

**WEBINAR**



# How to use AI & machine learning to predict battery lifecycles

Thursday 1<sup>st</sup> December



**Jan Figgner**  
Senior Battery Expert  
**ACCURE**



**Matt Shustack**  
Business Development  
Manager, Americas  
**HMS Networks**



**Yuan Lee**  
Business Development  
Manager, Europe & MEA  
**HMS Networks**



Moderated by  
**Andy Colthorpe**  
Editor  
**Energy-Storage.news**

# Battery Lifecycle Prediction by AI & Machine learning

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Business Development Manager – HMS Networks Americas

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Business Development Manager – HMS Networks Europe & MEA

**Jan Figgner**

Senior Battery Expert – ACCURE Battery Intelligence

2022.12.01





# Agenda



Background / Headwinds



Optimization & AIoT



Cloud-based Battery Analytics via ACCURE



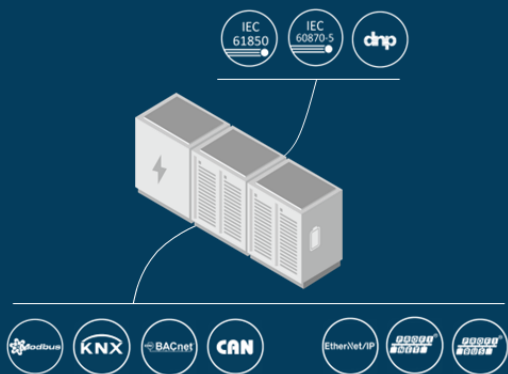
How to deploy – efficiently at scale



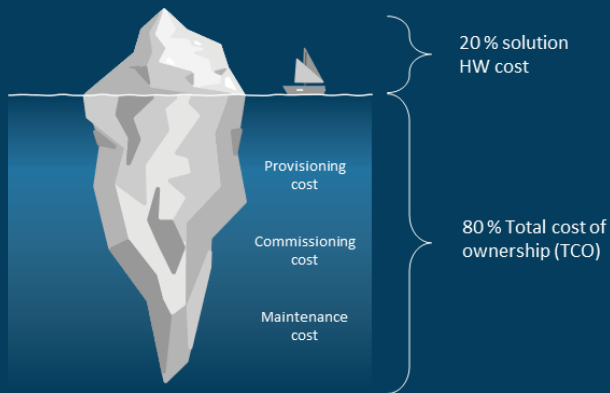
Polls and Q&A

# Headwinds

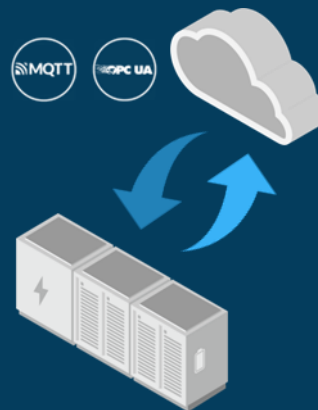
- Integration (in)flexibility



- Commissioning, provisioning, maintenance



- Performance & lifecycle optimization



# Headwinds

## On-demand Webinars



### How are battery storage and energy companies future-proofing their data communication infrastructure?

November 3, 2022

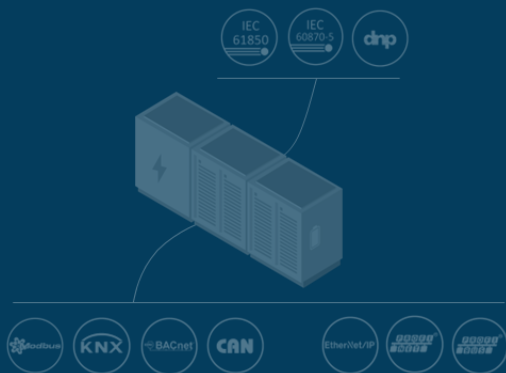
Battery Energy Storage Systems (BESS) will play an integral role in enabling both the transition to renewables and the long-term sustainability of our energy grid. Therefore, relentless focus is needed towards cost-optimizing the design, deployment, management, and maintenance of these systems to support such scalability. In this webinar we will explore some of the data and communication challenges to be solved in this process.

[Find Out More](#)

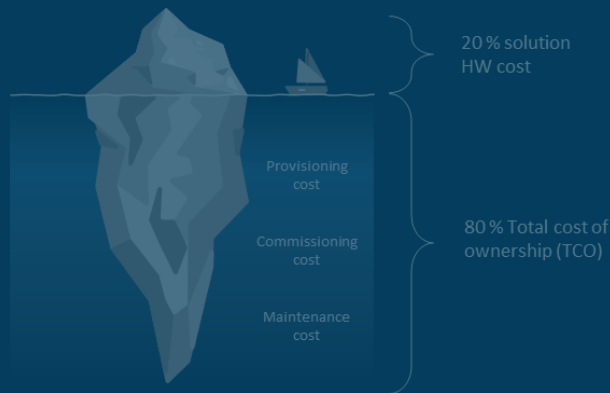


# Headwinds

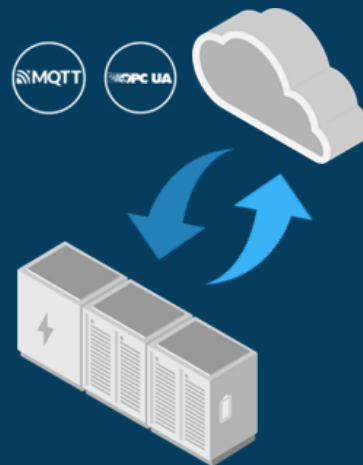
- Integration (in)flexibility



- Commissioning, provisioning, maintenance



- Performance & lifecycle optimization



# How to enable AIIoT for future workflow improvement

## Cloud AI and Data Analytics

Training / optimizing / prediction



## Centralized data monitoring

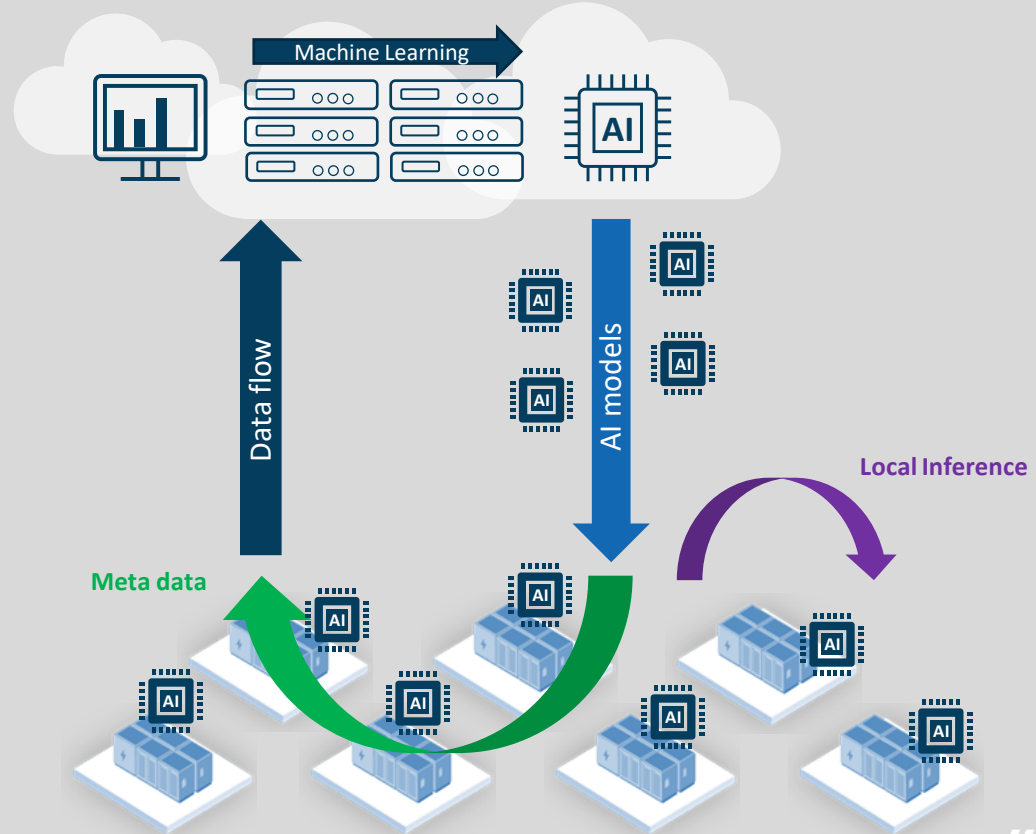
Data visualization / Decision making

## Data Communication

Technologies: 5G, NB-IoT, LTE-M, LPWAN, etc.  
Protocols: OPC-UA, MQTT, DNP3, IEC61850, etc.

