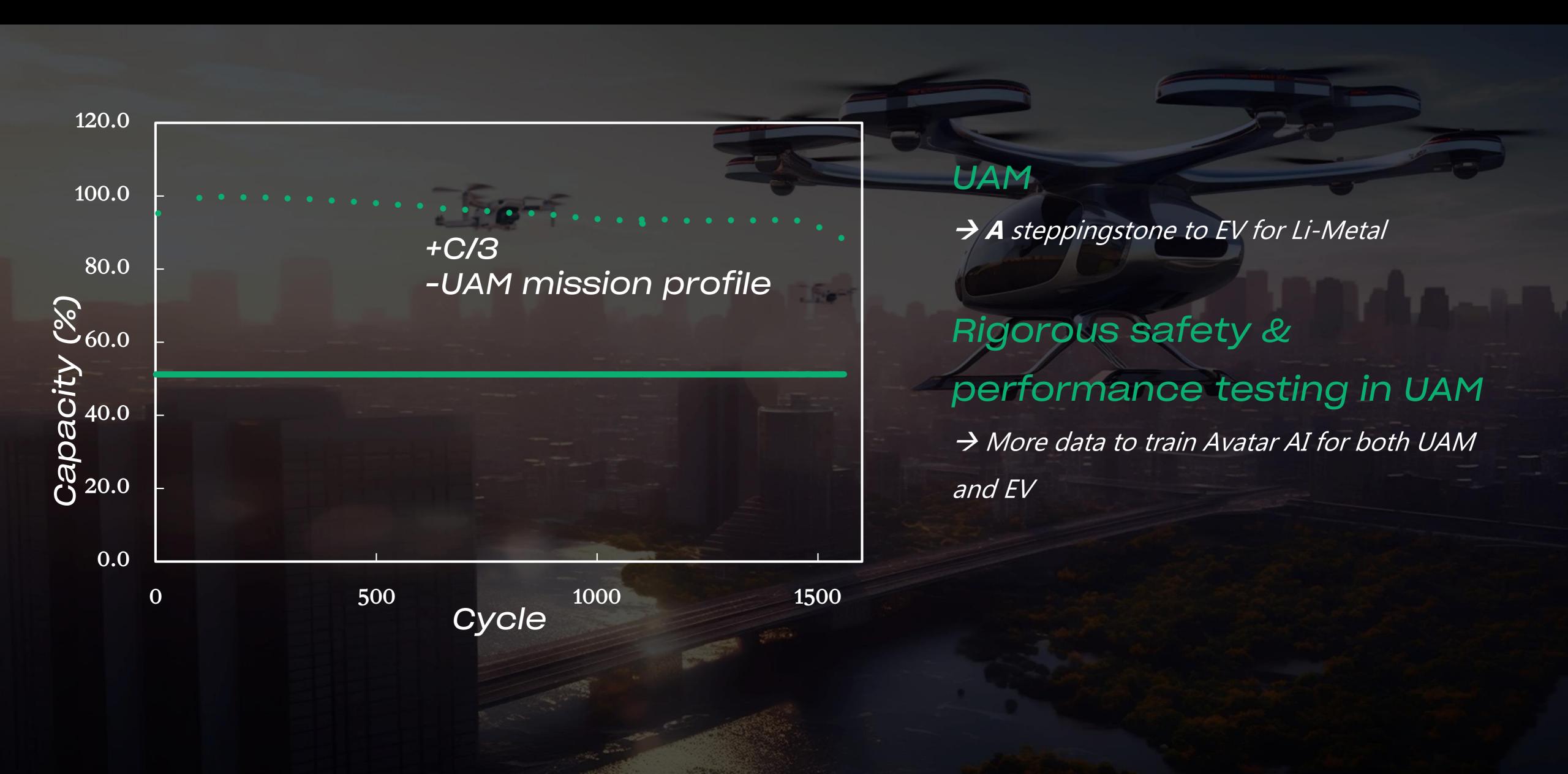
- Opportunity to be a first mover in Li-Metal for UAM, define industry standards and "make the market"; Li-Metal fundamentally changes the UAM market economics.
- A natural extension of current technological milestone and R&D achievements with automotive OEMs; EV B-samples are equivalent to UAM commercialization.
- Synergy with EV roadmap opens an additional TAM of \$30bn by 2030 with relatively low incremental investment.
- Generates revenue earlier than anticipated in 2025 while providing proof of concept for EV + data collection and training of Avatar AI.
- Signed a growing number of cell sampling and supply agreements with the top 5 UAM OEMs; working with OEMs on pack development and certification.



