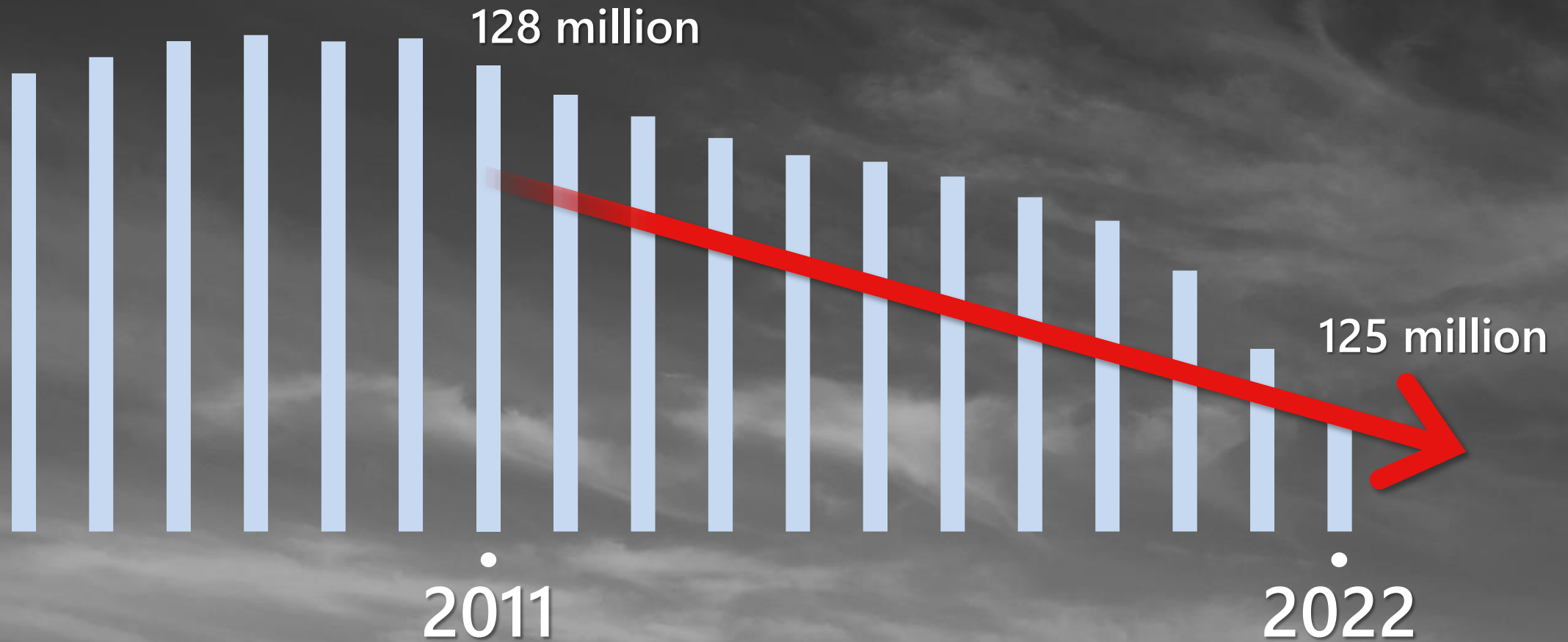


# Sustainable economic growth

# Decline in total population of Japan due to decreasing birthrate



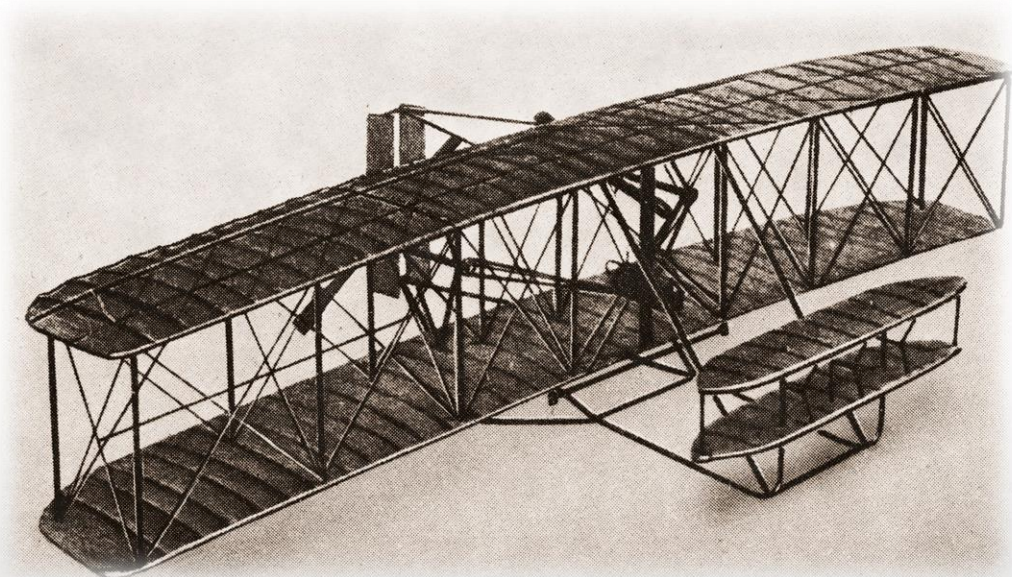
Source: Statistics Bureau, Ministry of Internal Affairs and Communications  
Population Estimates (as of October 1, 2022)

