

Hitachi High-Tech Group CONFIDENTIAL

# **NaatBatt 14th Annual Meeting & Conference**

Digital Innovations for Battery Ecosystems  
Lithium-ion Battery Life Cycle Management

21 February 2023

**Eric Yoshimura**

Industrial Solutions Division

Hitachi High-Tech America and Hitachi America, Ltd. R&D Solutions

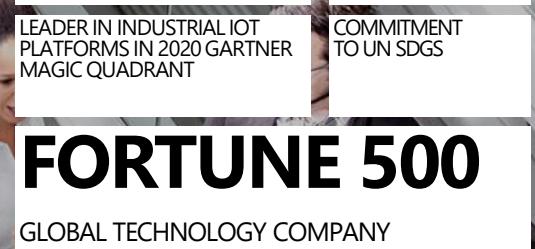
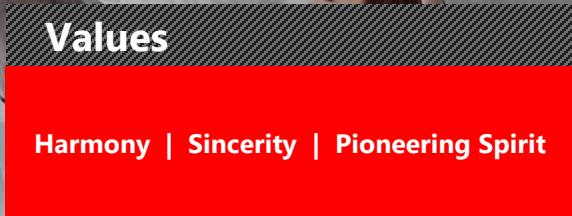
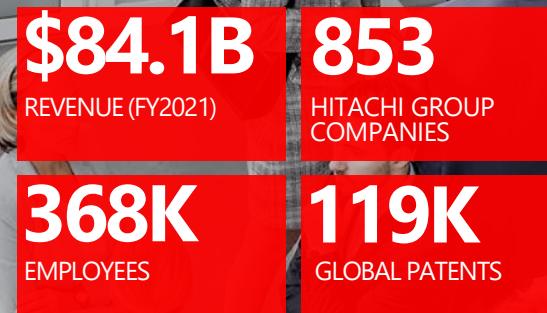
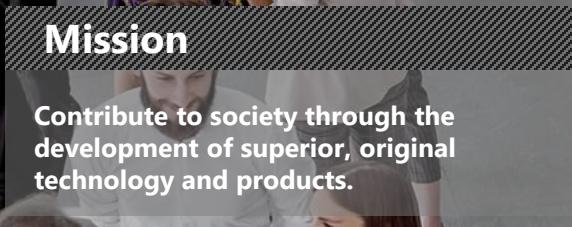
# Contents