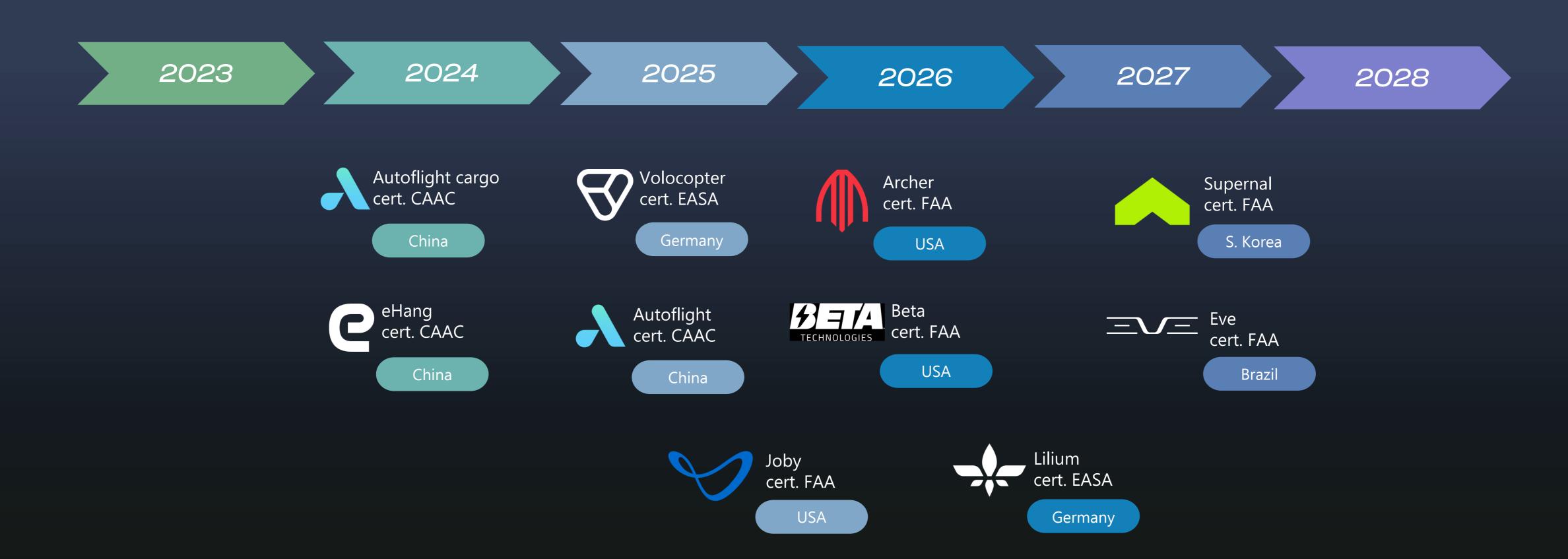
# Why Li-Metal for UAM

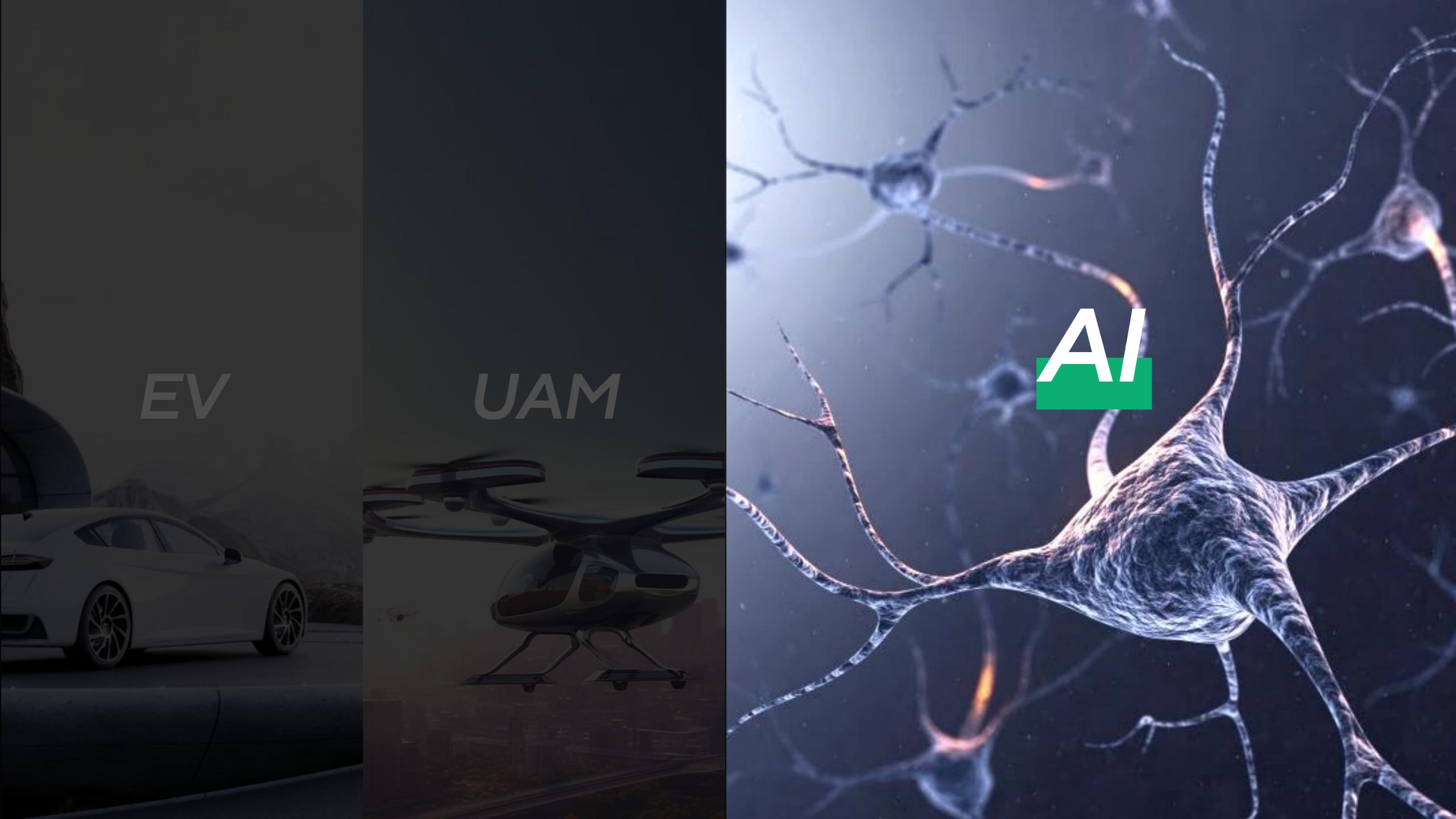


#### Li-Metal is a Perfect Fit for UAM

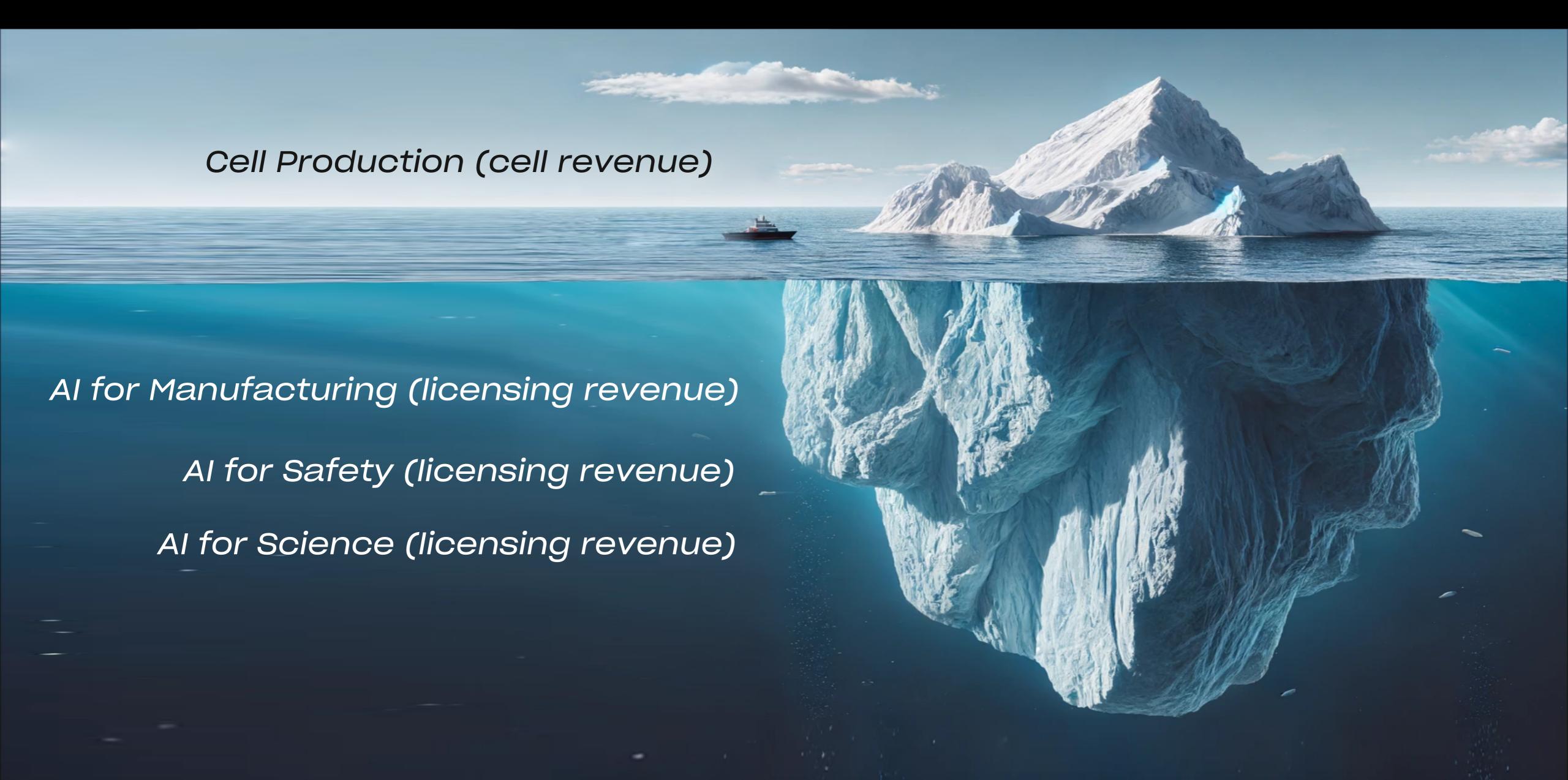


#### UAM is Faster than EV for New Battery Technology





# Al for Manufacturing, Safety, and Science



# Al for Manufacturing, Safety, and Science

Al for Manufacturing & Safety

A → Predict incident and achieve near 100% safety guarantee for EV/UAM

Al for Science

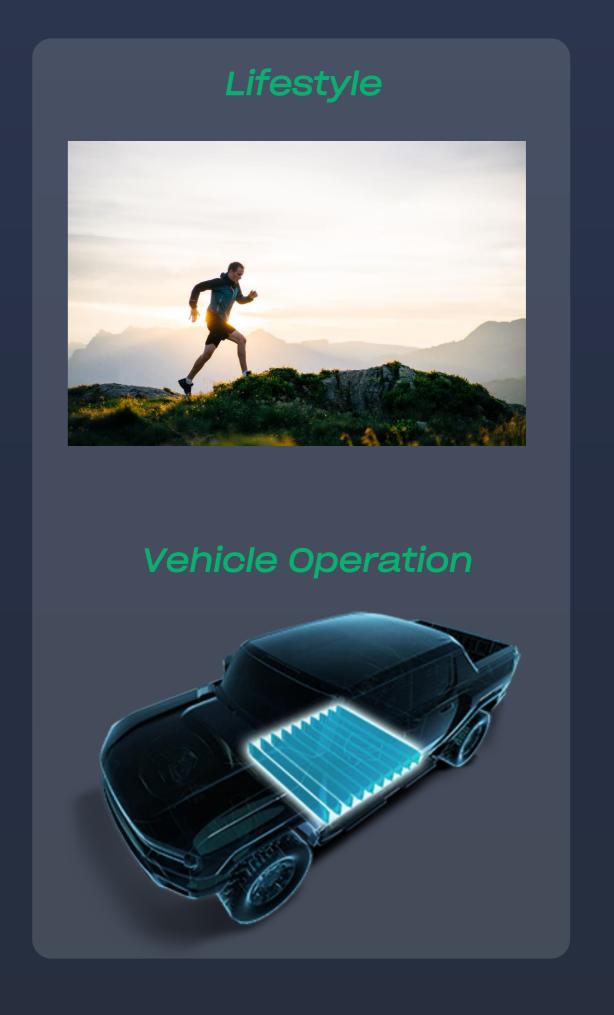
A → Accelerate development of future battery electrolyte material for EV/UAM

