



Quality Assurance of Lithium-Ion Batteries

The Key for Battery Driven Mobility

Company Profile

Facts, Customers & Locations



Foundation: February 2019



Size: 20 employees



Selected Customers

DIEHL



Ador Digatron Pvt Ltd

**RWTHAACHEN
UNIVERSITY**



AIR ENERGY

TUM

Technische Universität München



VOLOCOPTER



Key Competences

More than 10 years experience in lithium-ion batteries



Activities & Markets

Along the battery value chain

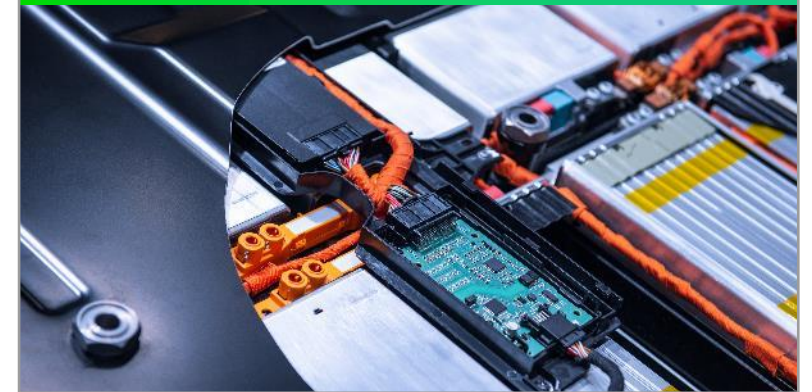
Battery Quality Assurance Solutions



Battery R&D Solutions



Battery Management Systems (BMS)



Activities & Markets

Along the battery value chain

Battery Quality Assurance Solutions



KPIs

- Precise battery quality assessment in seconds
- Integrated turn-key and stand-alone solutions
- Software platforms for back-to-back assessment

Markets

- Battery Cell Production (End-of-Line Testing)
- Battery System Production (Incoming Inspection)
- 2nd Life Remanufacturing

Battery R&D Solutions



KPIs

- Automated battery characterization in seconds
- Precise and cost-effective EIS measurement
- Software platform with automated workflows

Markets

- Battery Cell Development
- Battery Characterization
- Battery Modelling

Battery Management Systems (BMS)



KPIs

- Significant performance, lifetime and safety gain
- Battery core temperature measurement
- Identification of electrolyte decomposition