## Edge Computing and Edge AI

Local Inference / Machine Intelligence



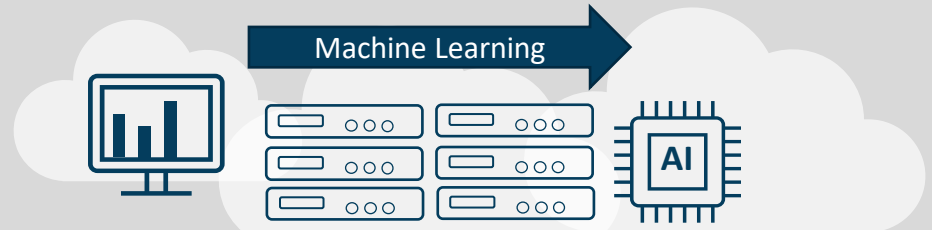
# How to enable AIoT for future workflow improvement

## Cloud AI and Data Analytics

Training / optimizing / prediction

## Centralized data monitoring

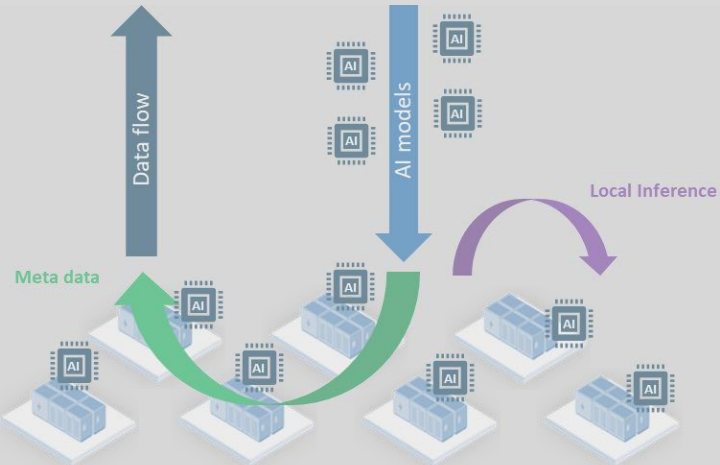
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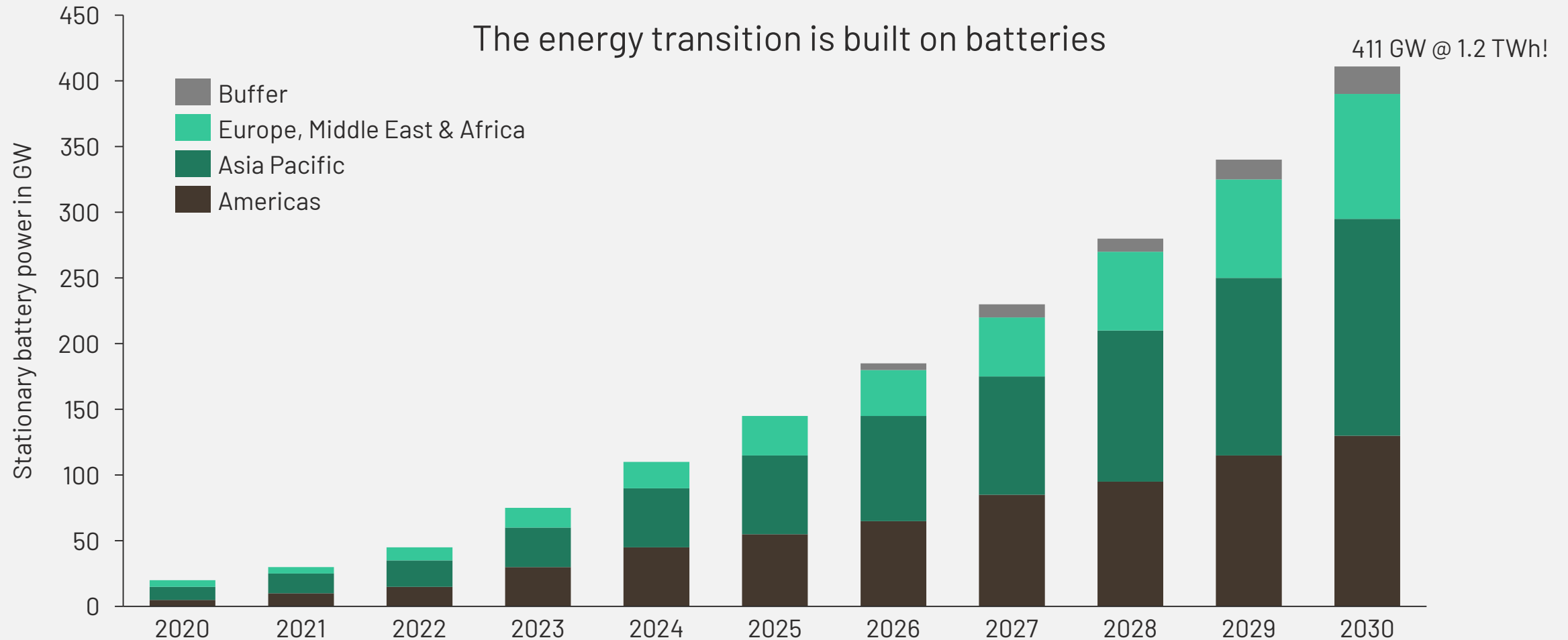
# How field data improves battery safety and performance

Webinar

Jan Figgner

## OVERVIEW

# The stationary battery storage market is growing rapidly



## OVERVIEW

# Making batteries safe, reliable, and sustainable

- Battery failures and fires cost companies billions in damages, although they are quite rare
- People lose trust in a pillar of clean energy transition



Victorian Big Battery, Australia, August 2022

## OVERVIEW

# Making batteries safe, reliable, and sustainable

### Problem

- Battery failures and fires cost companies billions in damages, although they are quite rare
- People lose trust in a pillar of clean energy transition

### Solutions

- Improved production quality
- Resilient system design
- **Advanced data analysis**



Moss Landing, CA, USA, September 2022

## REFERENCES

# Field-proven analytics

ACCURE supports OEM, owners, and operators around the world to make batteries more safe, reliable, and sustainable.

