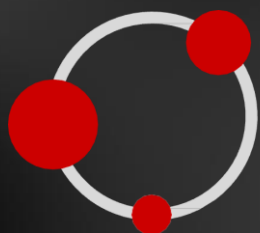
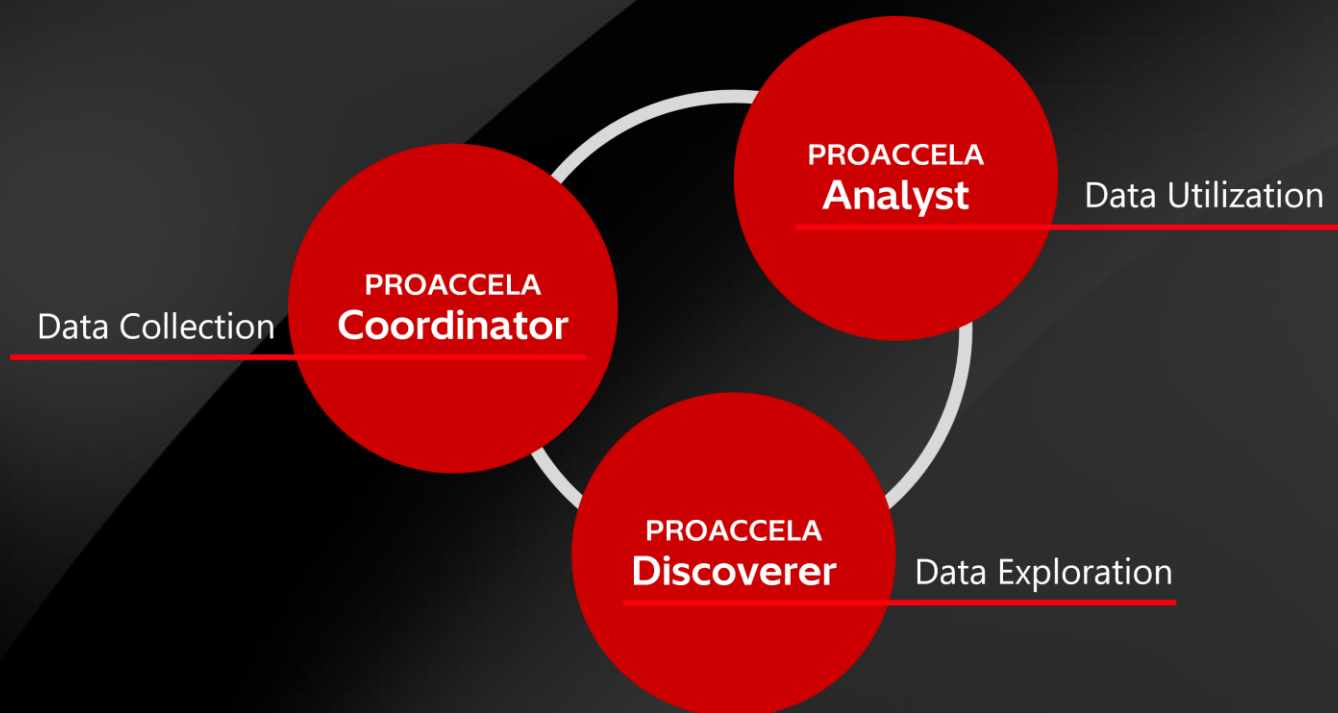


