

OCTOBER 2024

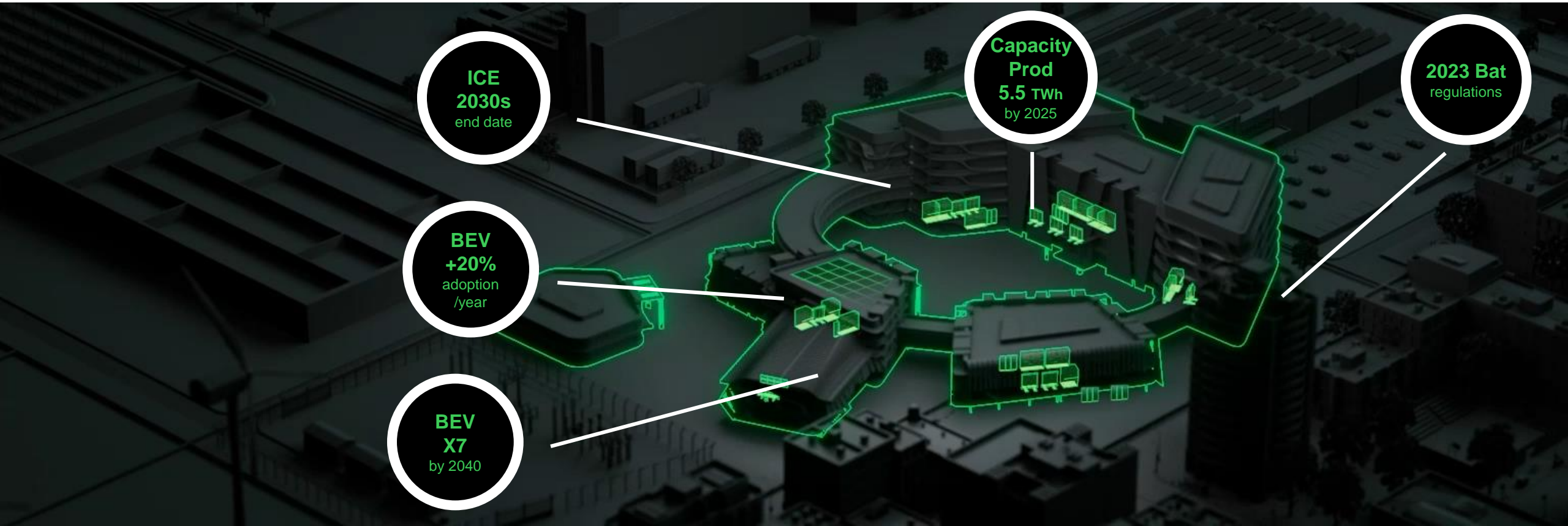
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# Verkor: Connecting the Digital Thread across EV battery manufacturing

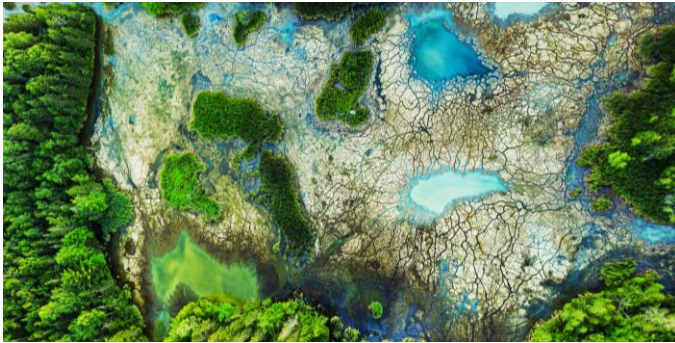
Guillaume Ogier, Digital OT - Operational Technology Manager, Verkor

Francois Verkindt, EV Battery Segment Lead, Schneider Electric

# EV Battery Market Continues To Grow Rapidly And Drastically



# Key Trends Driving The EV Battery Market



## Environmental Awareness

- Resource efficiency
- Circularity
- Energy efficiency in an energy-intensive industry