# Al for Manufacturing & Safety (Avatar)

Battery = Person







### Al for Manufacturing & Safety (Avatar)

	2022	2023	2024 (forecast)
Cell manufacturing quantity	<1,000 per year	500-1,000 per month	>1,000 per month per line
Quality check points per cell	200	600	1,500 (incl. imaging data)
Avatar AI incident prediction accuracy	<60%	92%	95%

Amount of training data: 15,000 Li-Metal cells (June 2024)

### Al for Manufacturing & Safety (Avatar) - SES Al Cares

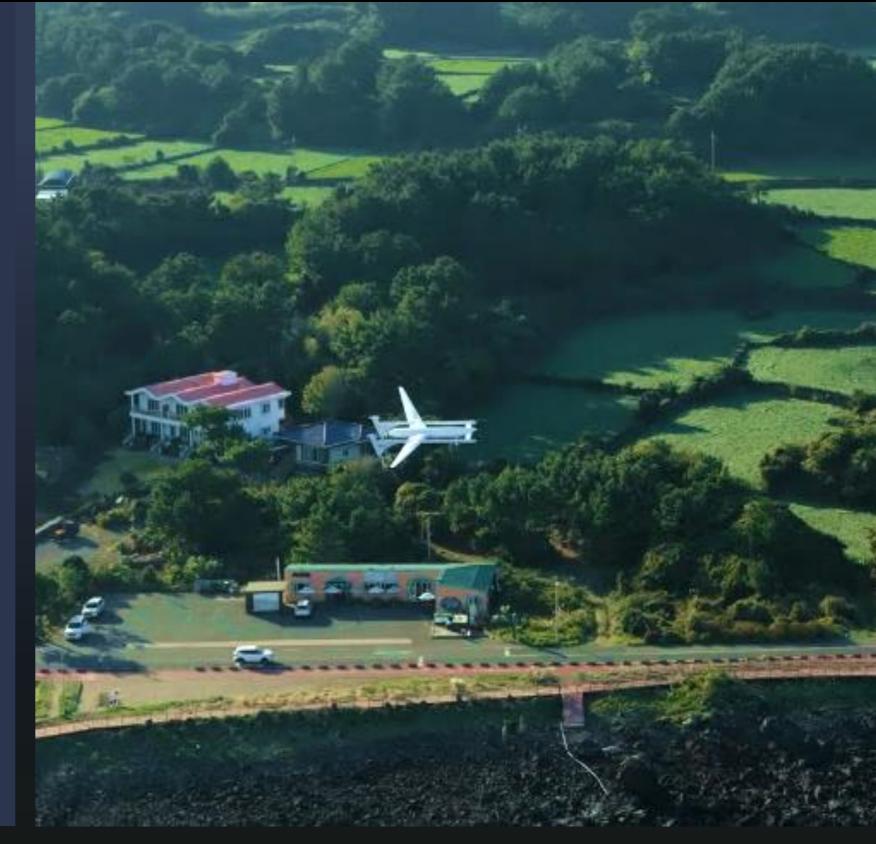
Actual flight data (July 2024)

Avatar on Li-Metal:

>100 flight

Avatar on Li-ion (same mission profile):