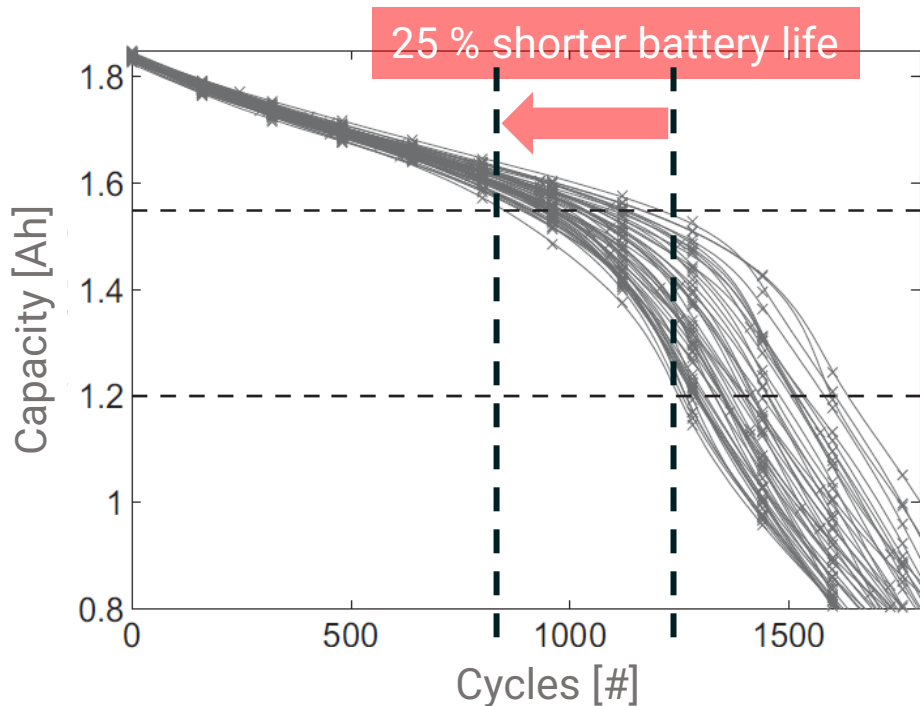
Markets

- Automotive, Aviation & Other Mobility Applications
- Industrial and Stationary Applications
- Consumer Electronics Applications

Battery Quality and Product Lifetime

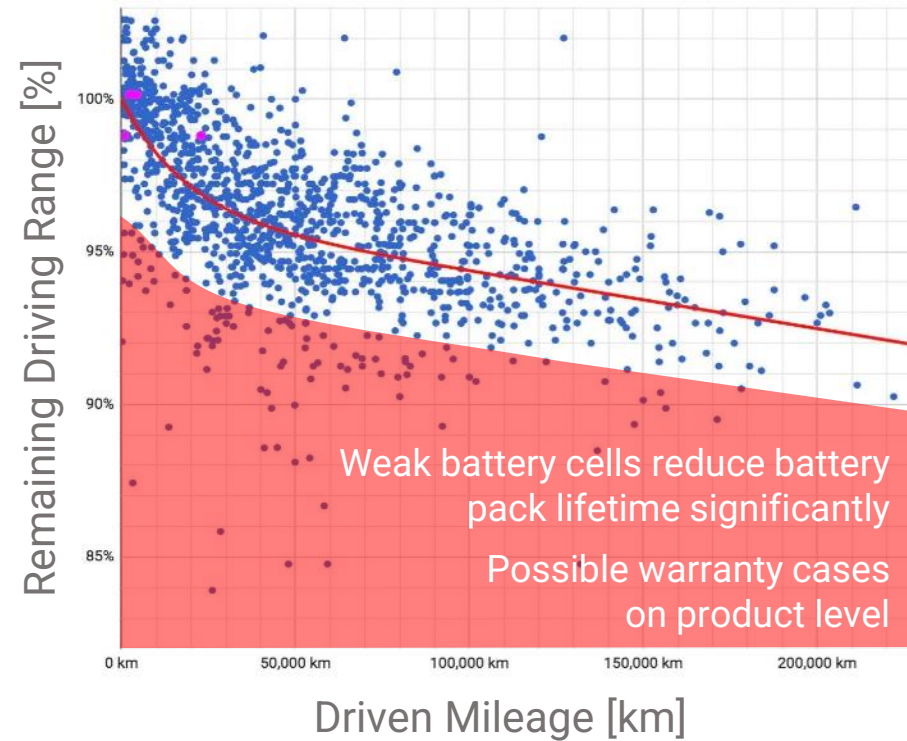
Quality variations lead to safety and warranty cases

Battery Quality Variations



Source: T. Baumhöfer et al. / Journal of Power Sources 247 (2014) 332e338

Battery System Lifetime




Source: <https://electrek.co/2018/04/14/tesla-battery-degradation-data/> and own modifications