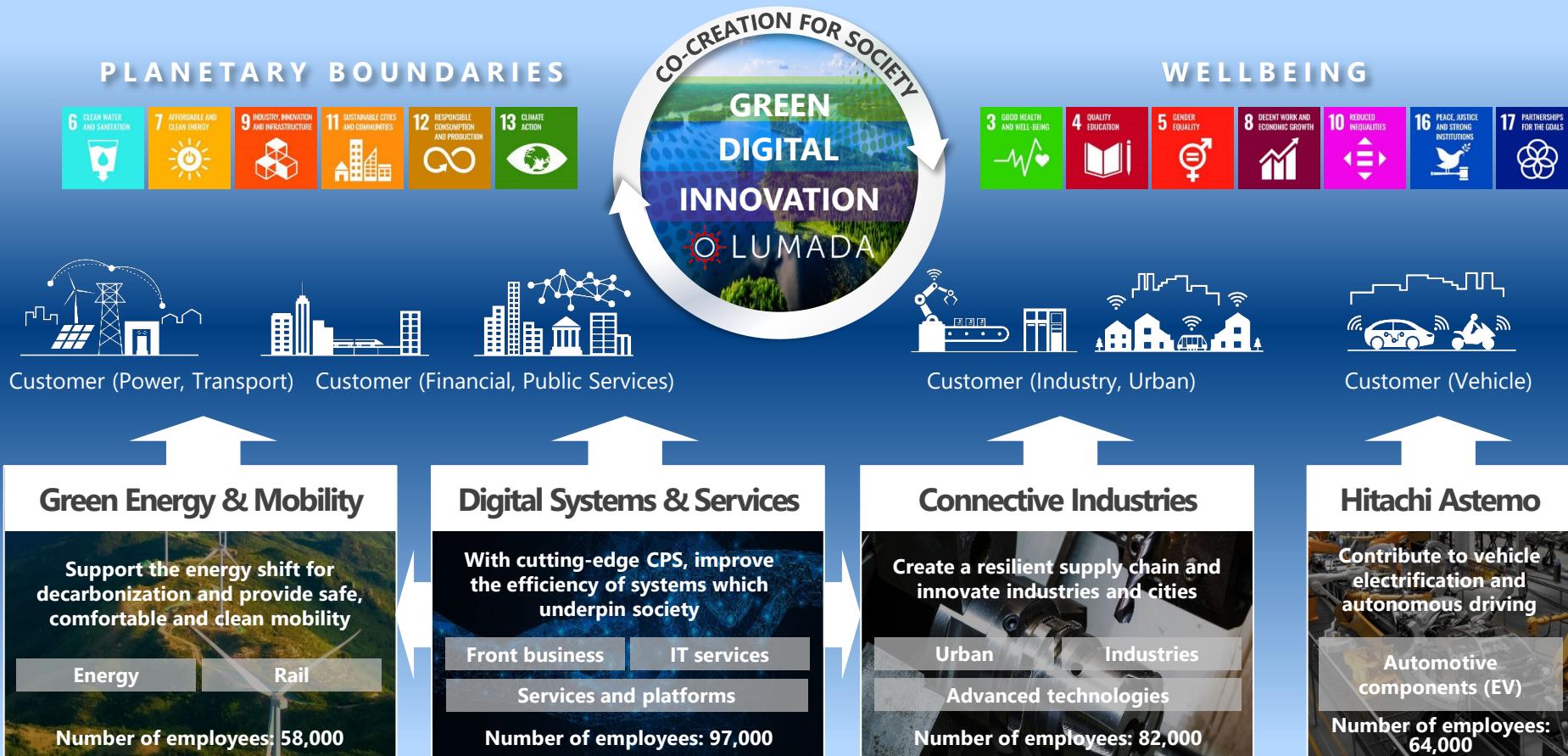
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- 1. Hitachi Overview**
- 2. Digital Innovations for Battery Ecosystems  
(Hitachi America, Ltd. R&D Solutions)**
- 3. Lithium-ion Battery Life Cycle Management  
(Hitachi High-Tech America)**