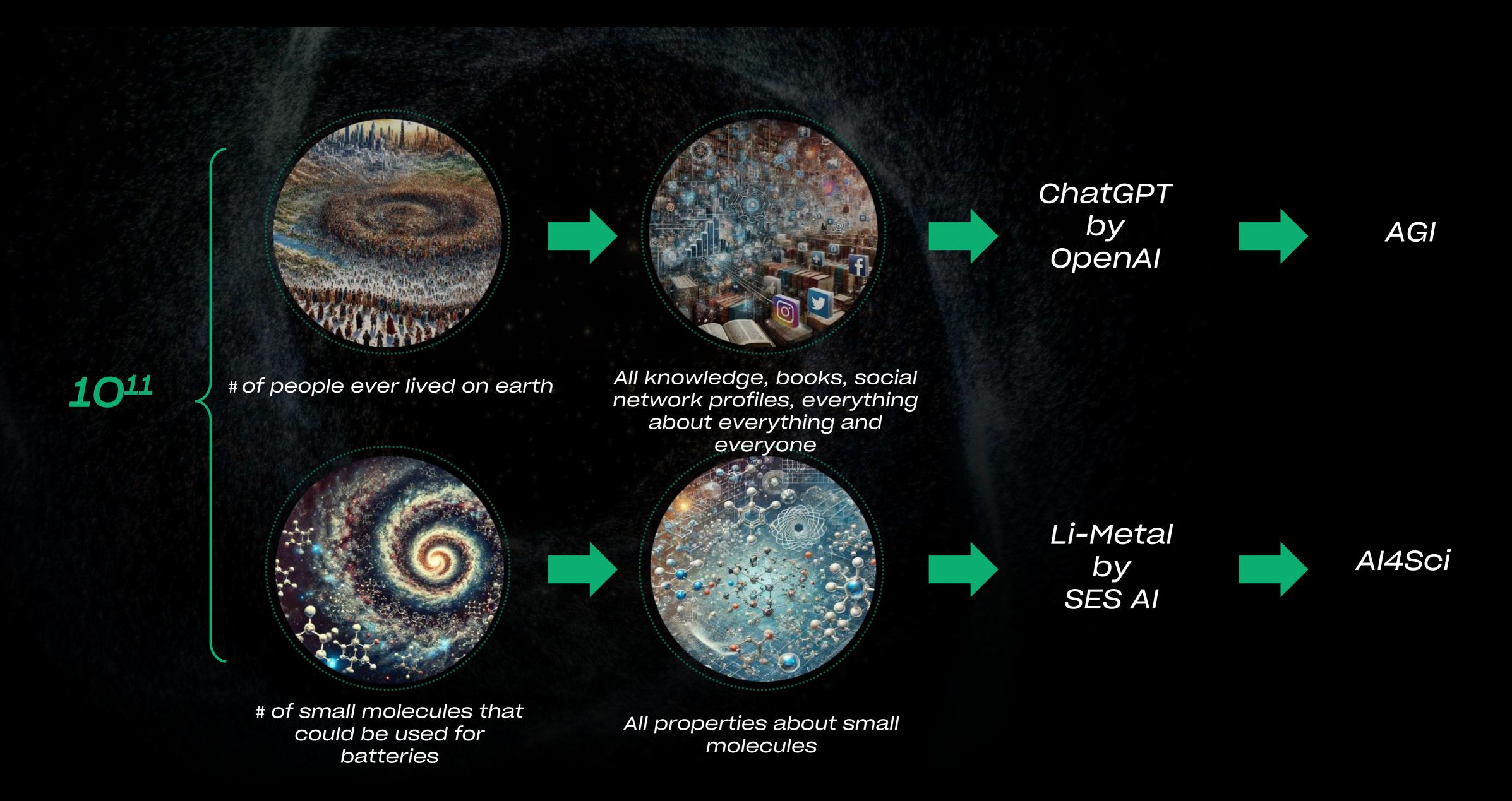
>50 flight hours

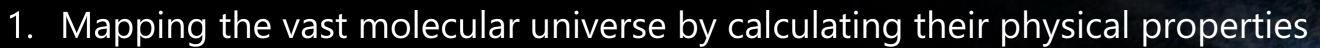








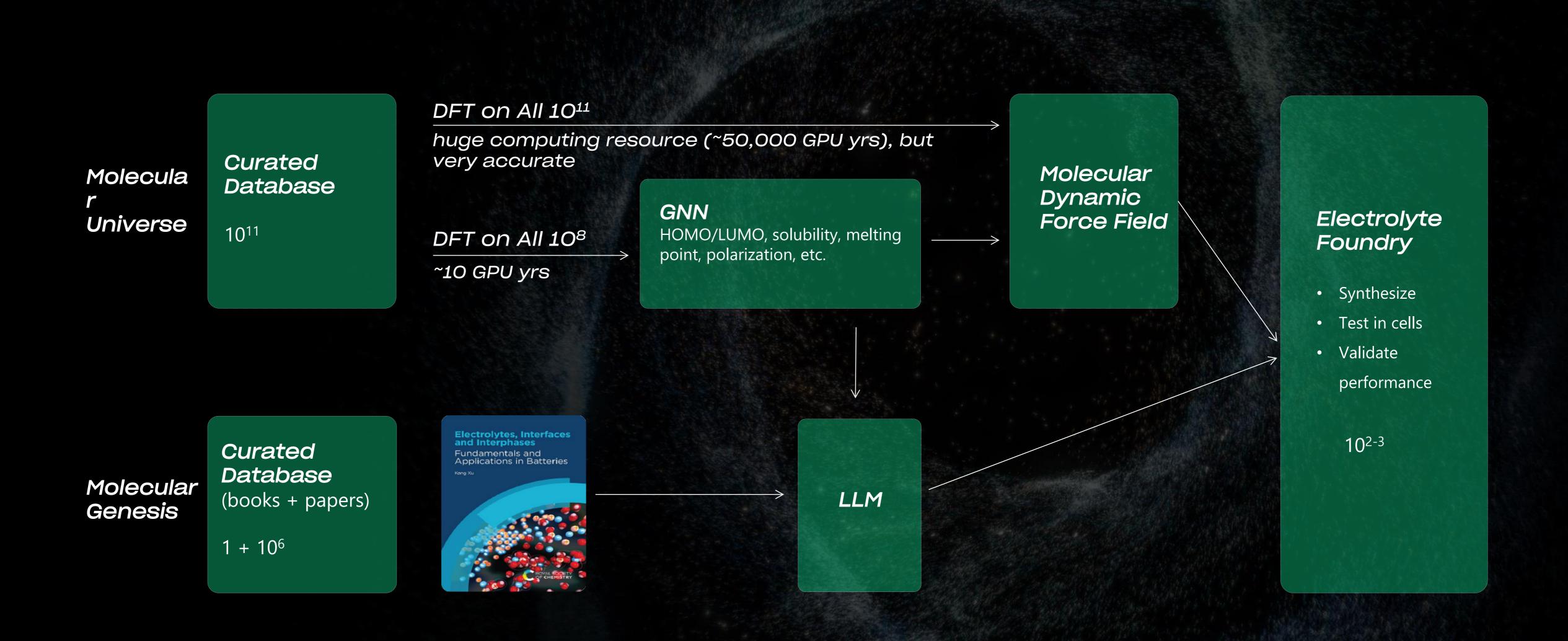


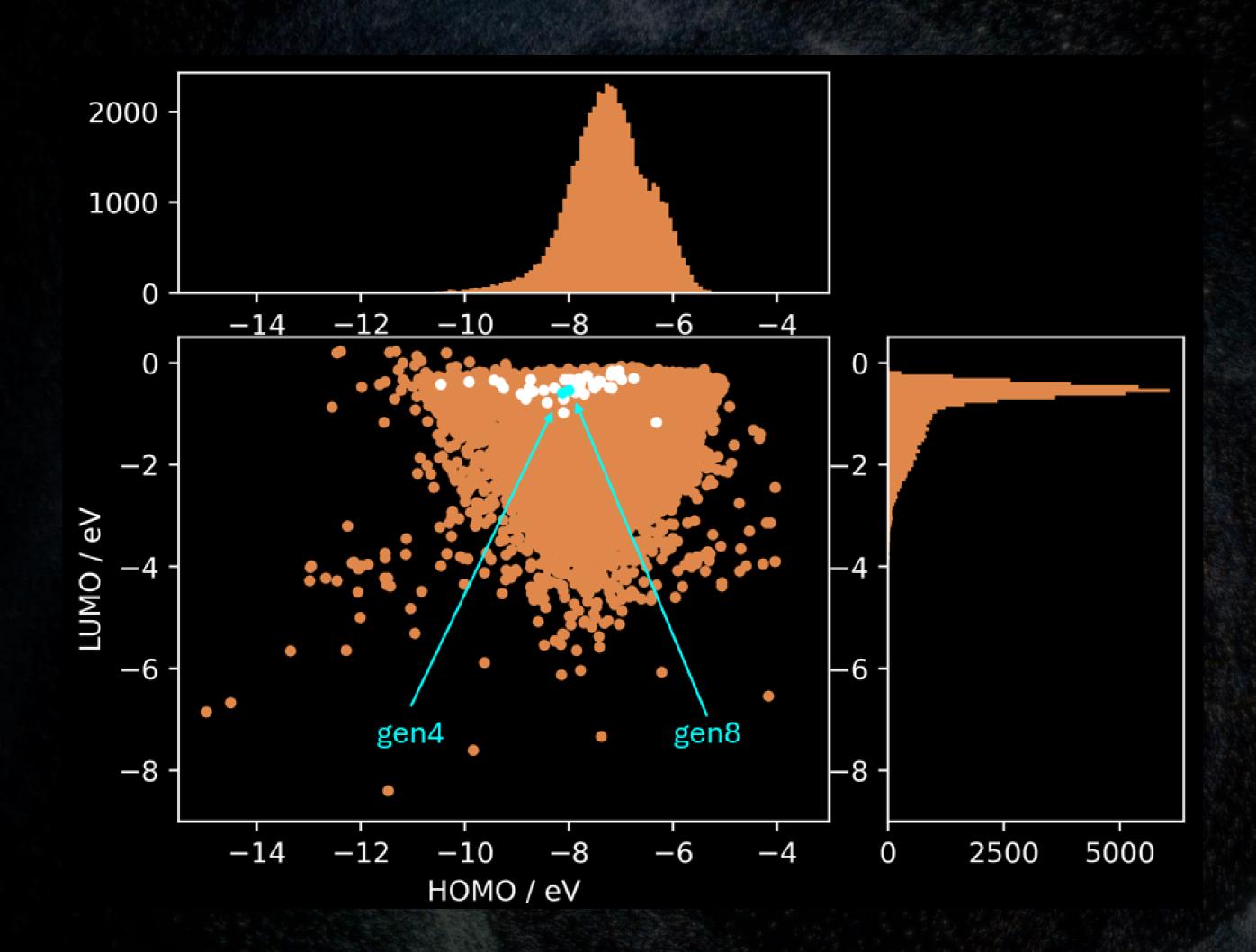


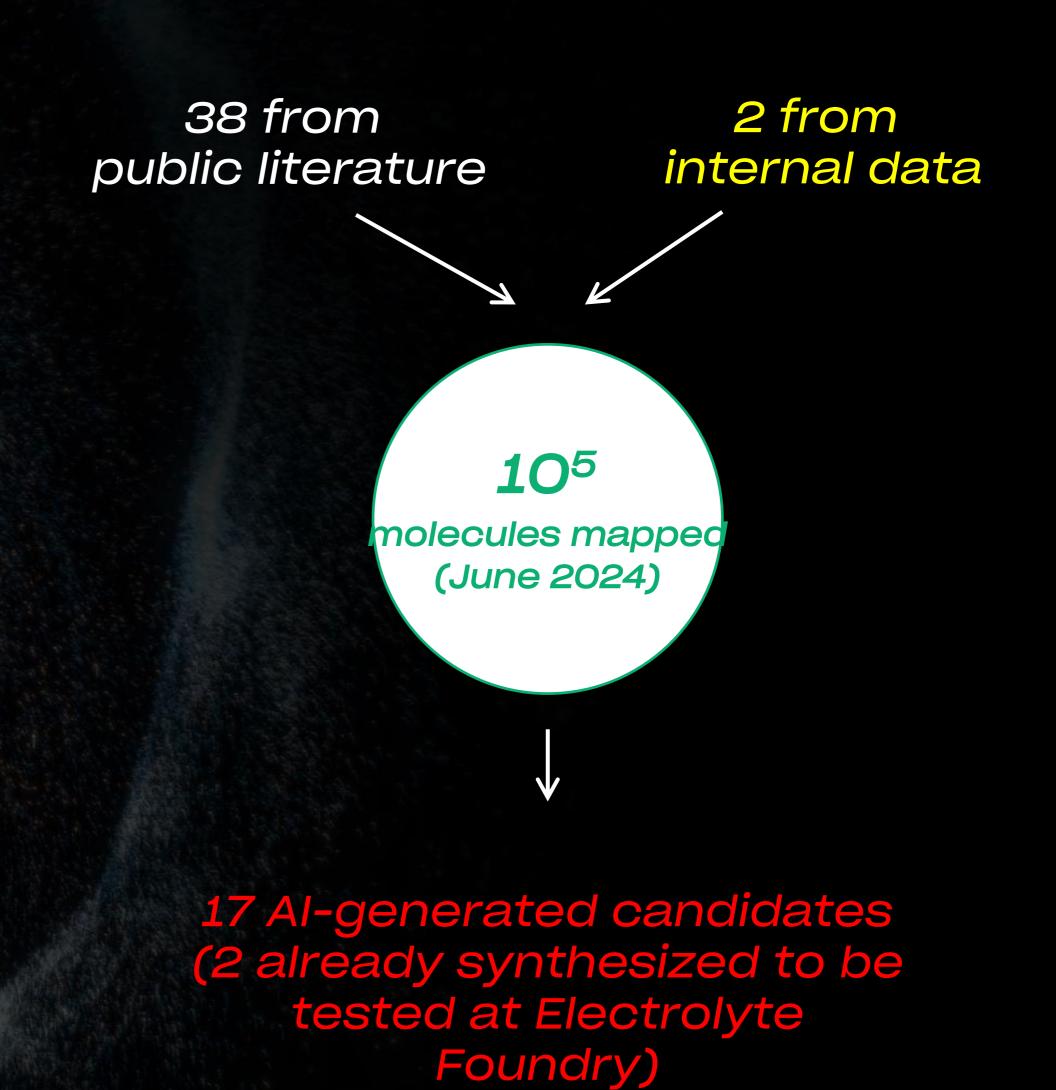
2. Training AI/ML models with physical properties of molecules to further filter/generate new molecules

3. Synthesizing new molecules and testing in electrolytes and real cells at Electrolyte Foundry

- Universe of molecules
- 10<sup>60</sup> Universe of small molecules (< 30 atoms)
- 10<sup>11</sup> Universe of small molecules (< 20 atoms) could be used for batteries
- Number of molecules studied by the battery industry since 1980s









Property database

Molecule database



Source computing resource to compute molecular properties

Breaking Li-Metal electrolyte coulombic efficiency record of 99.6% set by human

Train AI/ML models, screen/synthesize/validate molecules in electrolyte/full cells

#### 2024 – A Key Year in Commercialization of Li-Metal Batteries



Focus on EV B-sample JDAs

Build and operate new B-sample lines; address cell manufacturing quality; improve cell practical safety; accelerate future roadmap electrolyte development Build and ship UAM cells to customers

UAM cells will be our first commercial products and we are building a dedicated UAM Li-Metal line and expect to ship our first batch of cells to customers

Improve Avatar AI incident
prediction

Our ultimate goal is a nearly 100% safety guarantee for EV and UAM applications and we expect to achieve 95% and continue to pre-train our Avatar models with all EV A-sample Li-Metal cells and train with new EV B-sample and UAM cells