Customer Reference Case

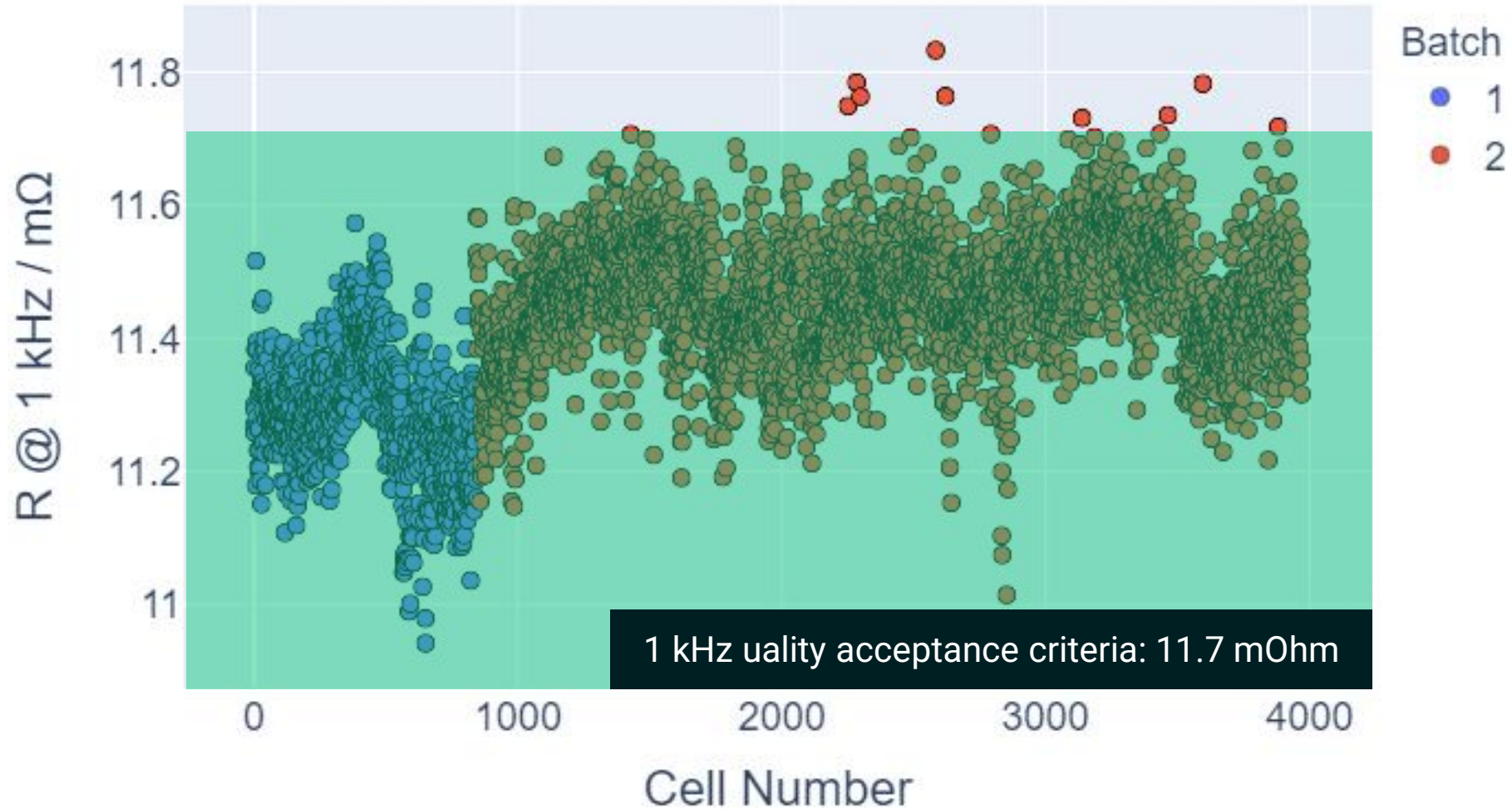
Battery systems for commercial drones



Cell Type	Case Data
	<ul style="list-style-type: none">▪ Murata (Sony) US18650VTC6▪ Nominal Capacity: 3 Ah▪ Customer received two batches (same type but different suppliers)▪ Batch #1: ca. 800 Cells▪ Batch #2: ca. 3300 Cells