## Advancements in Technology

- Efficiency improvement
- Transparent data throughout the value chain
- Traceability

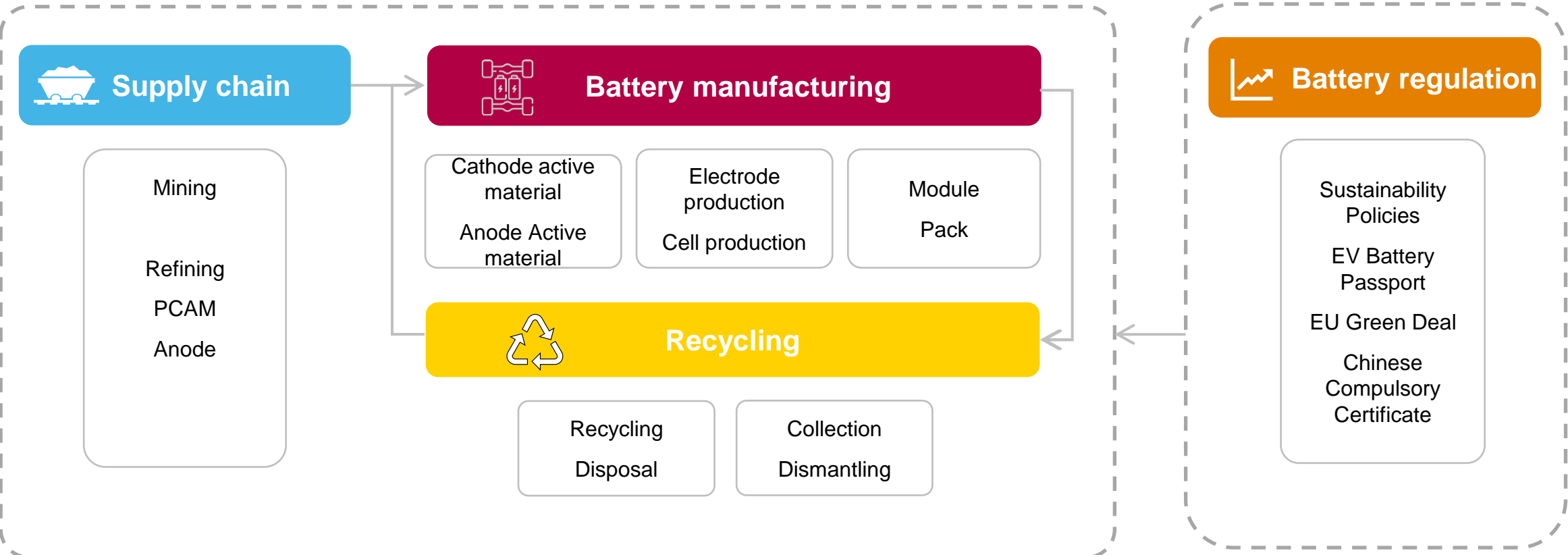


## Regulations & Incentives

- Incentives like IRA (US)
- European battery passport
- Chinese state subsidies

# Navigating the Complexities of the EV Battery Value Chain

Understanding the interconnected stakeholders and market dynamics in the ecosystem



# Meeting The Challenges To Higher EV Battery Plant Performance

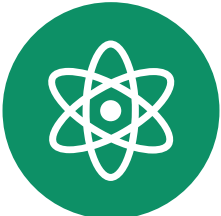
The key to addressing the hurdles through 5 pillars across the EV battery ecosystem