# APPENDIX



#### Cell Test Data Summary Table (4Ah vs. 33Ah vs. 100Ah)

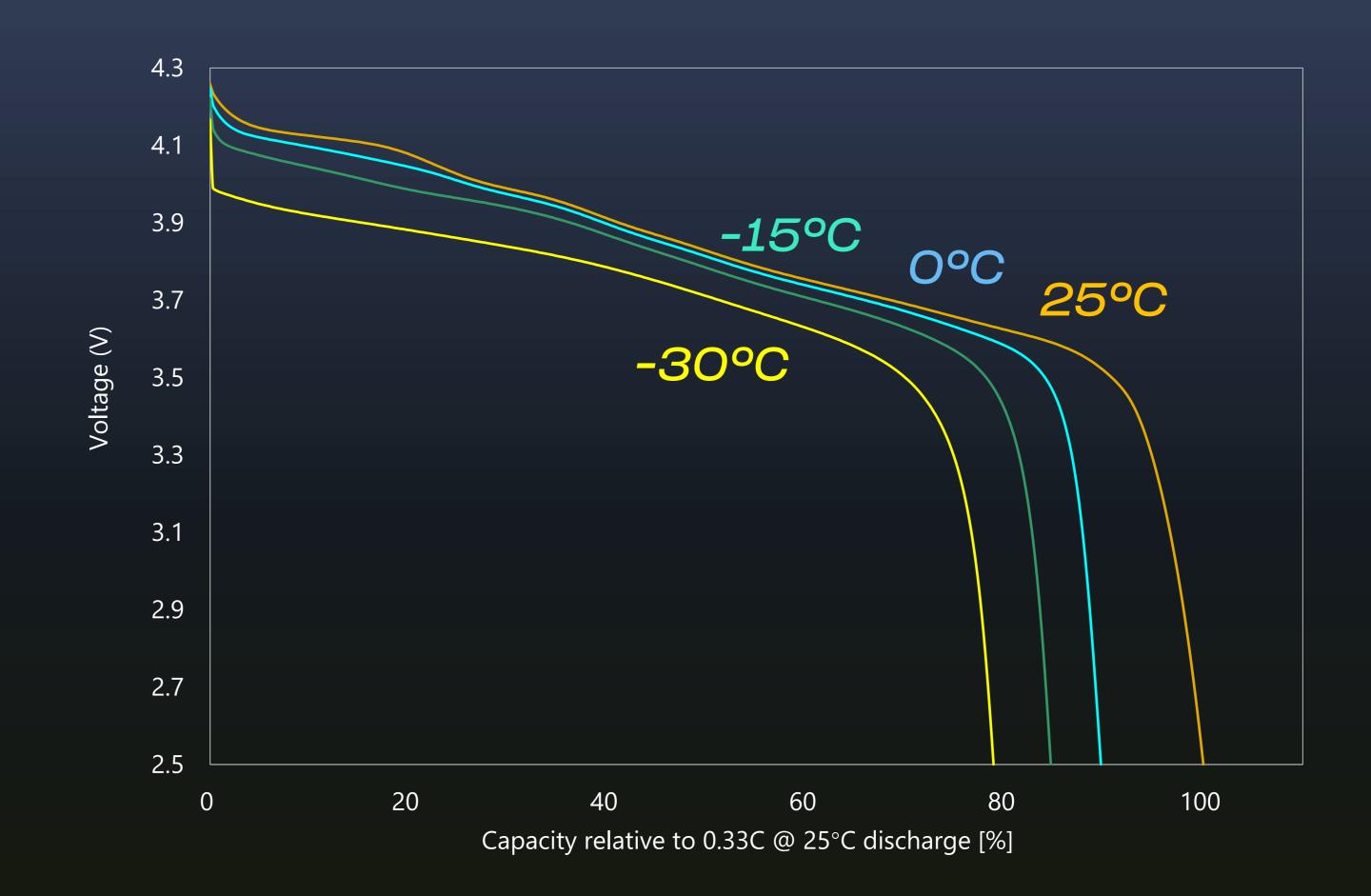
				⊕ SES	
	Cell Type	4.2Ah (25+ layer) at 25ºC Drone Design	33Ah (25+ layer) at 25℃ UAM Design	105.8Ah (32+ layer) at 25ºC EV Design	
	Low power C/20	>375 Wh/Kg	> 391 Wh/Kg	> 399 Wh/Kg	
Room Temperature (25°C)	Low power C/10	375 Wh/Kg (= 700 Wh/L at SOC 0%)	391 Wh/Kg ( = 742 Wh/L at SOC 30%)	399 Wh/Kg (= 862 Wh/L at SOC 30%)	
<b>Energy Density</b>	Medium power C/3	-	382 Wh/Kg	390 Wh/Kg (= 842 Wh/L)	
	Medium power 1C	339 Wh/Kg	363 Wh/Kg	370 Wh/Kg	
	High power 3C	-	344 Wh/Kg	351 Wh/Kg	
	High power 5C	321 Wh/Kg	-	-	
	Low power C/10	324 Wh/Kg	-	-	
Low Temperature (0°C) Energy	Medium power C/3	-	334 Wh/Kg	346 Wh/Kg	
Density	Medium power 1C	298 Wh/Kg	-	-	
	High power 5C	282 Wh/Kg	-	-	
	C/10 – C/3	600 cycles (80% retention)	440 cycles (80% retention)	>300 ongoing	
	C/3 – C/3	300 cycles (80% retention)	> 220 cycles (80% retention)	>250 ongoing	
	C/5 - 1C	700 cycles (80% retention)	> 520 cycles (80% retention)	-	
Lifetime (Ch-Dch)	SES 30 protocol - C/3 charge - UAM protocol between SOC80 to SOC50	2000 ~2100 (80% retention)	1800 ~ 1900 (80% retention)		
	SES 50. 1 protocol  - C/3 charge  - UAM protocol between  SOC100 to SOC50	800 ~ 900 (80% retention)	700 ~ 800 (80% retention)		
Fast Charging	Charge at 4C	80% in <15min	80 % in < 15 min	-	
	Thermal	Electrolyte is stable with Li above Li melting point	PASS TEST	PASS TEST	
Safety	Nail Penetration	PASS TEST	PASS TEST	PASS TEST	
	Overcharge	PASS TEST	PASS TEST	PASS TEST	
	External Short Circuit	PASS TEST	PASS TEST	PASS TEST	
Certification		UN38.3	UN38.3	UN38.3	
Manufacturability		(highly similar process to Li-ion)			
Tested Operating Temperature		-30 °C to 60 °C	-30 °C to 60 °C	-10 °C to 45 °C	