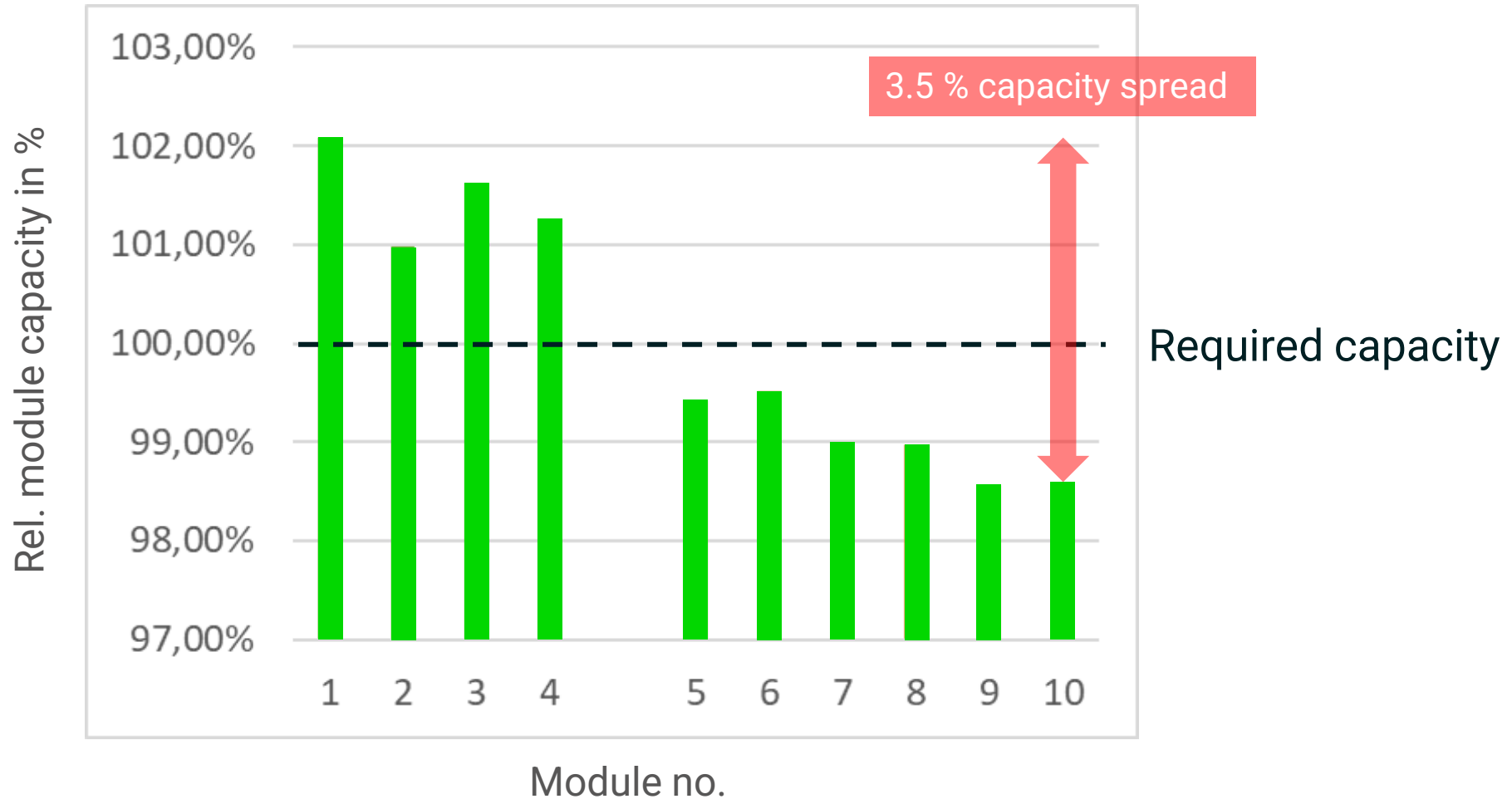
State of the Art for QA: 1 kHz Resistance