Time to Market



Production Ramp up



Quality



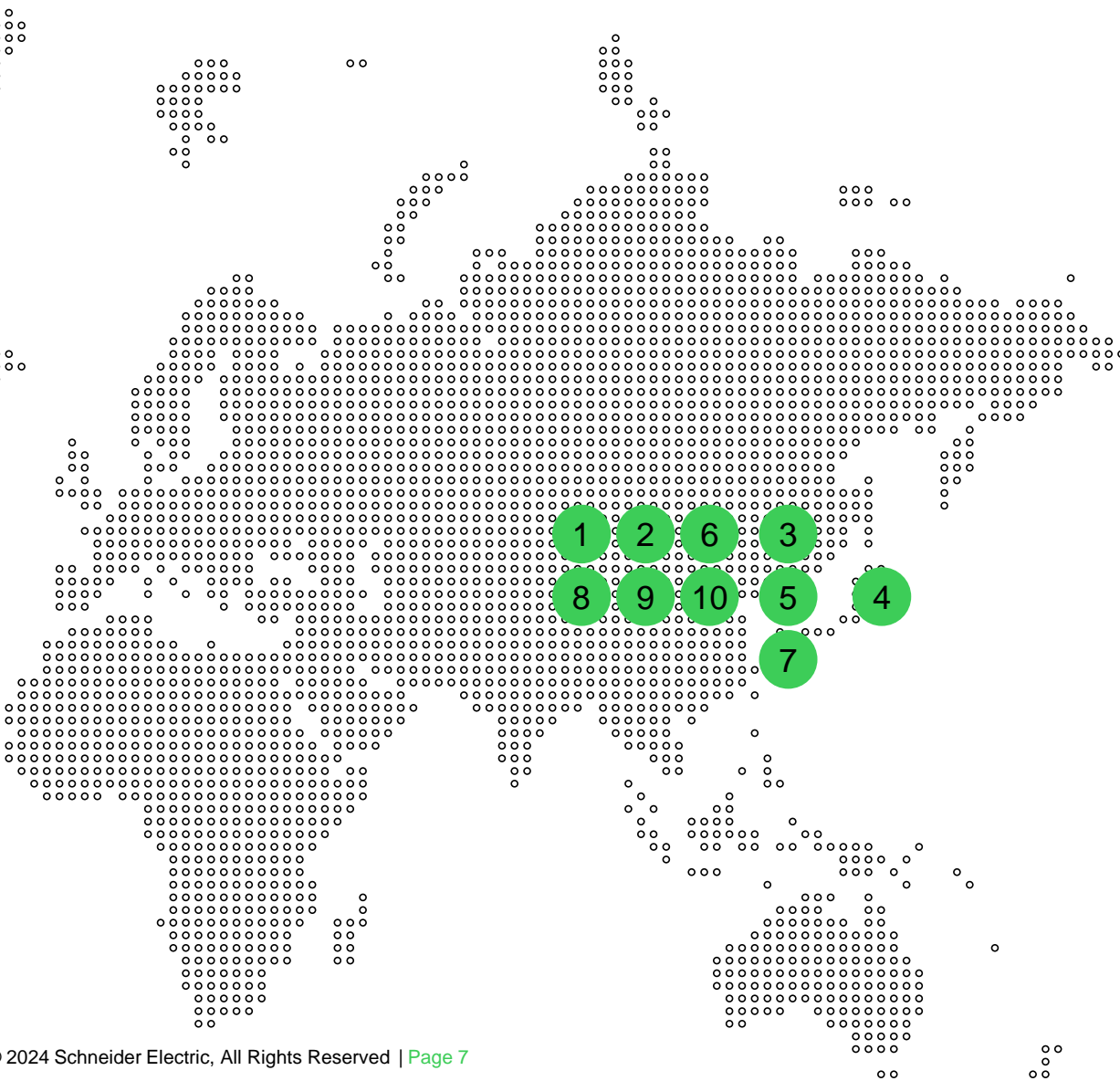
Energy Efficiency



Sustainability



# Top 10 players in the world are in Asia



1. **CATL** China / 259.7 GWh / 36.8% market share
2. **BYD** China / 111.4 GWh / 15.8% market share
3. **LG Energy Solution** Korea / 95.8 GWh / 13.6% market share
4. **Panasonic** Japan / 44.9 GWh / 6.4% market share
5. **SK On** Korea / 34.4 GWh / 4.9% market share
6. **CALB** China / 33.4 GWh / 4.7% market share
7. **Samsung SDI** Korea / 32.6 GWh / 4.6% market share
8. **Gotion (Guoxuan)** China / 17.1 GWh / 2.4% market share
9. **EVE** China / 16.2 GWh / 2.3% market share
10. **Sunwoda** China / 10.5 GWh / 1.5% market share