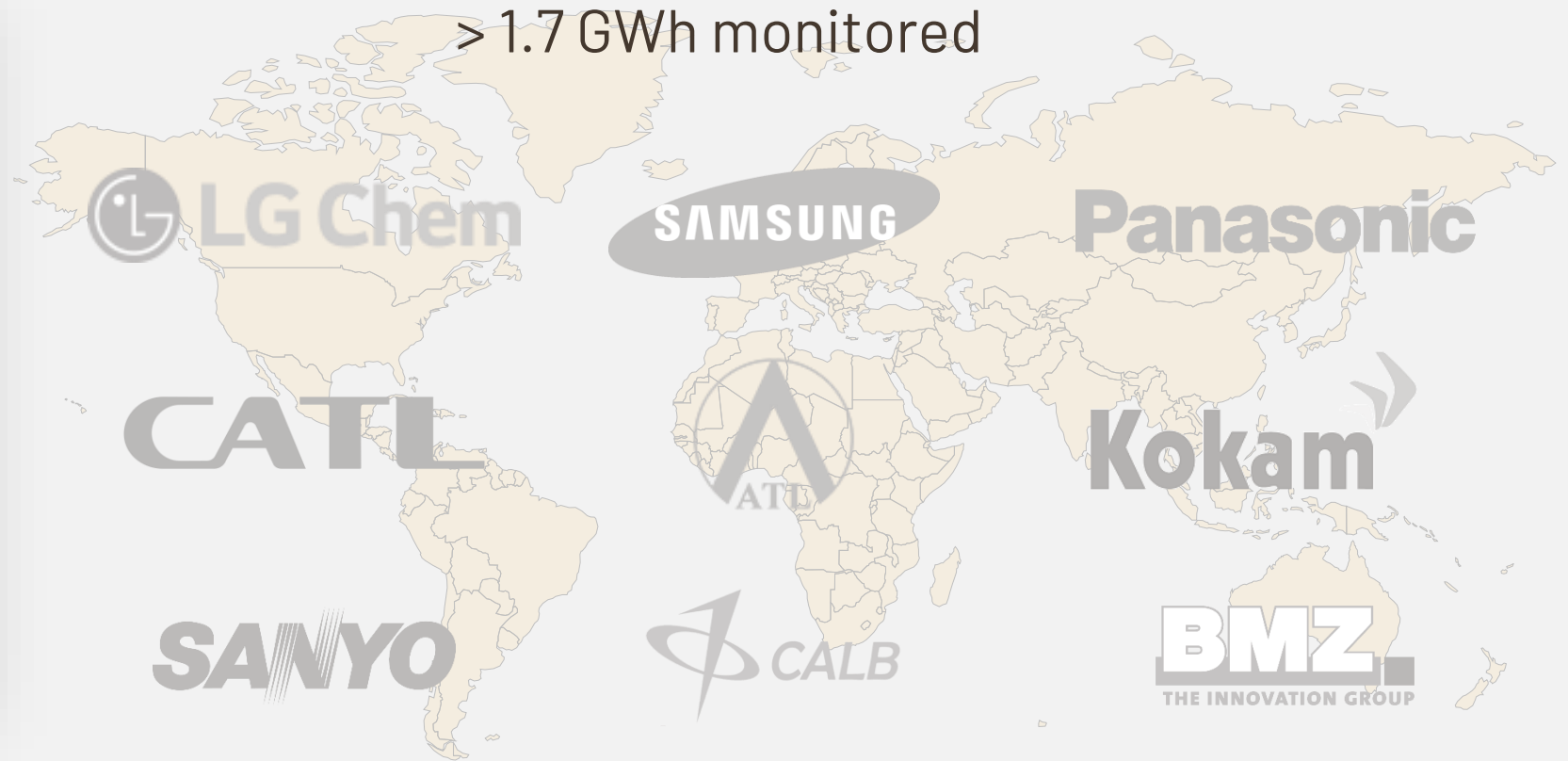
### Key facts

Domains: Energy storage, Electric mobility, Battery production

Employees: 80

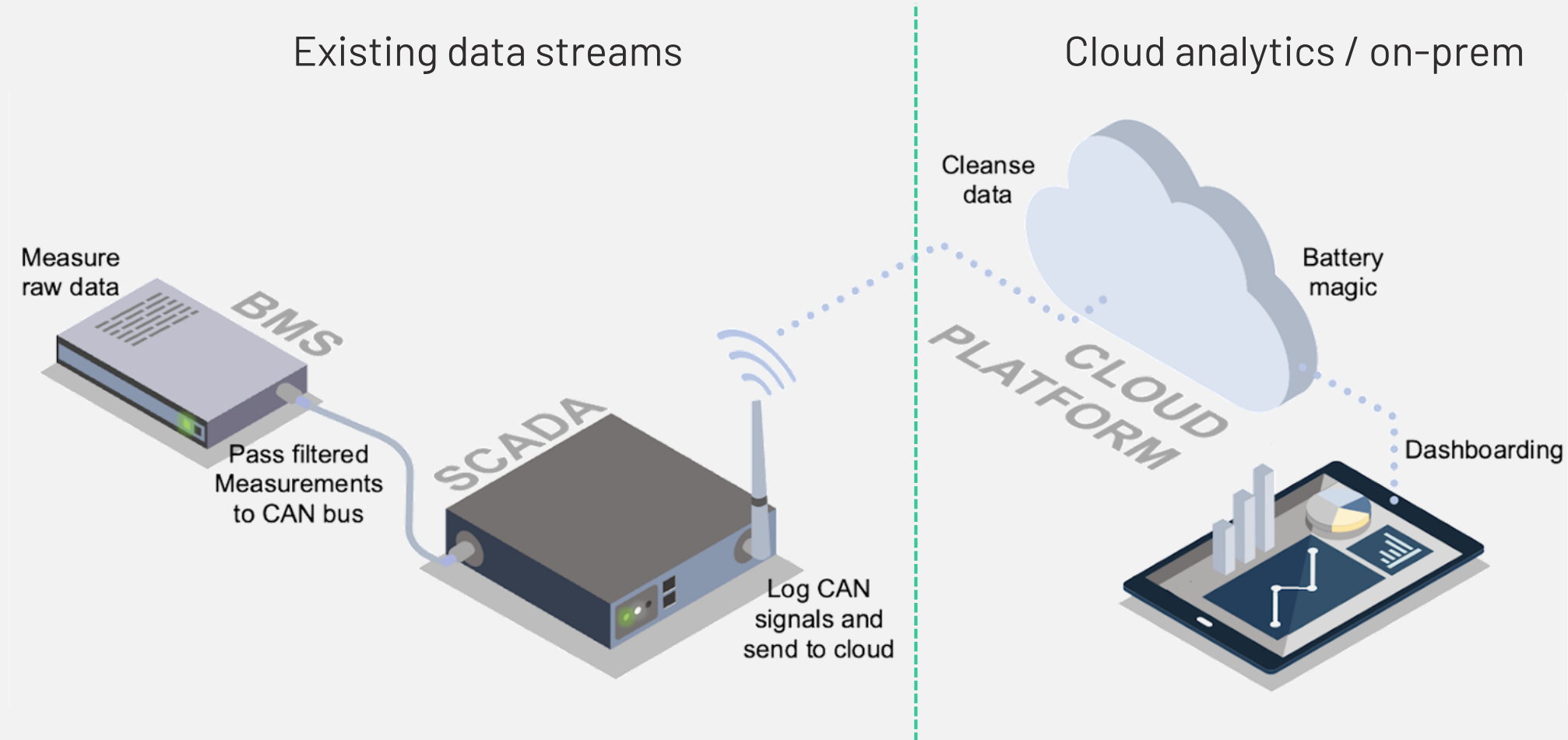
Offices: Germany, USA

VC: raised 10m



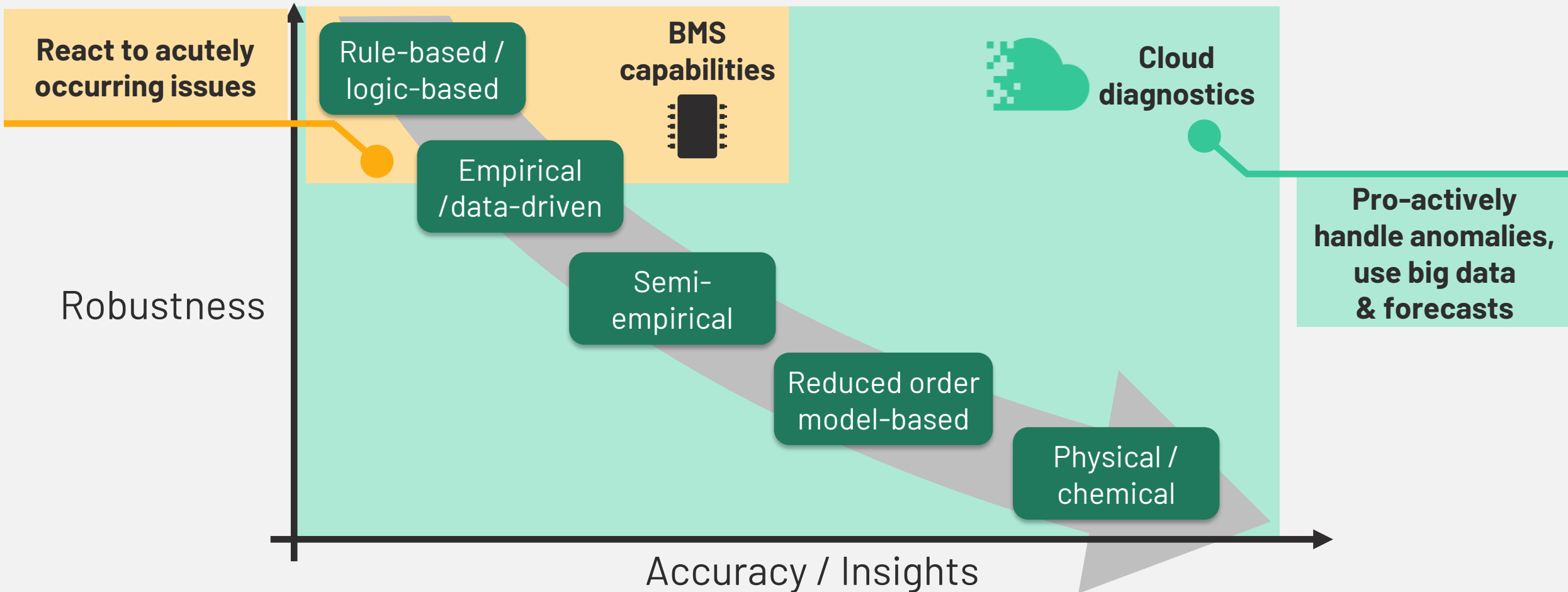


# Get additional value from existing data streams



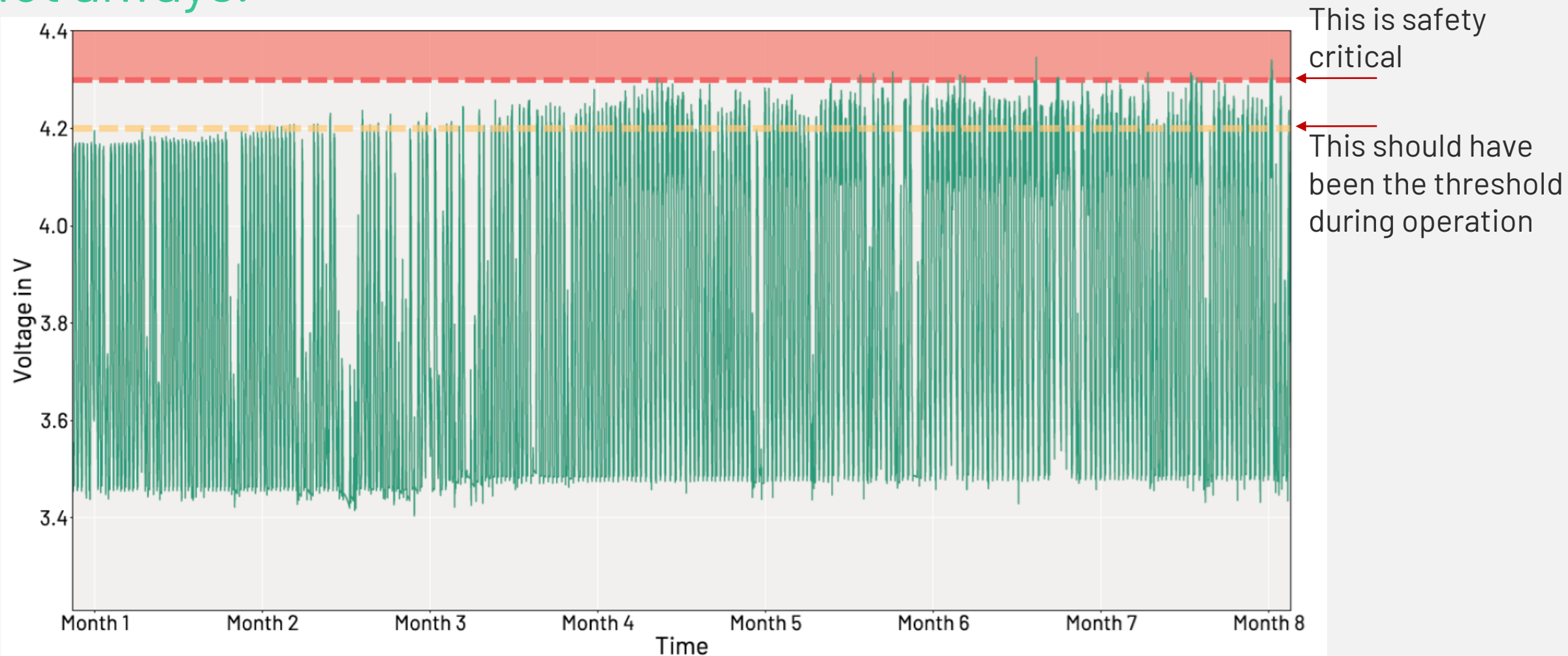
DRAW CONCLUSIONS FROM DATA