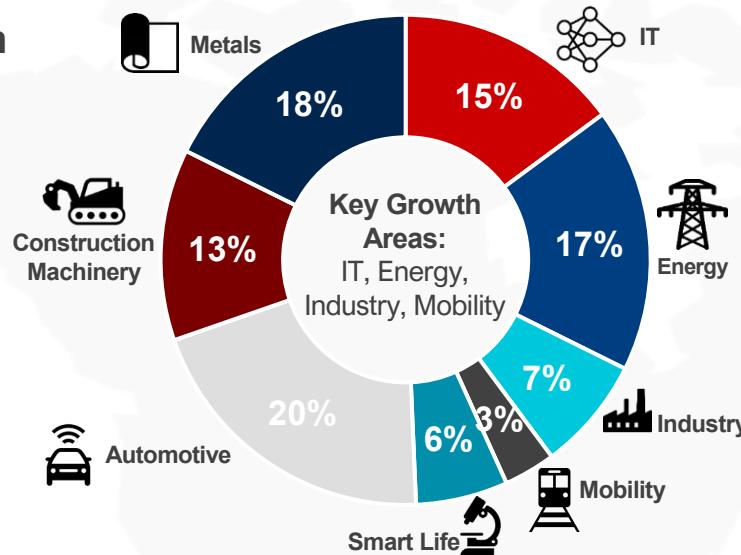


# 1. Hitachi Overview

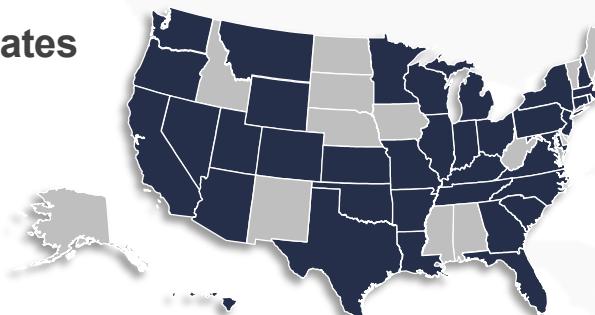




## Sales Composition



## U.S. Presence: 37 States



## HITACHI IN NORTH AMERICA (U.S. AND CANADA)

**1959**

Year of first U.S. subsidiary

**\$12.7B**

Total Sales FY2021

**28K+**

# of Employees

**97**

Companies

**78**

Manufacturing Sites

**30**

R&D Laboratories

## Environmental Vision

Hitachi will resolve environmental issues and achieve both a higher quality of life and a sustainable society through its Social Innovation Business, in collaboration with its stakeholders

### Long-term Environmental Targets: Hitachi Environmental Innovation 2050

#### For a decarbonized society

**Achieve carbon neutrality by FY2050 through the value chain**

Reduce CO2 emissions by 50% by FY2030 (compared to FY2010)

**Achieve carbon neutrality by FY2030 at business sites**

(factories and offices)

#### For a resource-efficient society

**Build a society that uses water and other resources efficiently with customers and society**

Efficiency in use of water/resources by FY2050

**50% improvement**

(compared to FY2010 in the Hitachi Group)

#### For a harmonized society with nature

Impacts on natural capital

**Minimized**

**SUSTAINABLE  
DEVELOPMENT  
GOALS**

To achieve its long-term environmental targets, Hitachi sets indicators and targets every 3 years. "Environmental Action Plan for 2021" covering the targets for FY2019 thru FY2021 is in progress.

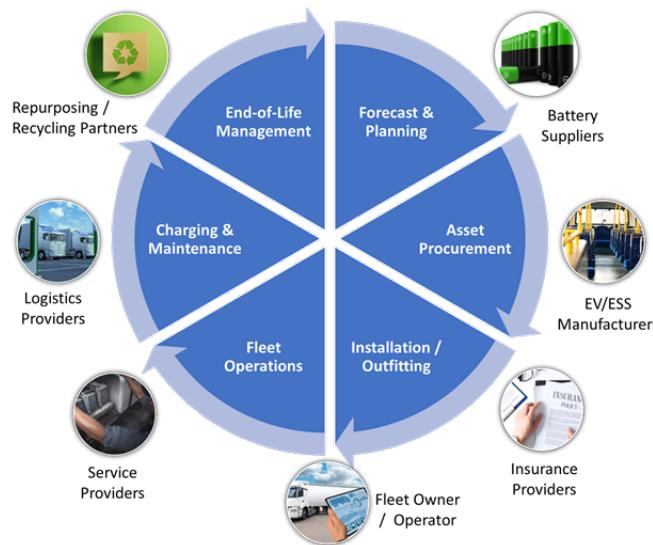


## **2. Digital Innovations for Battery Ecosystems (Hitachi America, Ltd. R&D Solutions)**

## 2-1 Digital Innovations for Battery Ecosystems

We are developing innovative digital solutions to address the challenges of battery ecosystems:

- Blockchain based trusted platform to connect the stakeholders in the battery ecosystem
- Analytics based solutions to enable data-driven decision making
- Micro-apps tailored for each stakeholder in the battery ecosystem