Everything looks fine and no difference between batches



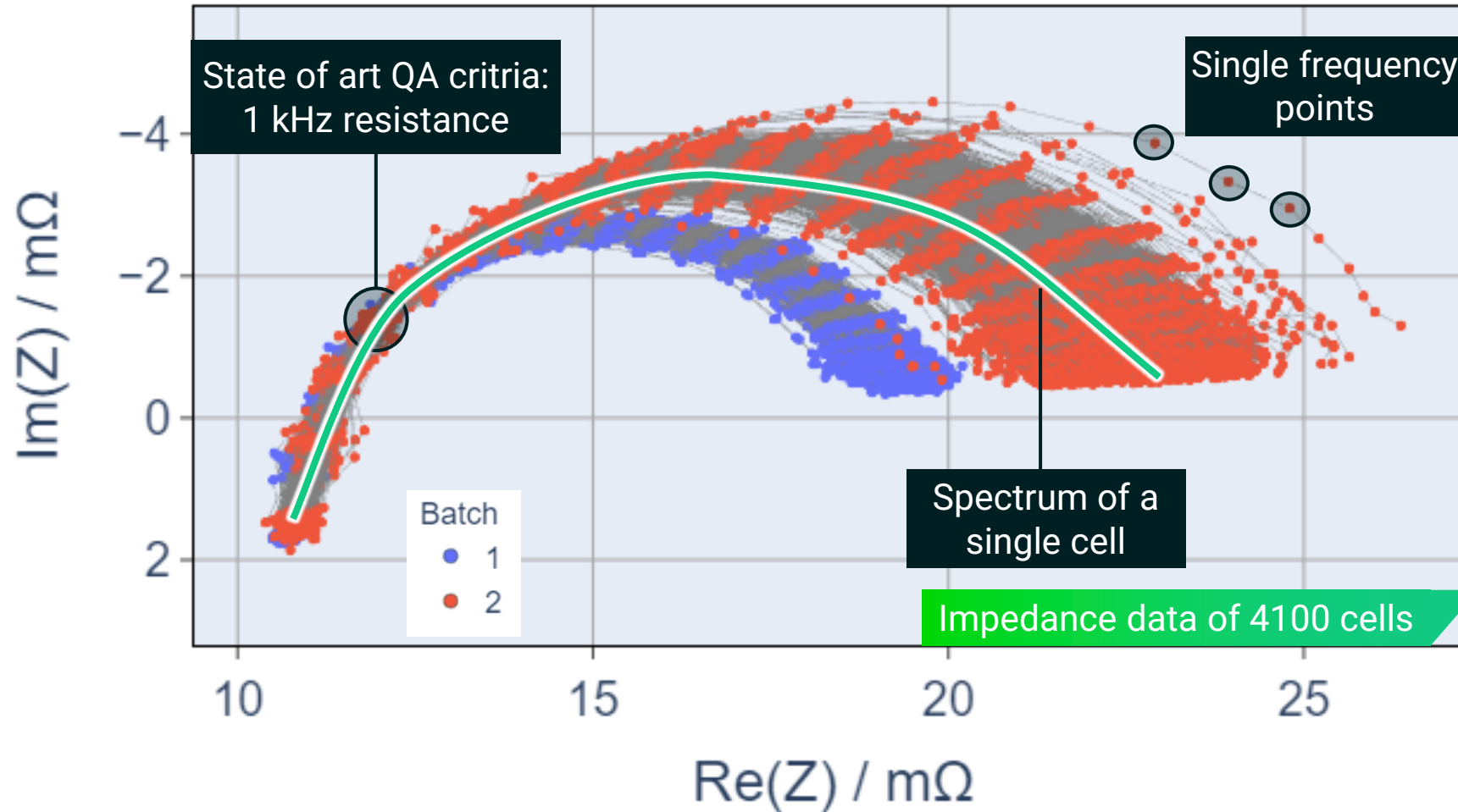
Customer Reference Case