# Cloud-based analytics utilize the entire spectrum of battery diagnostics



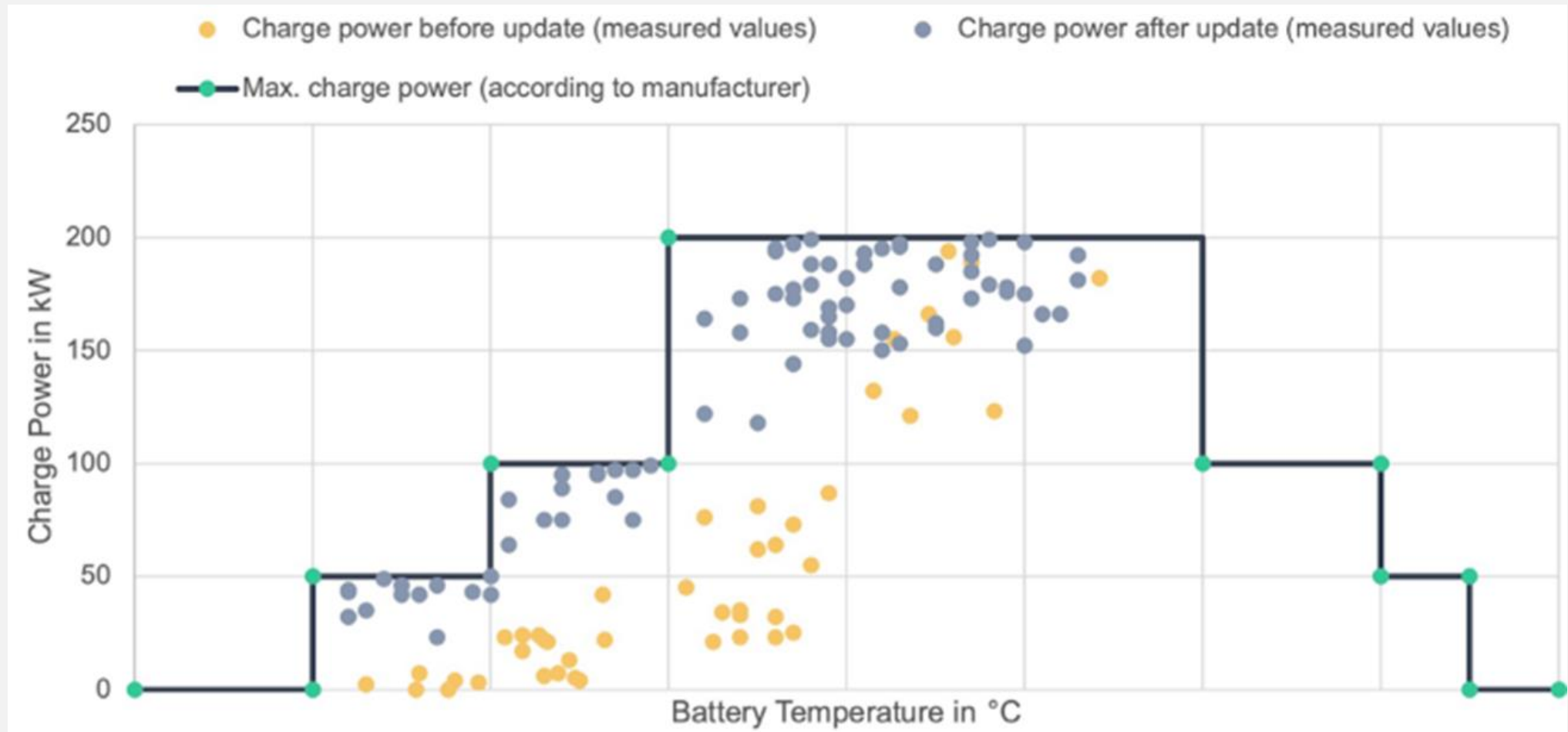
## EXAMPLE 1: BASIC ANALYTICS

Is it enough to rely on the battery management system?  
Not always.



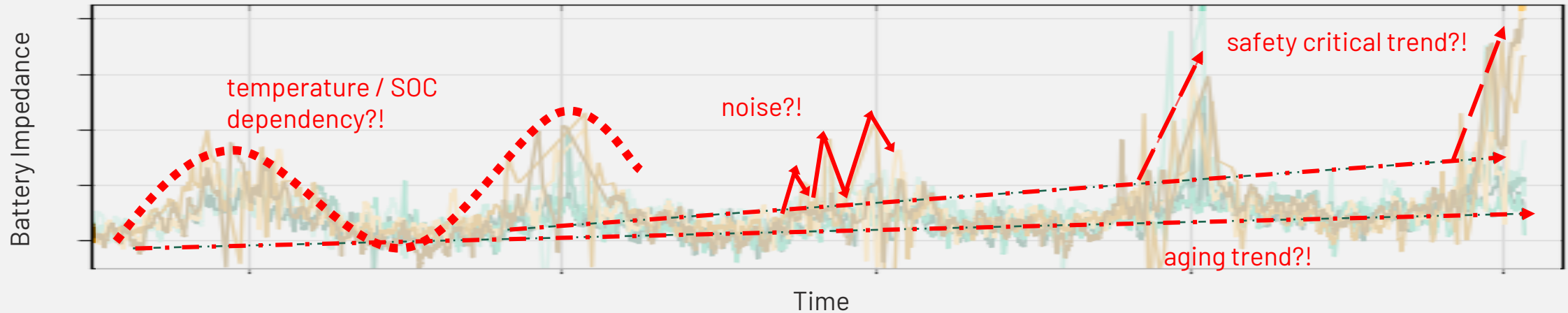
## EXAMPLE 2: PERFORMANCE MONITORING

# Continuous monitoring of performance to maximize revenue



### EXAMPLE 3: BIG DATA APPROACH

Thanks to the big data approach we can distinguish noise from aging and safety critical trends