# Japan's power to achieve innovations

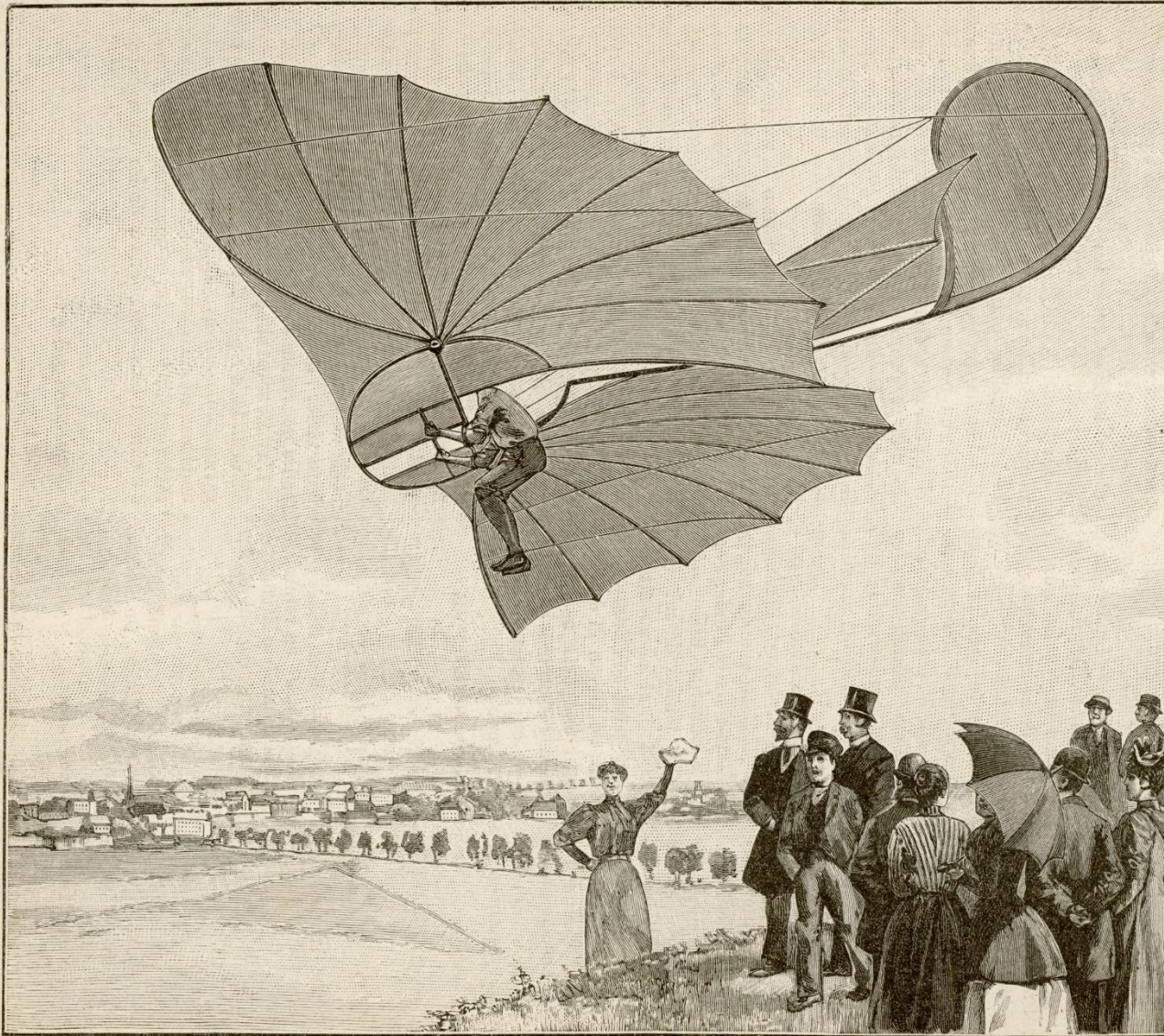
# Hitachi's vision for the future of innovation