HITACHI



PROACCELA

Accelerating Industrial DX with AI and Informatics



HIMAX

HMAX Industry

AI & Informatics Solutions for Lab-to-Fab



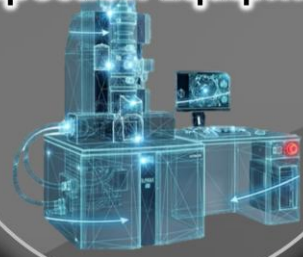
PROACCELA

AI • knowledge



Physical AI

Manufacturing & Inspection Equipment



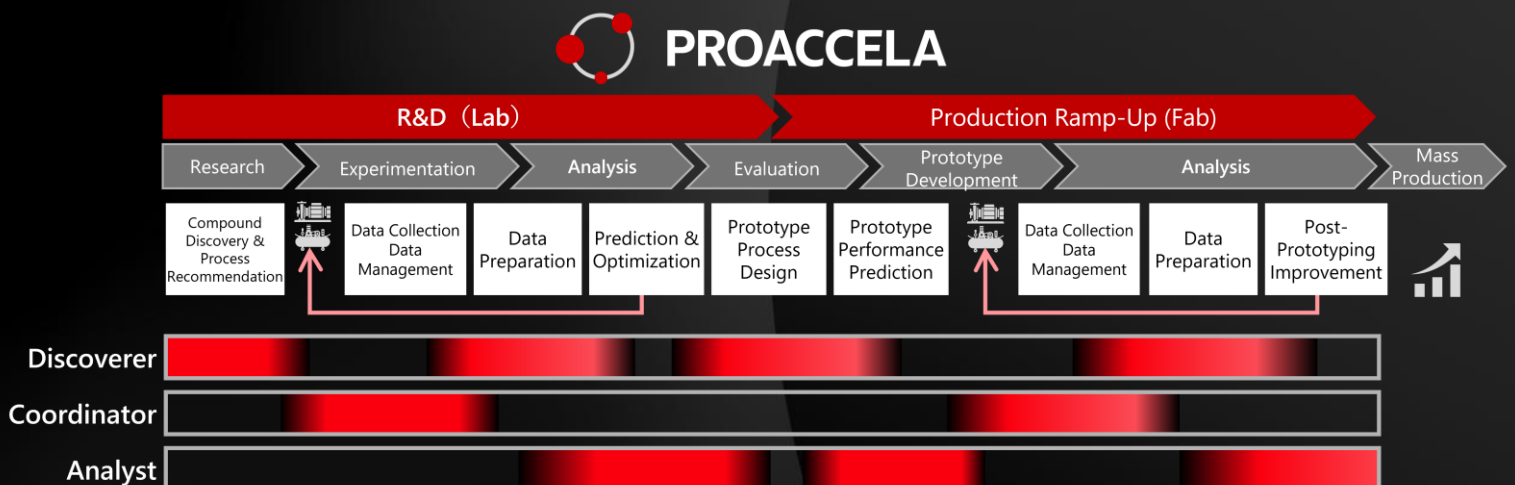
Physical Data

Supporting Customers from Lab to Fab for Advanced Materials

Advanced Materials Manufacturing Process



Category



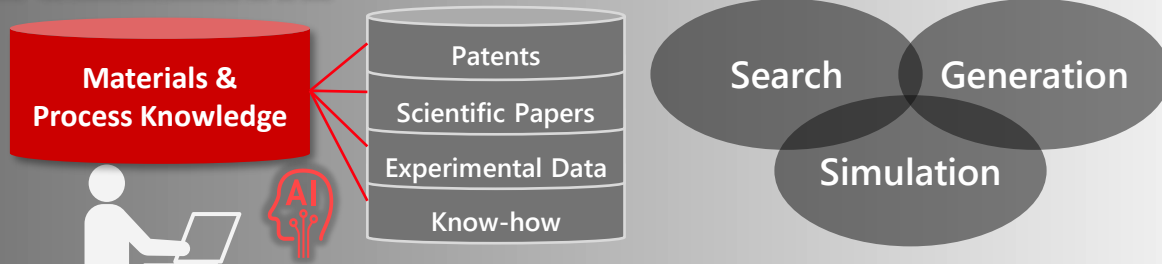


PROACCELA

Discoverer

Process Improvement Support AI (PISAI)

Improving Manufacturing Processes through Knowledge and Generative AI



1. Search

AI answers questions using the knowledge database.

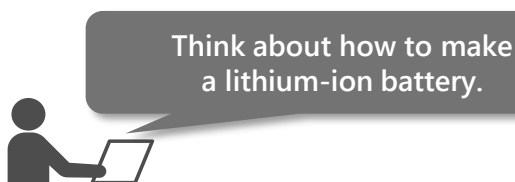
2. Generation

AI proposes new manufacturing processes, including novel material conditions tailored to the challenge.

3. Simulation

Process parameters are converted into tabular data for simulation and evaluation of experimental and production candidates.

Manufacturing Process Design & Data Extraction



Think about how to make a lithium-ion battery.

- Manufacturing Process Recommendation
- Inspection Process Recommendation
- Experimental Condition Recommendation



Manufacturing Process Recommendation

Manufacturing Flow Visualization

Support for trade-off analysis and optimization

Summary

Features

Tables

Samples

Download

Type	Exploratory	Exploratory	Exploratory	Exploratory	Exploratory	Exploratory
Columns	Cathode active material_KCMETL_01	Positive conductive additives_SuperP_01	Positive Binder_PMC_01	Positive Binder_SBR_01	Cathode dispersant_PCE_01	Cathode plasticizer_PEG_01
sample_01	94.2	2.30	1.90	0.500	0.500	0.000
sample_02	92.5	4.20	1.90	1.40	0.500	0.000
sample_03	91.8	4.90	0.800	0.600	0.400	0.000
sample_04	90.4	5.00	1.40	1.00	0.570	0.000
sample_05	92.6	4.40	1.70	1.30	0.580	0.000
sample_06	92.3	1.80	1.40	1.30	0.540	0.000
sample_07	91.8	5.00	1.80	0.800	0.420	0.000
sample_08	94.6	2.40	1.40	1.40	0.490	0.000
sample_09	90.2	4.90	2.30	1.90	0.600	0.000