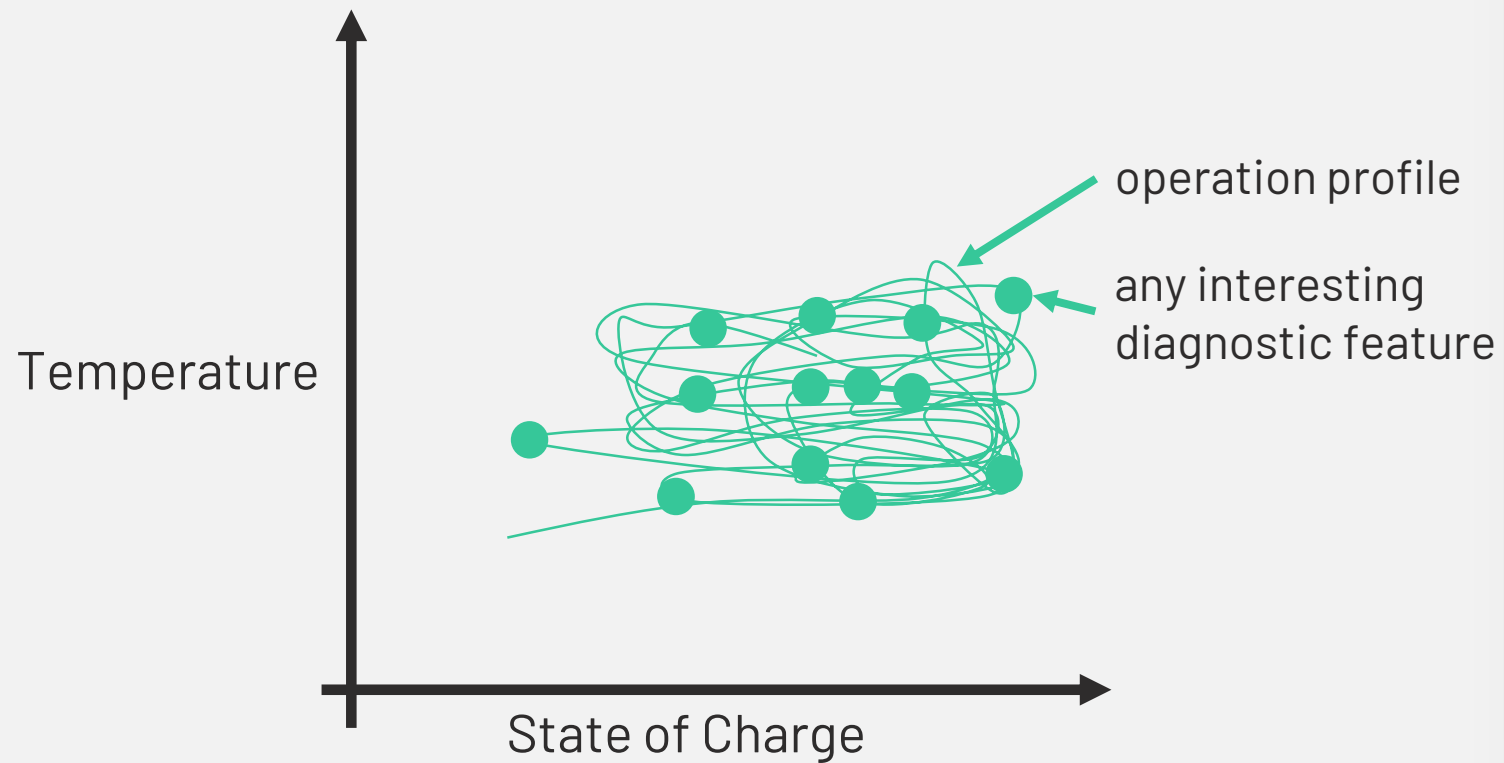


Let's apply the power of big data diagnostics



## EXAMPLE 3: BIG DATA APPROACH

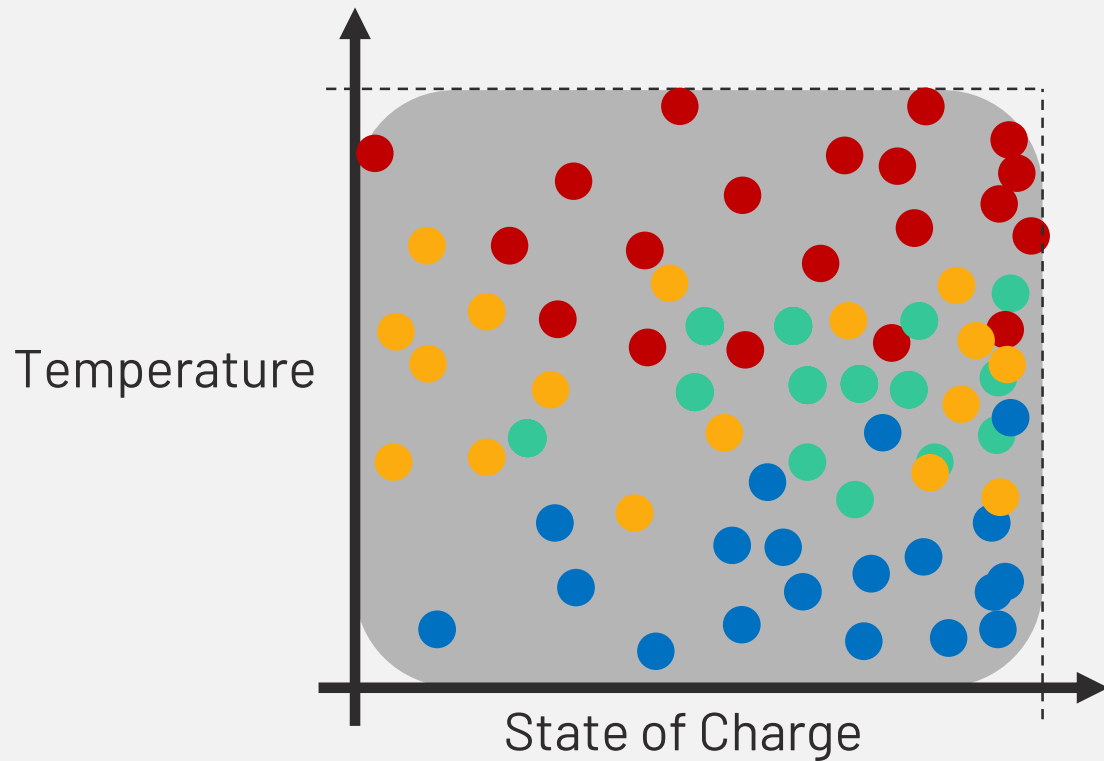
# The power of big data analytics



Exemplary system