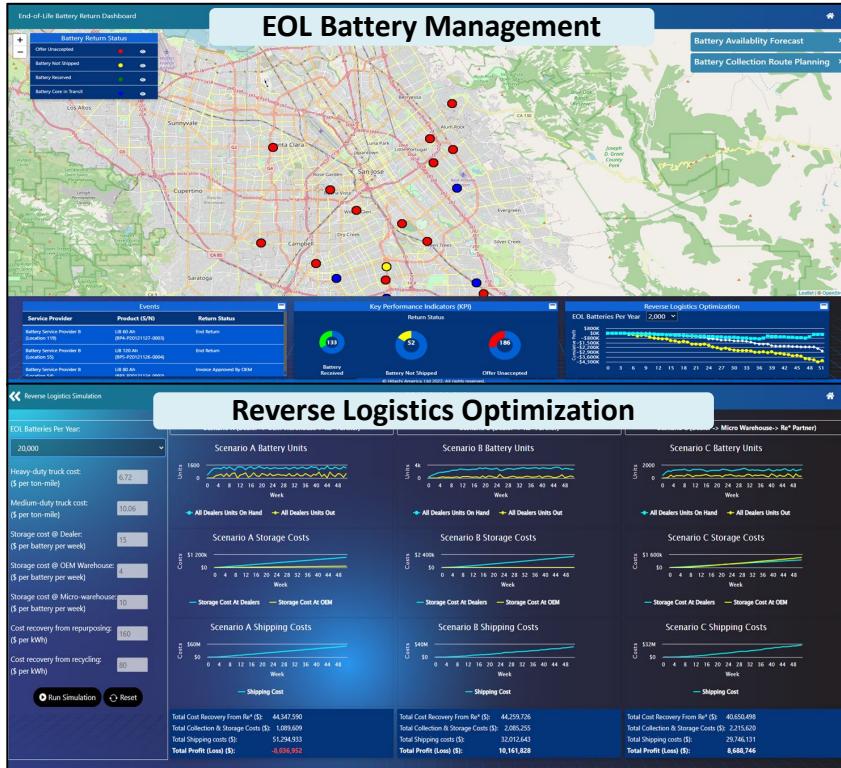
Battery Ecosystems Participants



Digital Solutions For Battery Value Chain

# 2-2 End-of-Life (EOL) Battery Management and Analytics

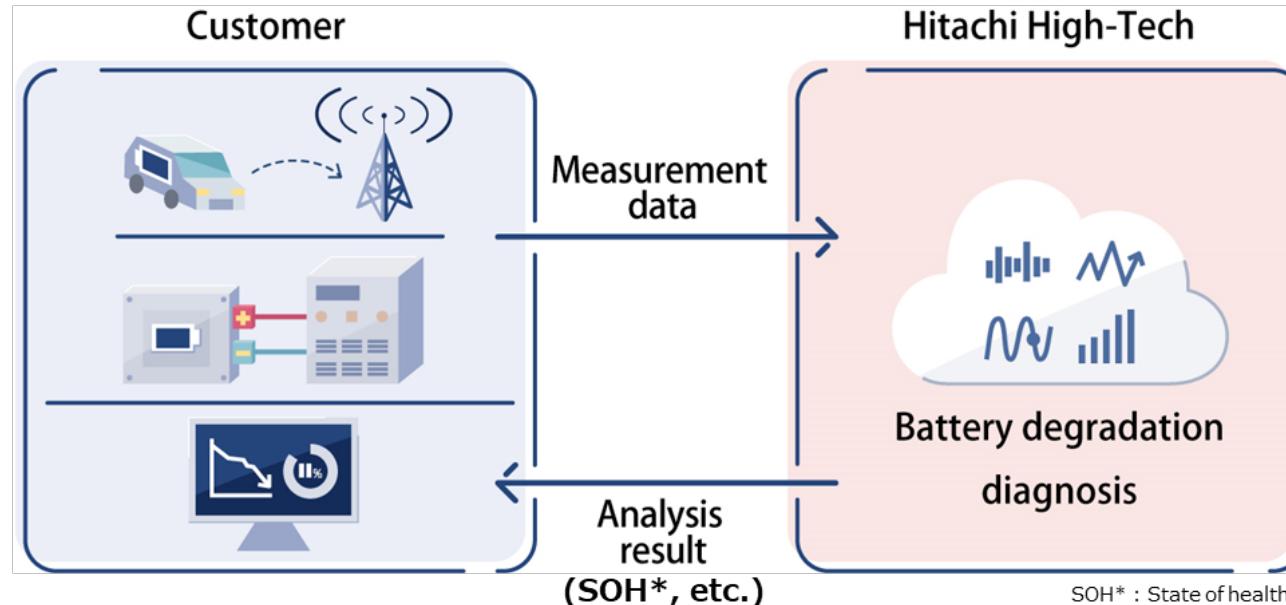
An innovative solution to track and forecast retired battery availability, estimate the remaining value of batteries, optimize transportation costs, and connect relevant stakeholders through a trusted platform.