Conversational AI Assistant for Data Preparation

Transform my data



Extraction of MI/PI-ready tabular datasets

Improve data quality and transform it into a format suitable for AI and machine learning





PROACCELA

Materials Informatics (MI)
Process Informatics (PI)

Analyst

80% Reduction in
Experimental and
Prototype Iterations

Design expertise with data

Forward
Analysis

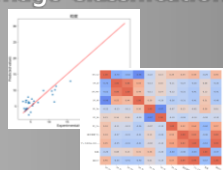
Inverse
Analysis

Image
Classification

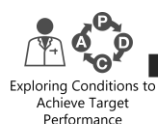
Designed Around
Researchers



Prediction,
Optimization &
Image Classification



Expert-Led Support



Material	Process	Performance Testing
40	20	100
50	30	110
Based on Historical Experimental Results		

Forward Analysis

Predict Product Performance from Process Conditions

Material	Process	Performance Testing
Cathode	Additive	Solvent
100 g	20 g	100 ml
	Mixing	Coating
	100 rpm	20 n/min
		120 °C
		Battery Capacity
		Battery Performance
		???
		???



Predict Performance from
Conditions

Inverse Analysis Optimize

Predict Process Conditions to Achieve Desired Performance

Material	Process	Performance Testing
Cathode	Additive	Solvent
???	???	???
	Mixing	Coating
	???	???
		???
		Battery Capacity
		Battery Performance
		150 mAh
		100 Ω



Predict Conditions from
Performance

Forward Analysis

Predict material properties from composition ratios and process conditions.

Inverse Analysis Optimize
Optimize formulations and manufacturing parameters to achieve target properties.

Image Classification

Quantitative classification using AI-based image analysis.

Discoverer

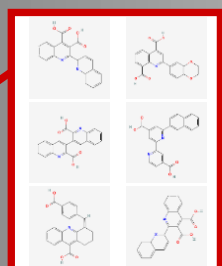
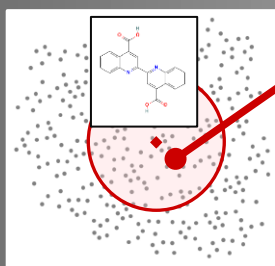
90% Reduction in
Compound
Exploration Time

Chemicals Informatics (CI)

Discovery of chemical compounds using AI

COMPONENT	NAME	STRUCTURE	PROPERTY	STATUS
1	1,2,3,4-tetrahydroquinoline		1.2	OK
2	1,2,3,4-tetrahydroquinoline		1.2	OK
3	1,2,3,4-tetrahydroquinoline		1.2	OK

designated compound List of similar compounds



Compound
search

Regulatory
Compliance

Intellectual
Property Risk
Assessment

Chemicals
Informatics

- Comprehensive extraction of candidate materials from large patent databases
- Early identification of promising compounds during technology investigation and material design
- Initial screening of patent infringement risks



PROACCELA

Electronic Laboratory Notebook

Coordinator

Securely Centralize Experimental Data
and Enable Organization-Wide Utilization



Custom Forms
for Every Team

Flexible Layouts
Tailored to
Each Experiment



Securely centralize and manage diverse experimental data generated in R&D.

Enhance data searchability and reusability without changing existing research workflows.

Built with the scalability to support MI, PI, and future AI-driven innovation.

Robust
Security

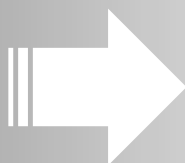
High
Scalability

Flexible
Layout Design

Coordinator

Data Integration

Visualize Experiment Workflows with an Integrated Data Model



Visualization

Data
Integration

Intuitive Data
Management

Visualize and manage research data relationships through a unified digital data model.

Connect data across disparate databases to prevent information silos, improve data utilization, and enable seamless collaboration across teams and organizations.

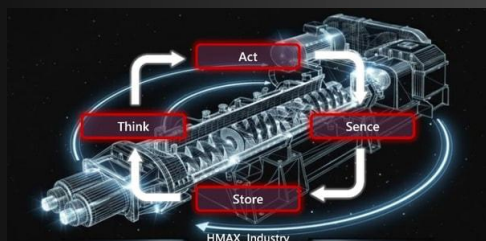


PROACCELA

Case Study

Discoverer × Analyst

PISAI×PI



Utilizing public patent data and proprietary knowledge to identify optimal mixing conditions and process parameters for slurry manufacturing through AI-assisted recommendations.



Electronic Laboratory Notebook × MI

Coordinator × Analyst



Visualizing and organizing challenges, establishing a data collection platform, and introducing Materials Informatics for development DX initiatives.

Discoverer

CI

Addressing structural challenges dependent on individual expertise by providing objective, data-driven support for decision-making, faster investigations, and multi-perspective evaluations.



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<https://www.hitachi-hightech.com/jp/ja/products/ict-solution/randd/>



Web