## EXAMPLE 3: BIG DATA APPROACH

# The power of big data analytics



Exemplary system



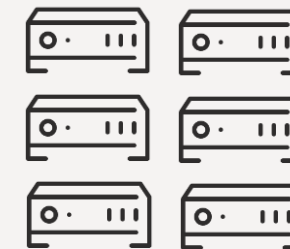
Cold operation



Hot operation



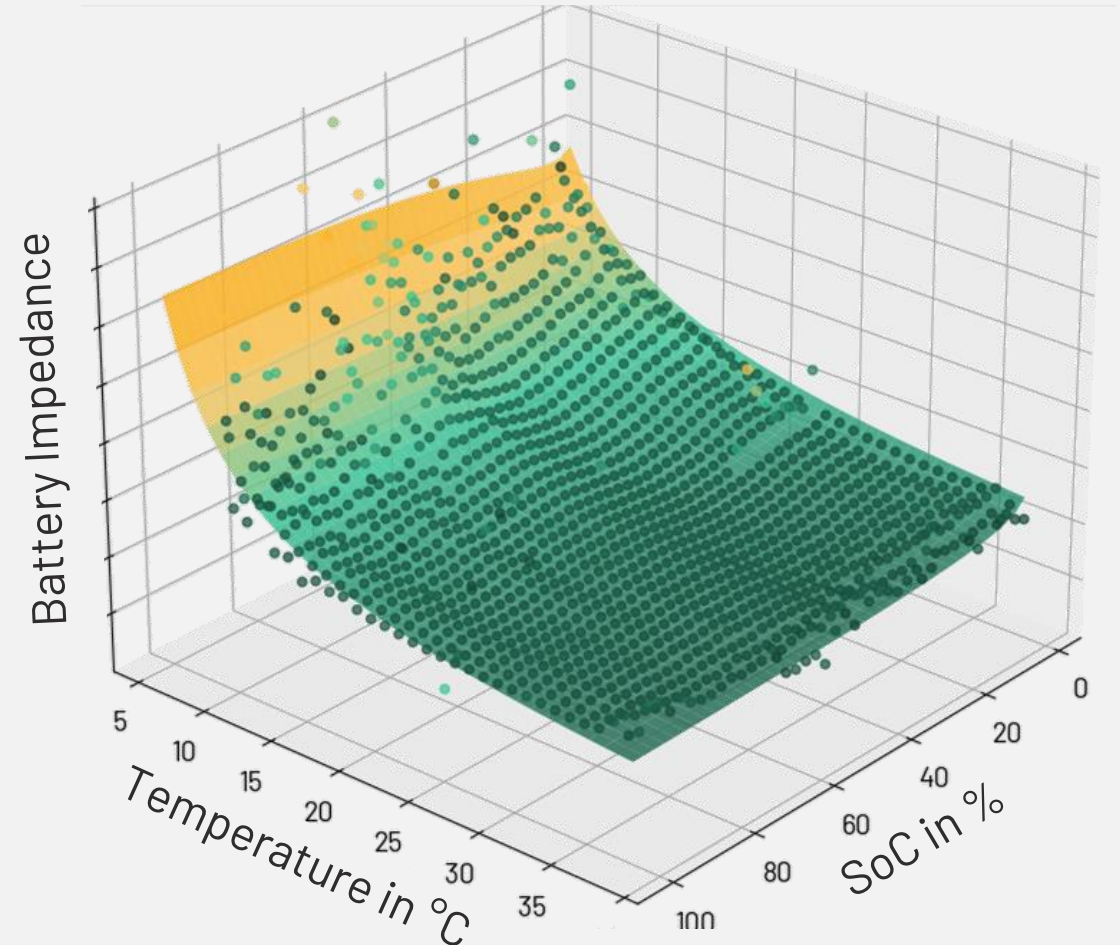
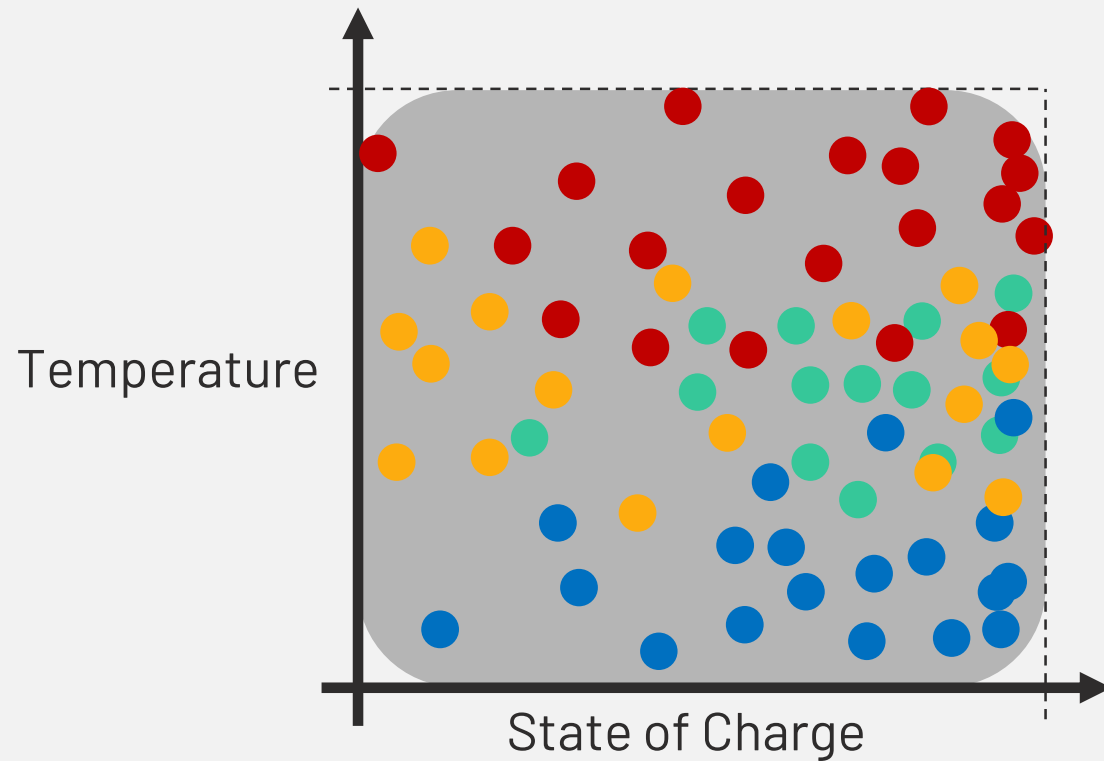
Average operation