Unexpected quality issues and warranty claims



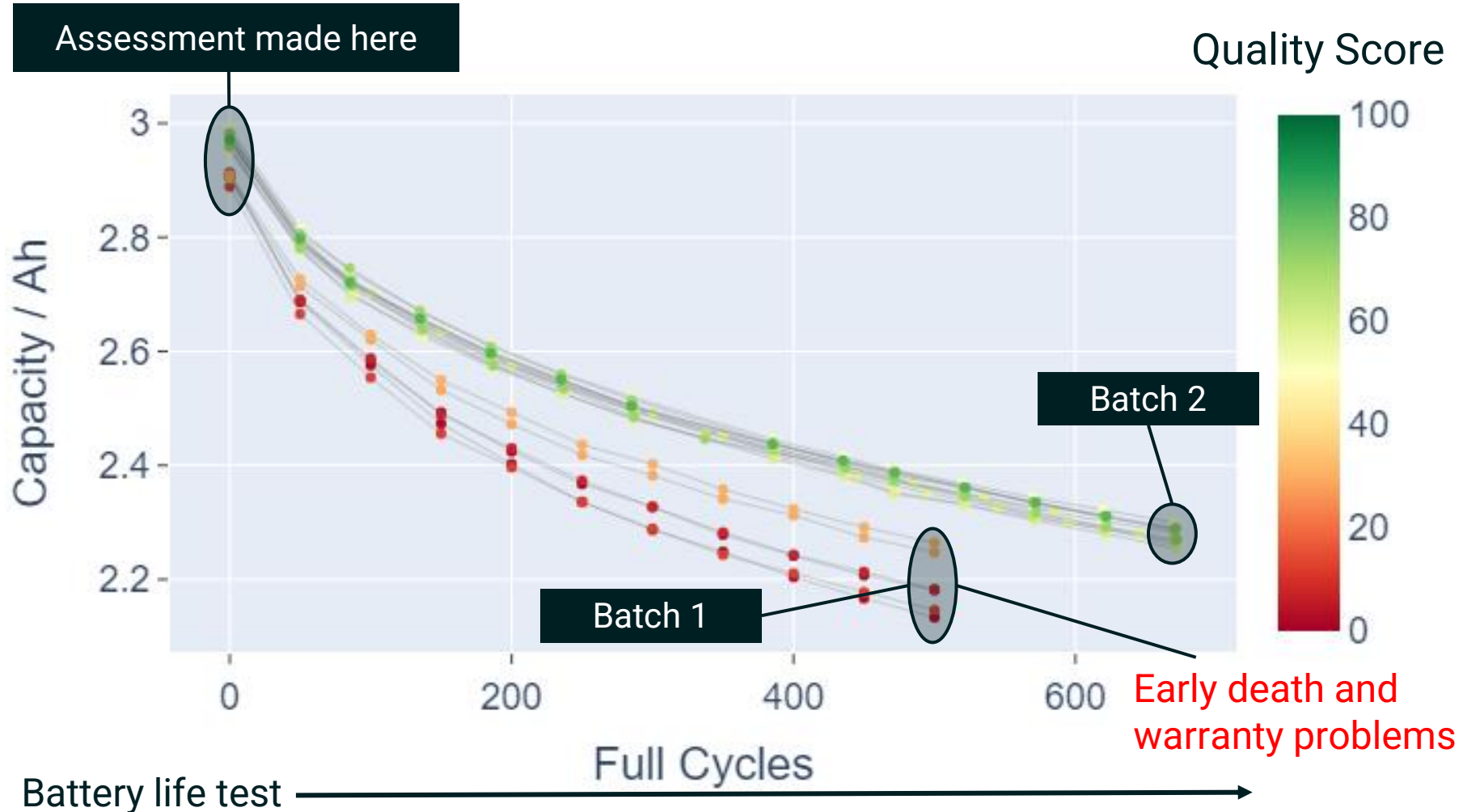
Game Changer EIS-based Quality Assurance