# Major European Investments in Battery Space


 **VERKOR** | Batteries. Now for the future.  
Verkor | France | 50 GWh

 **NOVO**  
A joint venture between northvolt | V.O. & V.O.  
Novo | Sweden | 50 GWh

 **ProLogium**  
ProLogium | France | 48 GWh

 **CALB** | CALB | Portugal | 45 GWh

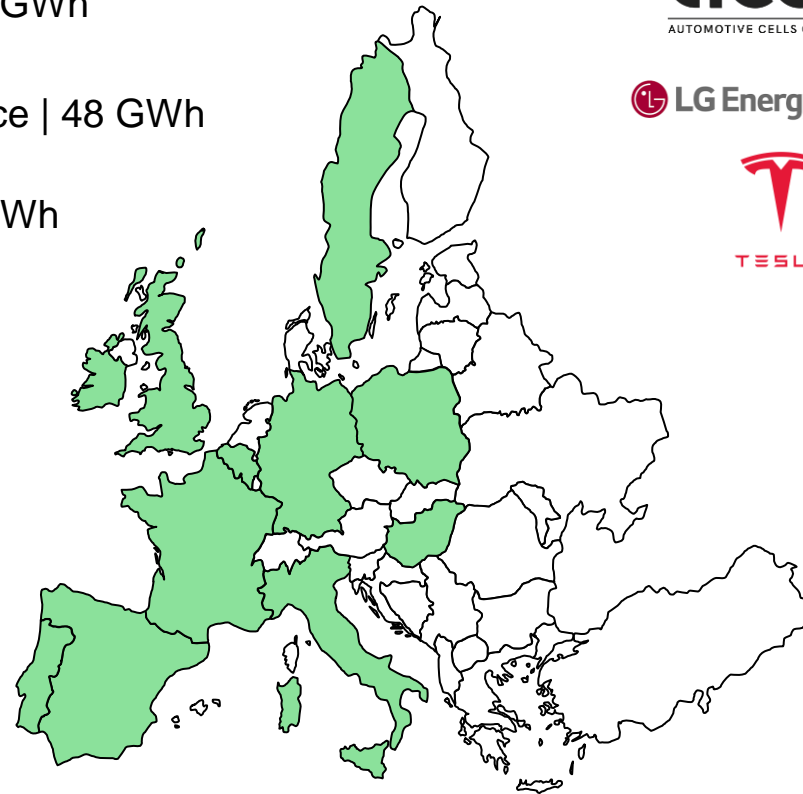
 **MORROW** | Morrow | Norway | 43 GWh

 **TATA MOTORS**  
Tata Motors | UK  
| 40 GWh


 **SAMSUNG**  
**SAMSUNG SDI**  
Samsung SDI | Hungary | 40 GWh

 **BlueSolutions**  
Bolloré  
BlueSolutions | France | 25 GWh

 **BASQUEVOLT**  
tech by BRTA  
Basquevolt | France & Spain | 13 GWh



 **PowerCo** | PowerCo | Germany & Spain  
| 120 GWh

 **ACC** | ACC | France, Germany & Italy | 120 GWh  
AUTOMOTIVE CELLS Co

 **LG Energy Solution** | LG Energy Solution | Poland | 115 GWh

 **TESLA**  
Tesla | Germany | 100 GWh

 **CATL** | CATL | Hungary | 100 GWh

 **ITALVOLT** | Italvolt | Italy | 70 GWh

 **northvolt** | Northvolt | Germany & Sweden | 120 GWh

 **Envision AESC** | Envision AESC | Spain & UK | 85 GWh

 **SVOLT** | Svolt | Finland | 50 GWh

# VERKOR AT A GLANCE

Low carbon battery manufacturer set to amplify production in Europe



A **16GWh** battery **Gigafactory** in **Dunkirk** due to construction in **2025**, with a target of 50 GWh by 2030



**High plant efficiency & process** yields are ensured **through scrap minimization, digitalization** and **real time data analysis**, to deliver high competitiveness



**Best level carbon footprint** targets in Europe



Supported by the **best-in-class consortium** in intelligent manufacturing, battery materials & EV production