Additional use cases  
(e.g. 100,000 batteries)

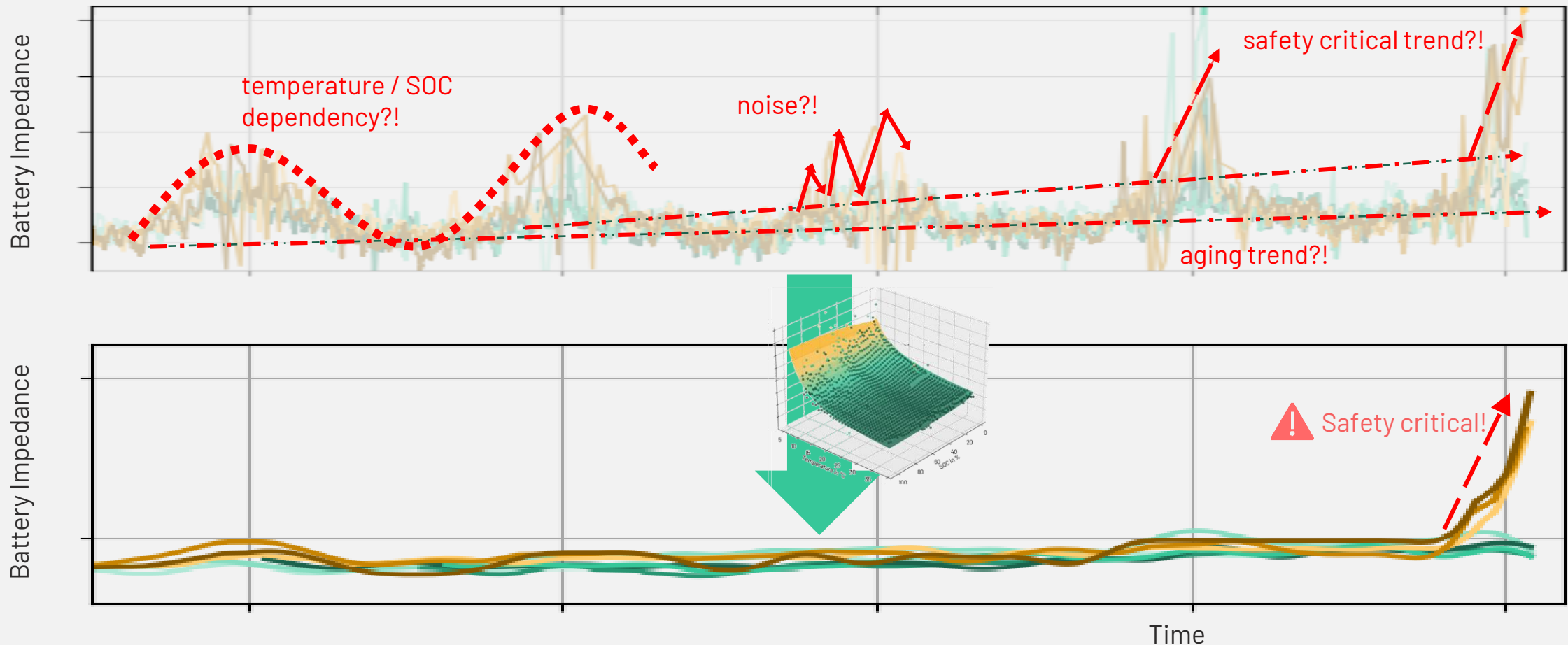
## EXAMPLE 3: BIG DATA APPROACH

# The power of big data analytics



### EXAMPLE 3: BIG DATA APPROACH

Thanks to the big data approach we can distinguish noise from aging and safety critical trends



# Predict failures before they become dangerous

## Incident

- After 3 battery explosions in March 2022, SENEK contracted ACCURE for its battery safety analytics software.

## Outcome

- ACCURE identified additional safety hazards based on operational data.
- After SENEK addressed urgent safety issues, it brought ~65,000 battery systems back online.
- ACCURE continuously monitors the fleet.





# ACCURE offers the right product for your use case



## Safety Manager

Battery safety analytics deliver early warnings for unsafe behavior, preventing fires and downtimes.

 **GET STARTED →**



## Performance Manager

Get the most out of what you have. Identify underperforming assets and stay within warranty coverage.

 **GET STARTED →**



## Lifetime Manager

Get on-demand aging predictions. Inform business strategies with unlimited simulations.

 **GET STARTED →**

We cooperate with insurances!

GET IN TOUCH

# Let's connect!



Are you interested in learning more about us?



We are hiring!