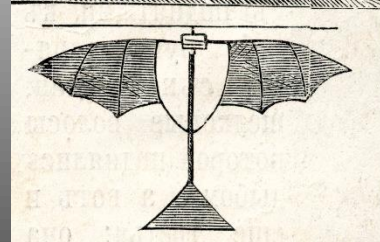
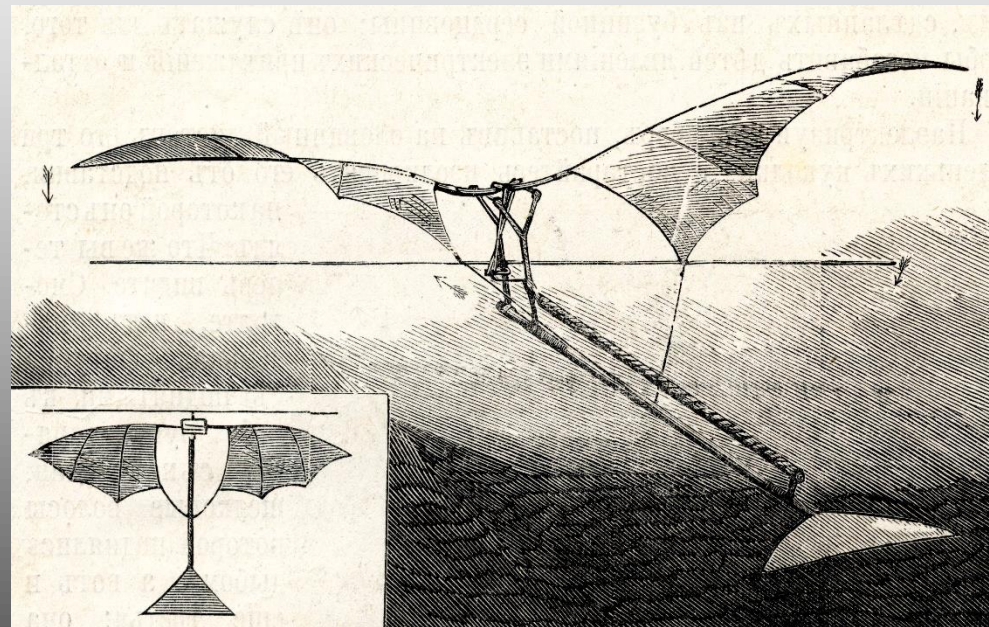
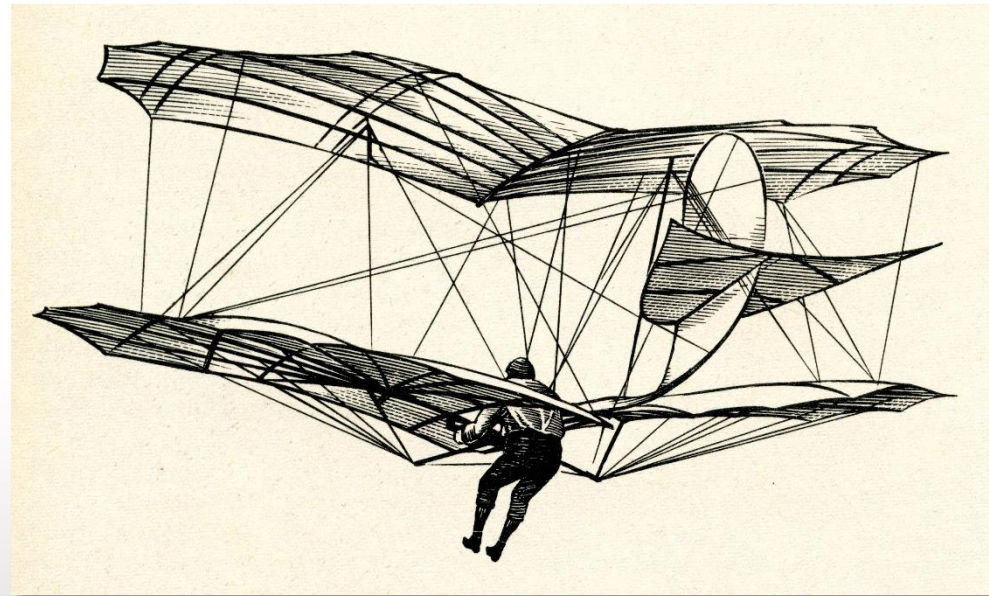
Orville Wright (1871-1948)  
Wilbur Wright (1867-1912)