**One of the few** European battery manufacturers **endorsed by automakers**



Exceptional team of **industry leaders & international battery experts**



# VERKOR

## A CATEGORY CHAMPION

### VERKOR INNOVATION CENTRE GRENOBLE

WORLD-CLASS INNOVATION, OPTIMISED MANUFACTURING PROCESSES AND DIGITAL APPLICATIONS LEADING TO CUTTING-EDGE TECHNOLOGY

Head  
quarters

R&D lab

Pilot line

Battery  
school



01



Process  
innovation

Digital  
innovation

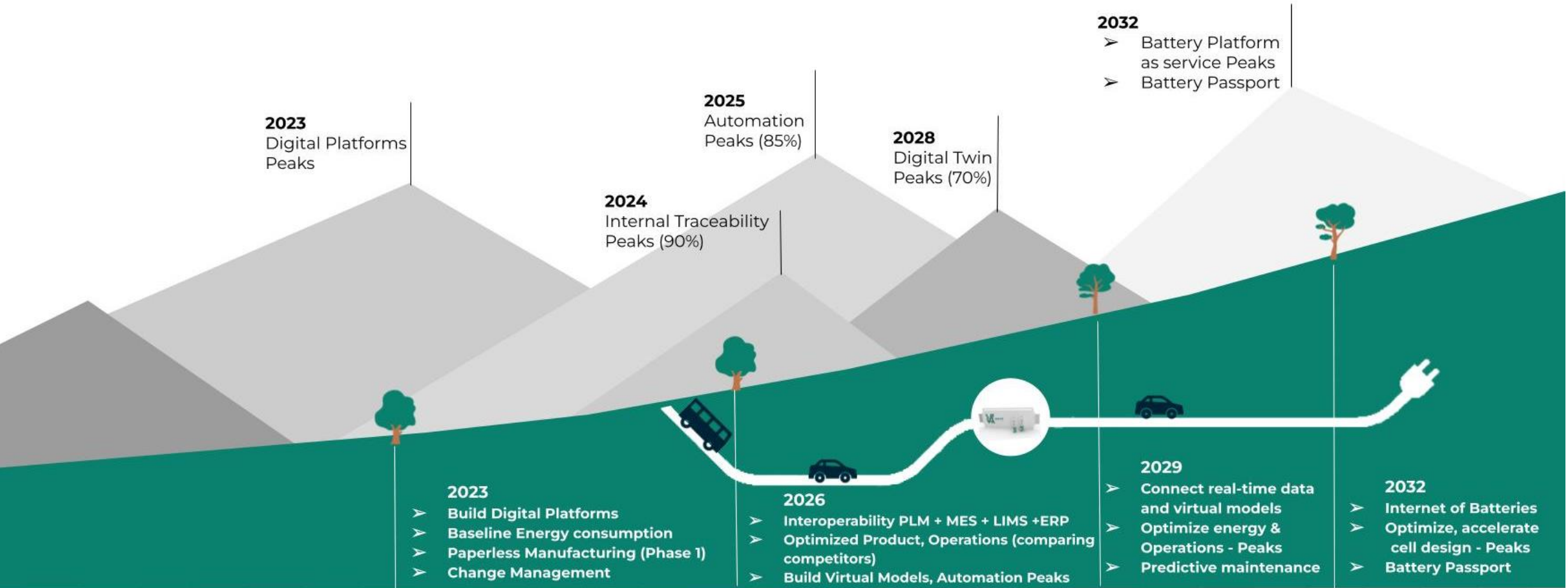
Recycling

02

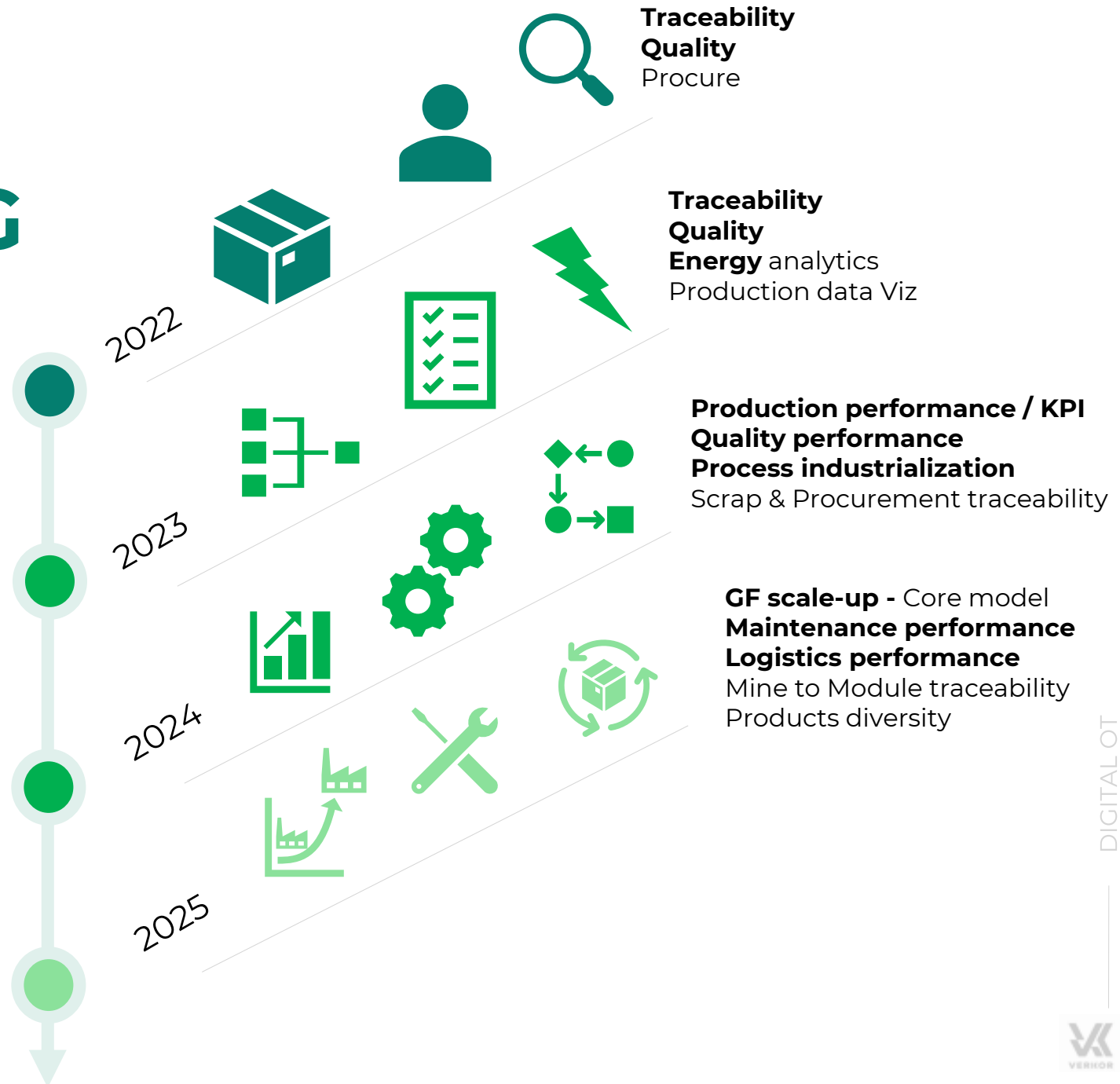
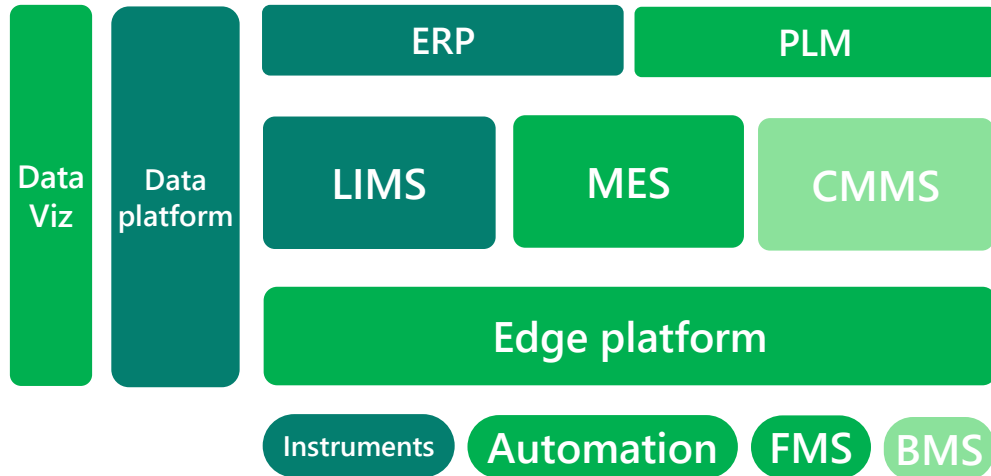
### GIGAFACTORY DUNKIRK