**Jan Figgner**

Senior Battery Expert

[j.figgner@accure.net](mailto:j.figgner@accure.net)

[www.accure.net](http://www.accure.net)

# How to deploy ... *efficiently, at scale* ?

Collect, Manage, Cleanse BMS Data



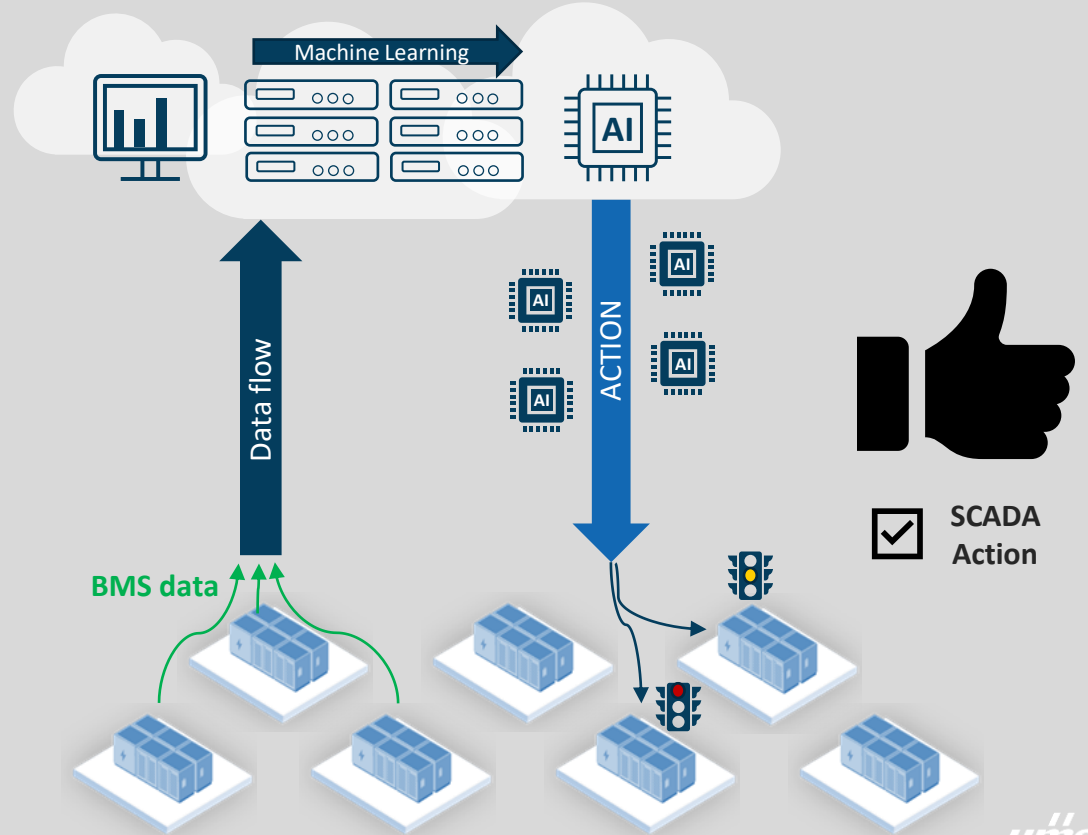
Perform "Cloud Battery Magic"



Generate Insights, Take Action!



SCADA  
Action



# How to deploy ... *efficiently, at scale* ?

Collect, Manage, Cleanse BMS Data



Perform "Cloud Battery Magic"

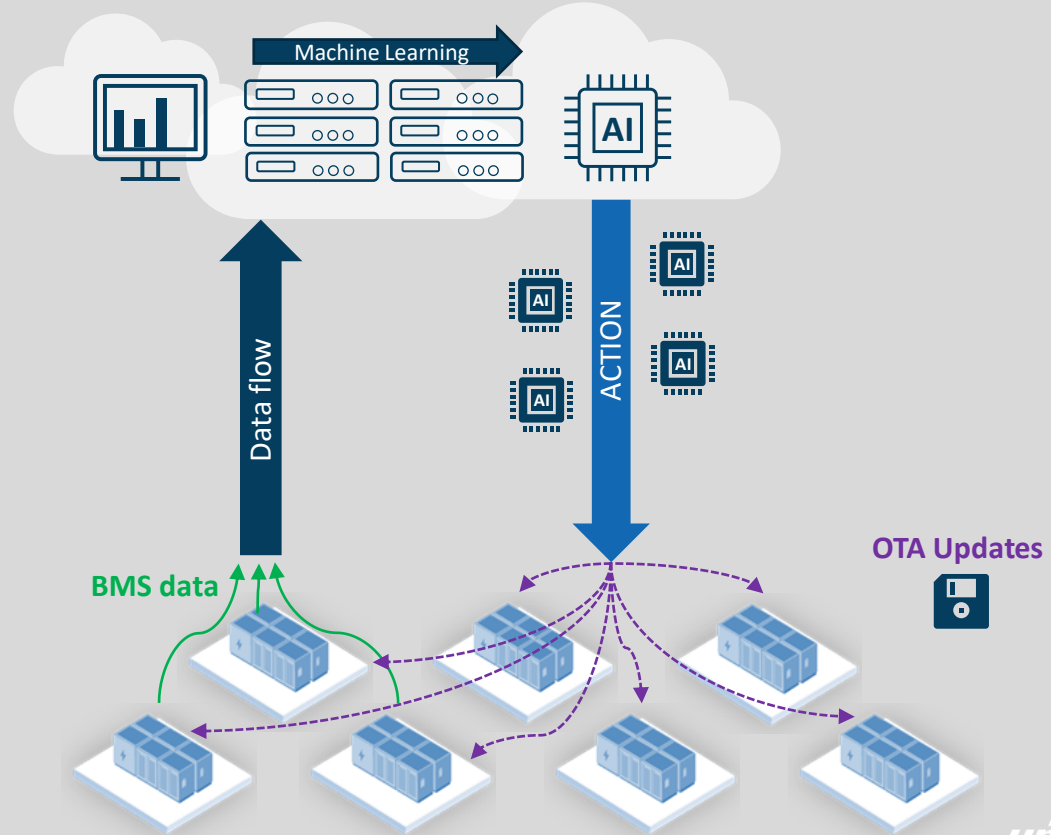


Generate Insights, Take Action!



SCADA  
Action

Software  
Update



# "Hardware Meets Software" with HMS



WEBfactory®  
Member of the HMS group

**Anybus**®  
BY HMS NETWORKS

**Ewon**®  
BY HMS NETWORKS

**Intesis**™  
BY HMS NETWORKS

**Ixxat**®  
BY HMS NETWORKS

**PROCENTEC**  
Member of the HMS group.



# Polls

## Poll 1:

***How do you currently monitor the health & lifecycle of your batteries?***

(Pick one)

- a) Not at all, not high enough priority
- b) Not at all, we are currently investigating options
- c) We rely on the BESS provider / "OEM"
- d) We have our own internal data collection & analytics
- e) Outsourced to an external 3rd party partner

## Poll 2:

***What data / communications challenges do you anticipate regarding large-scale deployment of an AIoT solution of this nature?***

(Pick any)

- a) Accessing relevant CAN bus data from BMS level
- b) Filtering / interpreting relevant battery/BMS CAN bus data
- c) Transmitting to / from cloud
- d) Local deployment / local inference
- e) None of these

How do you currently monitor the health & lifecycle of your batteries? (Pick one)

We do not have batteries	66 (28%)
We have our own internal data collection & analytics	64 (28%)
We rely on the BESS provider / "OEM"	58 (25%)
Not at all, we are currently investigating options	26 (11%)
Outsourced to an external 3rd party partner	11 (5%)
Not at all, not high enough priority	7 (3%)

What data / communications challenges do you anticipate regarding large-scale deployment of an AIoT solution of this nature? (Pick any)

Filtering / interpreting relevant battery/BMS CAN bus data	89 (32%)
Transmitting to / from cloud	49 (18%)
Local deployment / local inference	49 (18%)
Accessing relevant CAN bus data from BMS level	48 (18%)
None of these	39 (14%)



Questions?



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