Orville Wright (1871-1948)  
Wilbur Wright (1867-1912)

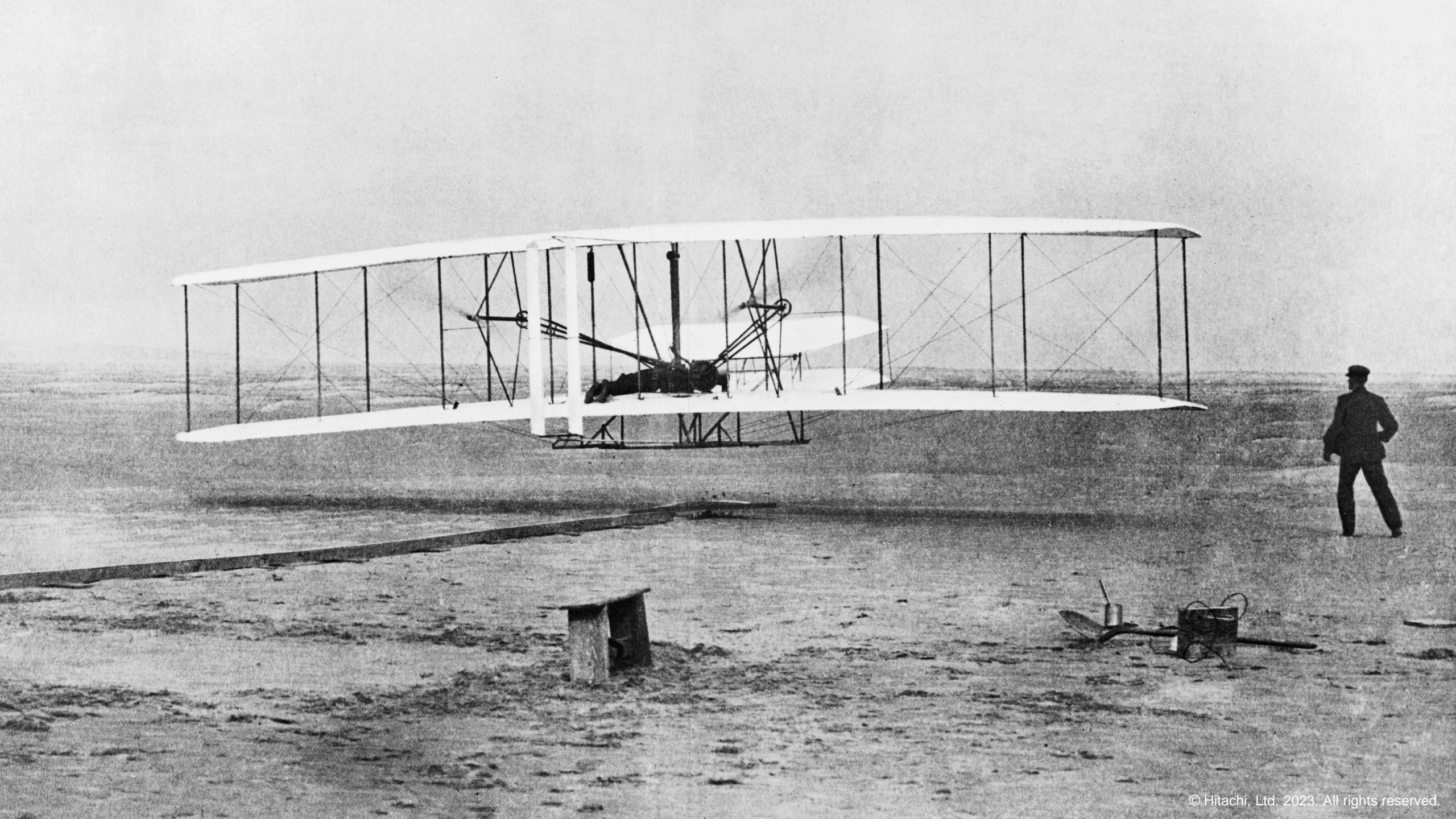


L'HOMME VOLANT. — Expérience de M. Otto Lilienthal.