#### Low Temperature Performance (100Ah Cell)



Excellent performance in cold weather

Retains 80% capacity (C/3 at 25°C) even at - 30°C

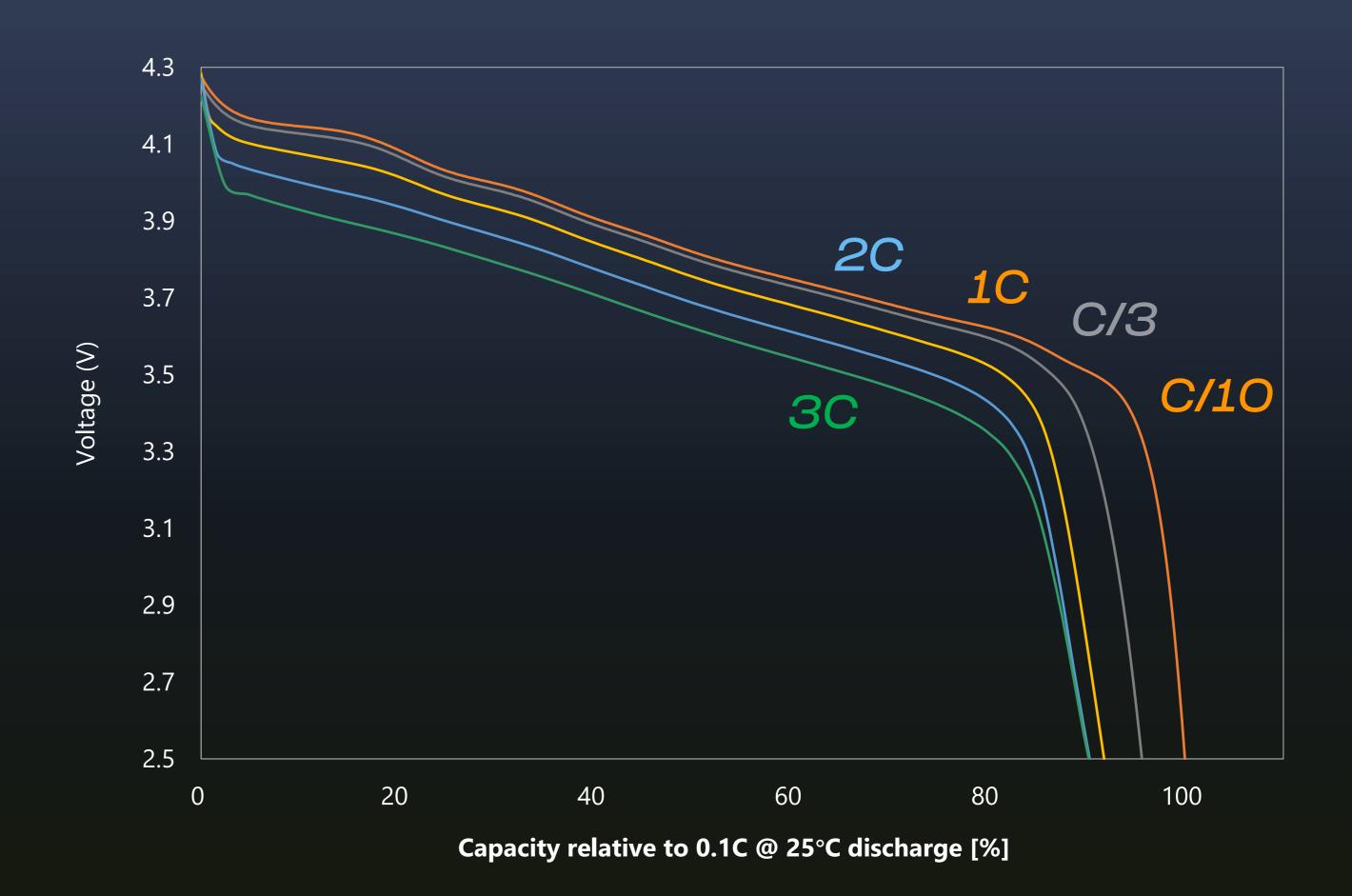


# High Power Performance (100Ah Cell)



Excellent performance in high power requirements

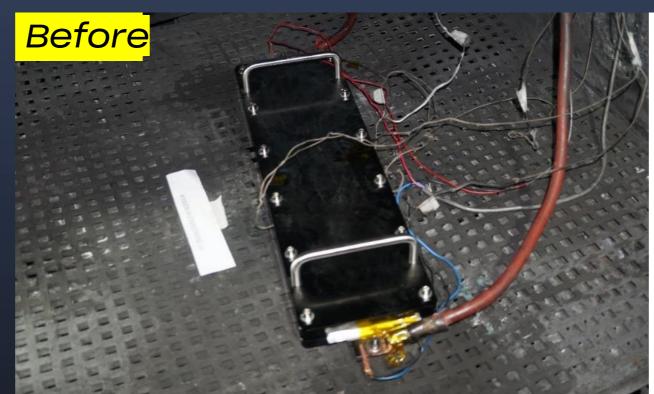
Retains 90% capacity (C/3 at 25°C) even at 3C

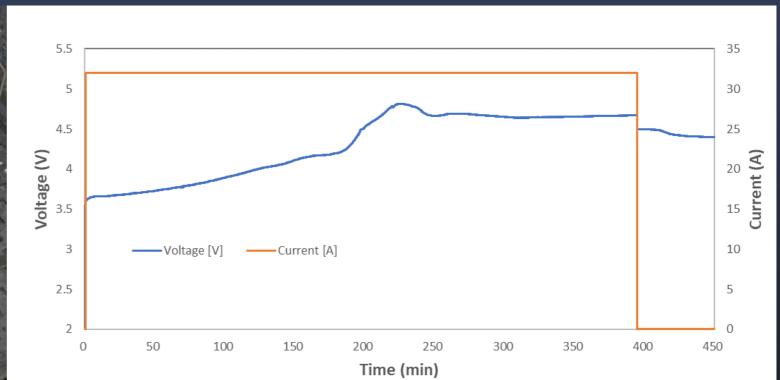




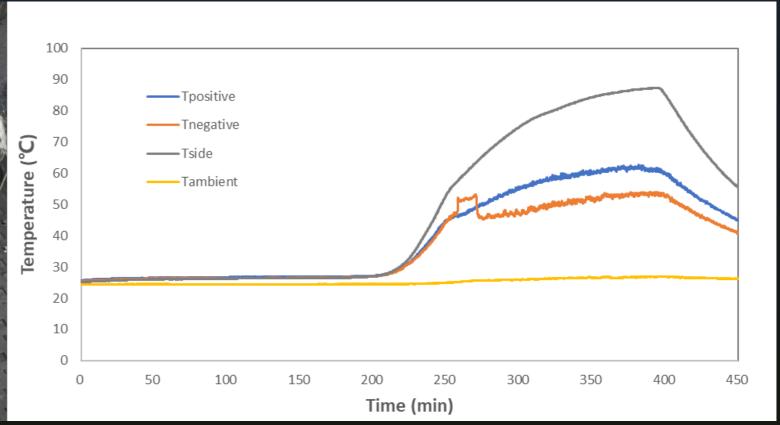
Overcharge 
√ Passed

(3<sup>rd</sup> party test)









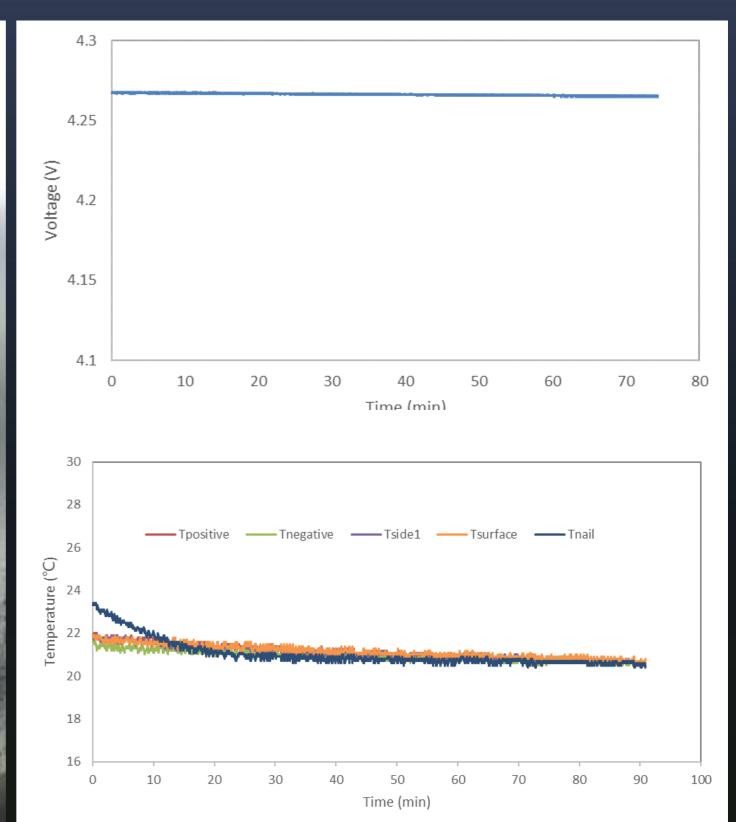


Nail Penetration

√ Passed

(3<sup>rd</sup> party test)





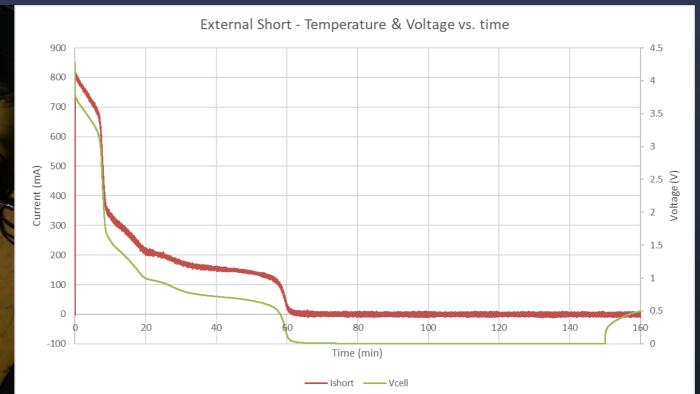


External Short Circuit

✓ Passed

(3<sup>rd</sup> party test)