INDUSTRY-LEADING PRODUCTION EFFICIENCY AND ONE OF THE LOWEST CARBON FOOTPRINTS

# VERKOR DIGITAL AMBITION



# VERKOR DIGITAL MANUFACTURING



# VERKOR DIGITAL OT SUCCESSSES / CHALLENGES



**Optimized Make or Buy** strategy validated from R&D/pilot to GF lines

Foundation ERP / MES / PLM (**Buy**)

- ✓ **Aveva MES successfully deployed** for Pilot commissioning
- ✓ **Out of the box** Aveva MES MD templates:
  - + value for Verkor
  - program complexity & risks
- 🏗️ Quickly scale-up to GF

Data Engineering & Integration (**Make**)

- ✓ Invest in core people expertise
- ✓ Data Viz 100% aligned on battery maker needs
- 🏗️ Foundations internal customization/extension

**Digital IT/OT convergence**

- ✓ **Cyber: 100% Monthly OT updates**
- ✓ One Digital: ↘ silos at all company levels



# Empowering Performance: Role of Data in EV Battery Plant Excellence

Leveraging process, quality, & sustainability data to enhance operational efficiency & manufacturing performance



# Key Takeaways

**1 Data capture, contextualization and visualization**

**2 End-to-end, unique and open digital platform**

**3 Scalable MES based on templates and standards**

## Presentors



**Guillaume OGIER**  
Digital OT - Operational  
Technology Manager  
*Verkor*



**Francois VERKINDT**  
EV Battery Business Leader  
*Schneider Electric*



# Questions?

Please wait for the microphone.  
State your name and company.



# Please remember to...

Navigate to this session in the mobile app to complete the survey.



# Thank you!