In 1 sec. up to 32 frequency points



Lifetime prediction with 1sec measurement

CO2 reduction by sorting our weak cells



Available as stand alone or in-line systems



University Spin-Offs

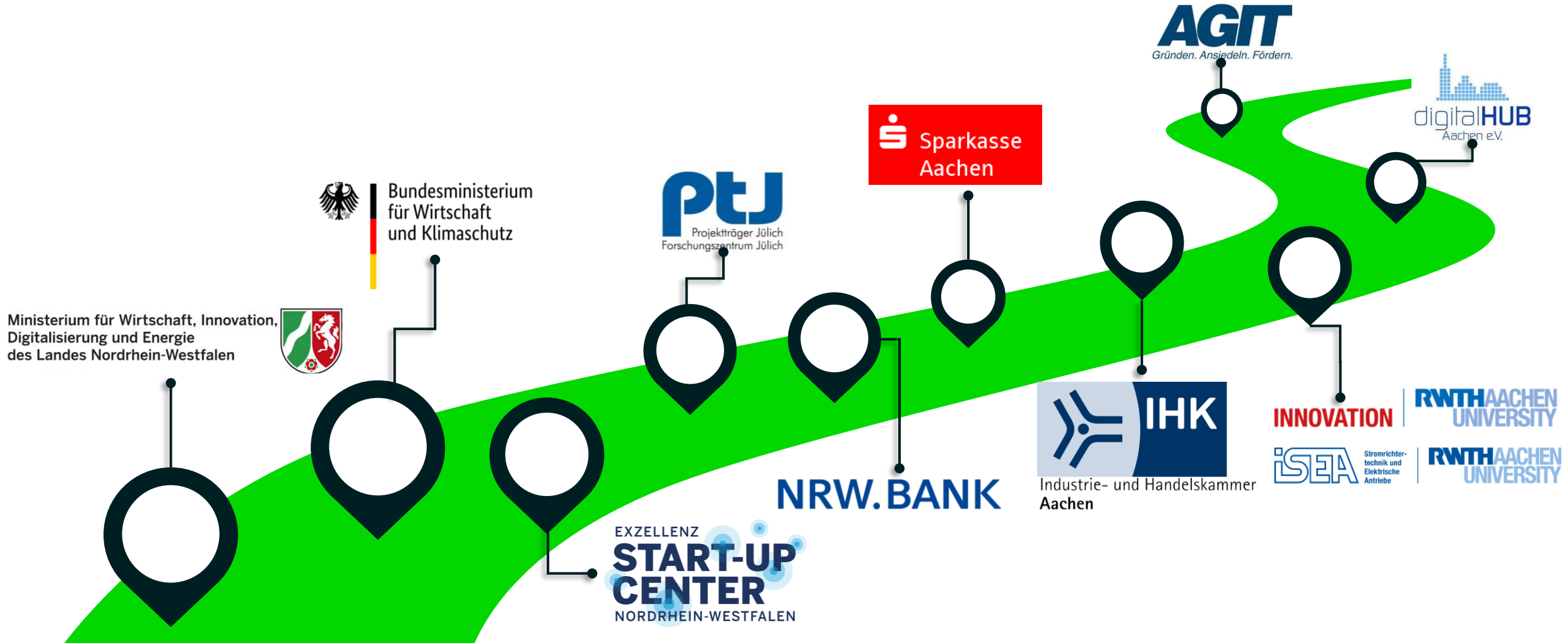
Blood, Sweat, and Tears

- Besides business risks, high technology risks
- Complex products with complex (B2B) markets
 - Source for resilient technology advantages in Aachen
 - Source for long-term job securities in Aachen

NRW's Spin-Off Ecosystem (Aachen perspective)

Fit as a fiddle

SAFION



Get in touch with us!
Know your batteries.



The future is now :D Come to your booth!

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