### **3. Lithium-ion Battery Life Cycle Management (Hitachi High-Tech America)**

# 3-1 Lithium-ion Battery Life Cycle Management

## Solution Outline

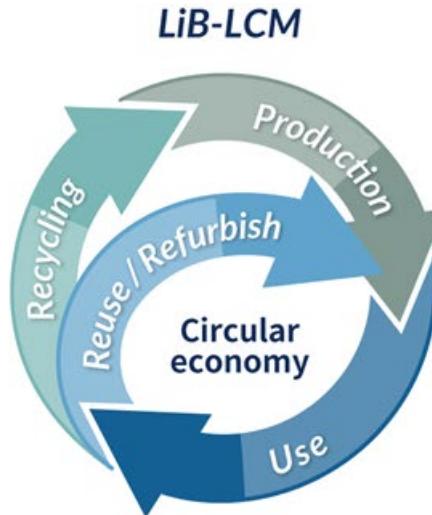


**Measurement data from the various operation equipment is analyzed in the cloud. Analysis results are displayed on dashboard.**

### Features

1. **Remote Battery Diagnosis & Rapid Battery Diagnosis**
2. **Applicable with current equipment customers own**
3. **Cloud-based diagnostic system**

# 3-2 LiB-LCM: Applicable Business Sectors



## Solution for Recyclers



- ✓ Sorting next life/real EOL as recycling

## Solution for Regeneration Business



- ✓ Degradation diagnosis • Residual value grasp
- ✓ Precise grading for reuse
- ✓ Used car assessment

## Solution for Battery manufacturers

## Solution for EV & Equipment OEM



- ✓ Identifying defective product and performance in pre-shipping inspection
- ✓ Analytical consulting for R&D

## Solution for ESS operators



- ✓ On-BMS installation
- ✓ Acceptance/Pre-installation inspection

## Solution for Fleet operators



- ✓ Degradation status monitoring
- ✓ Abnormal Deterioration Detection
- ✓ EOL management for 2<sup>nd</sup> life

## Solution for Fleet operators



- ✓ Degradation-based management
- ✓ Abnormal Deterioration Detection
- ✓ EOL management for 2<sup>nd</sup> life

# Hitachi members attending NaatBatt 2023

## Hitachi High-Tech America, Inc. members:



Ryo Kobayashi (Director)



Eric Yoshimura (Manager)



Monica Degnan (Western  
Area Sales Manager)

## Hitachi America, Ltd. R&D Solutions members:



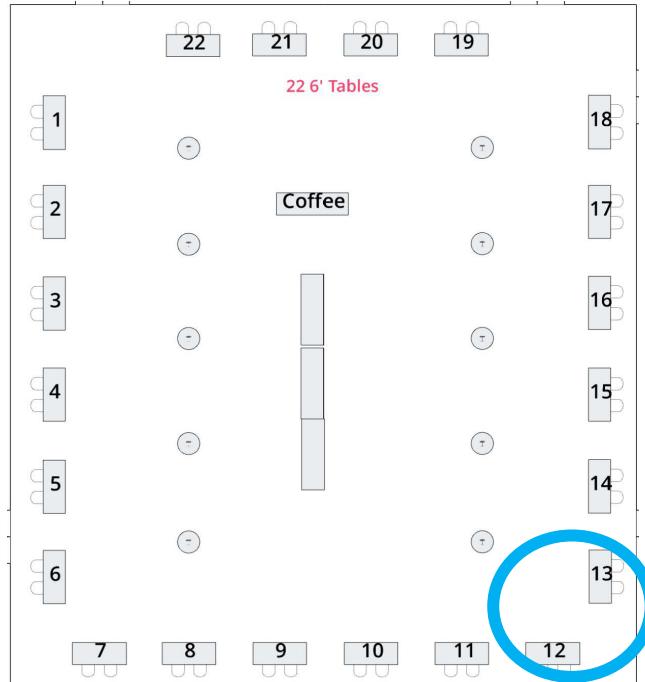
Amit Kumar (Sr. Manager, Solutions)



Pierre Huyn (Principal Research Architect)

## NaatBatt 2023 exhibitor booths:

#12 and #13



**END**

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***Creative Minds. Innovative Solutions.***