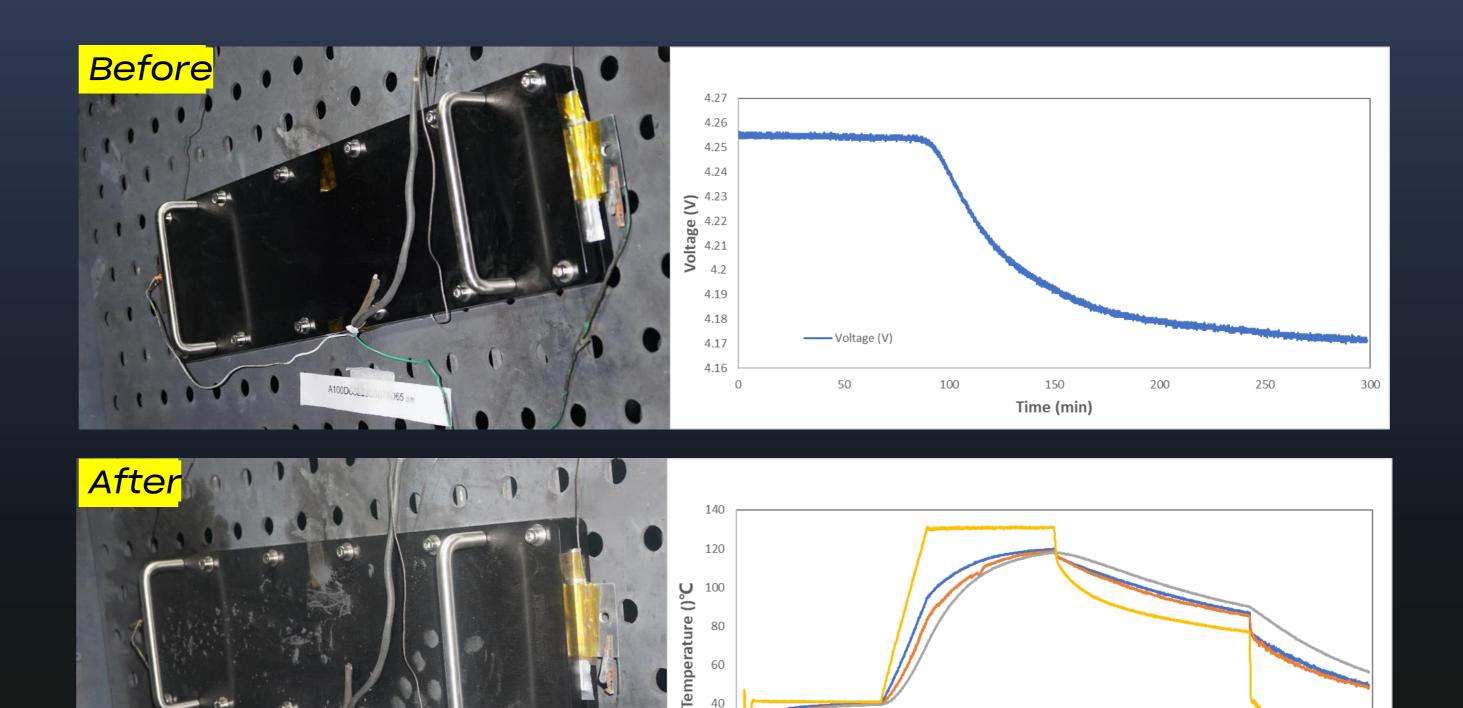


Thermal Stability



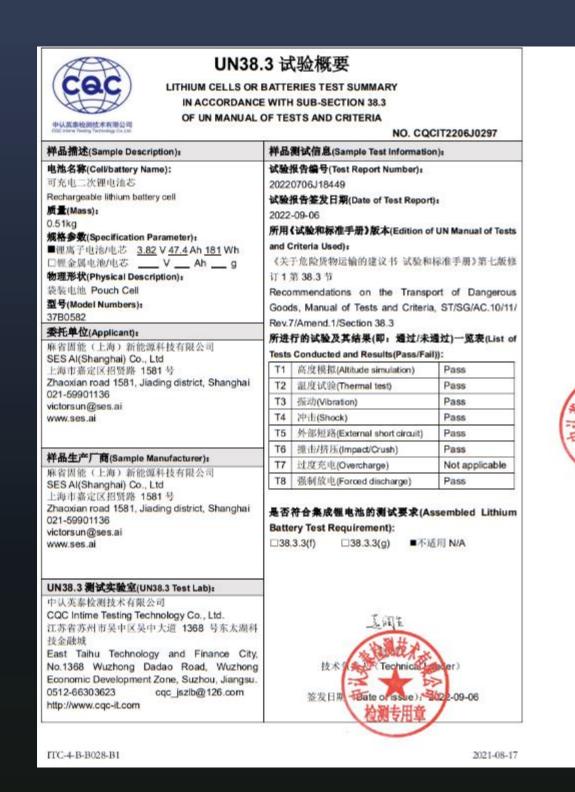
√ Passed

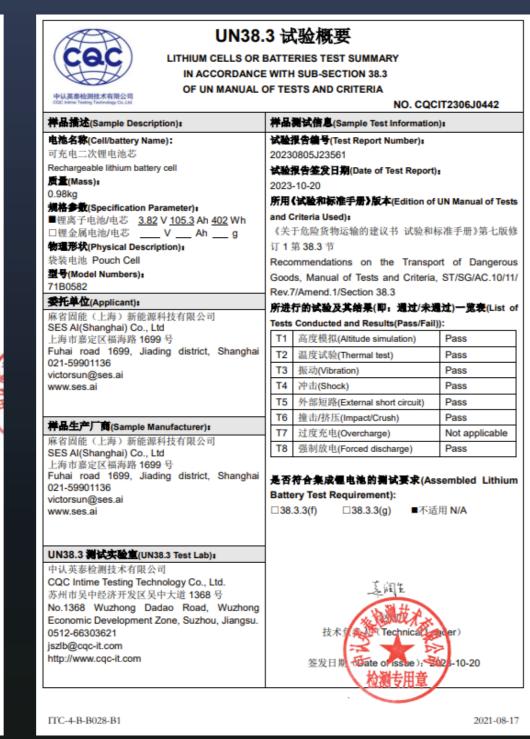
(3<sup>rd</sup> party test)



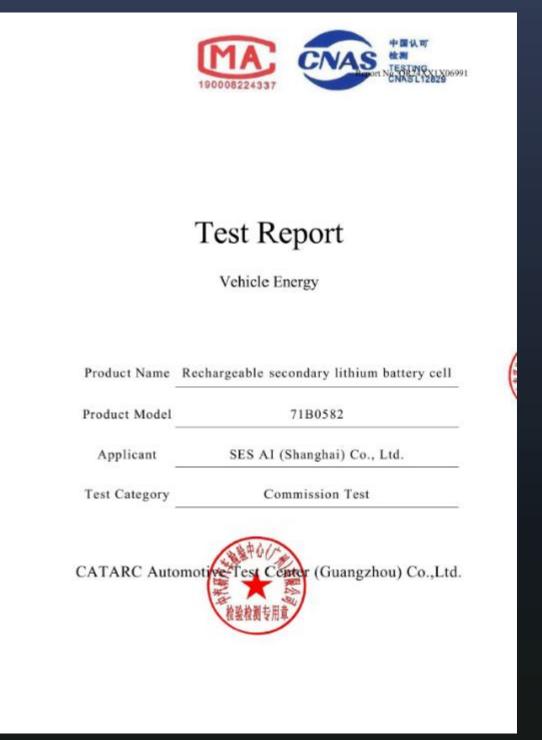
Time (min)

#### UN38.3 & GB38031 (50Ah & 100Ah Cell)









50 Ah UN 38.3: Passed 100 Ah UN 38.3: Passed

50 Ah GB38031: Passed 100 Ah GB38031: Passed **ESES**Beyond Li-ion<sup>TM</sup>