# Actions

Create prototype



**Will  
to Fly**

# Information

Flight research



# Science

Wind tunnel tests



# Innovations

## Actions

Acquire new knowledge



## Information

Share and develop knowledge

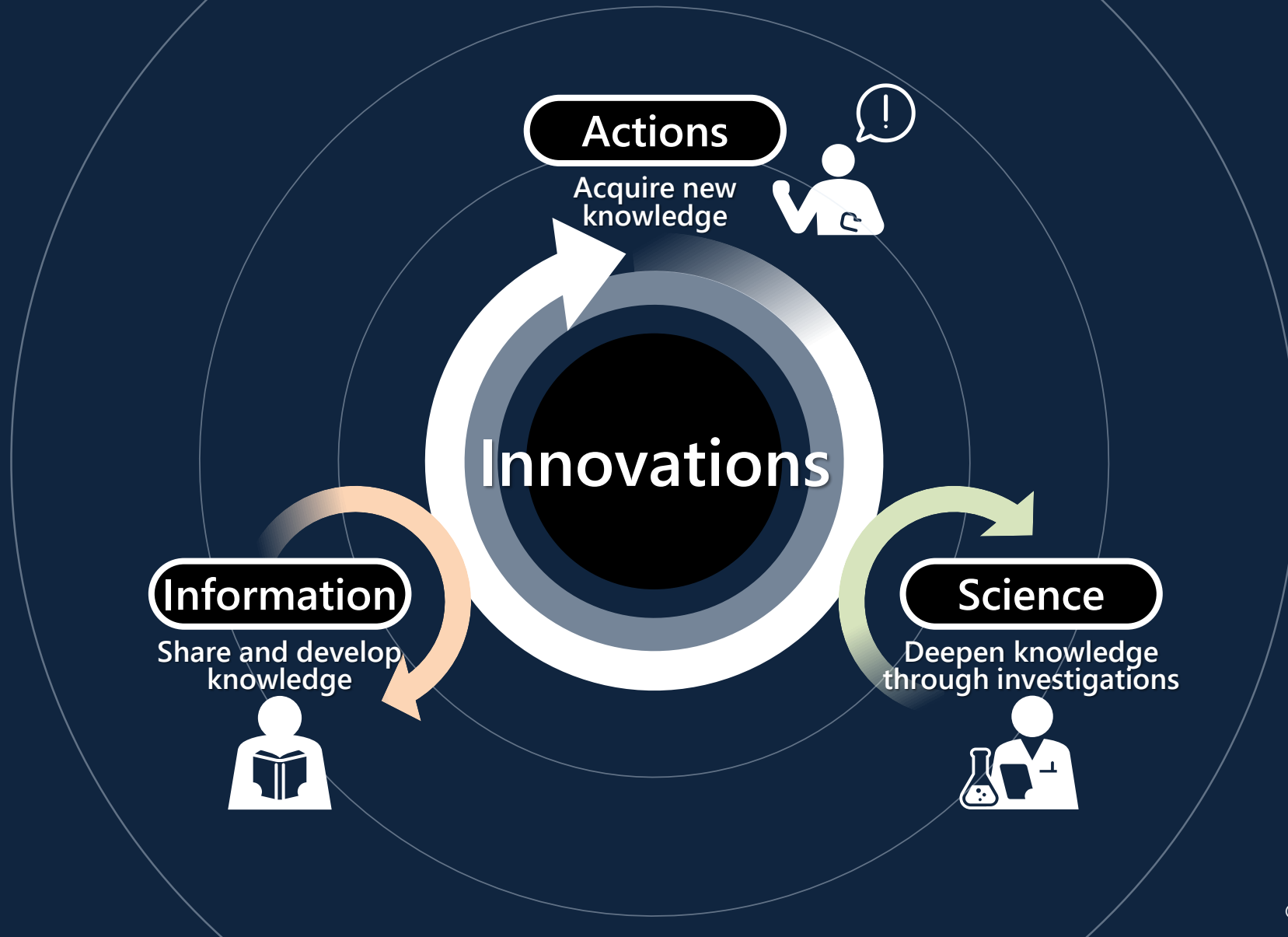


## Science

Deepen knowledge through investigations



# Human evolution through a chain of innovations





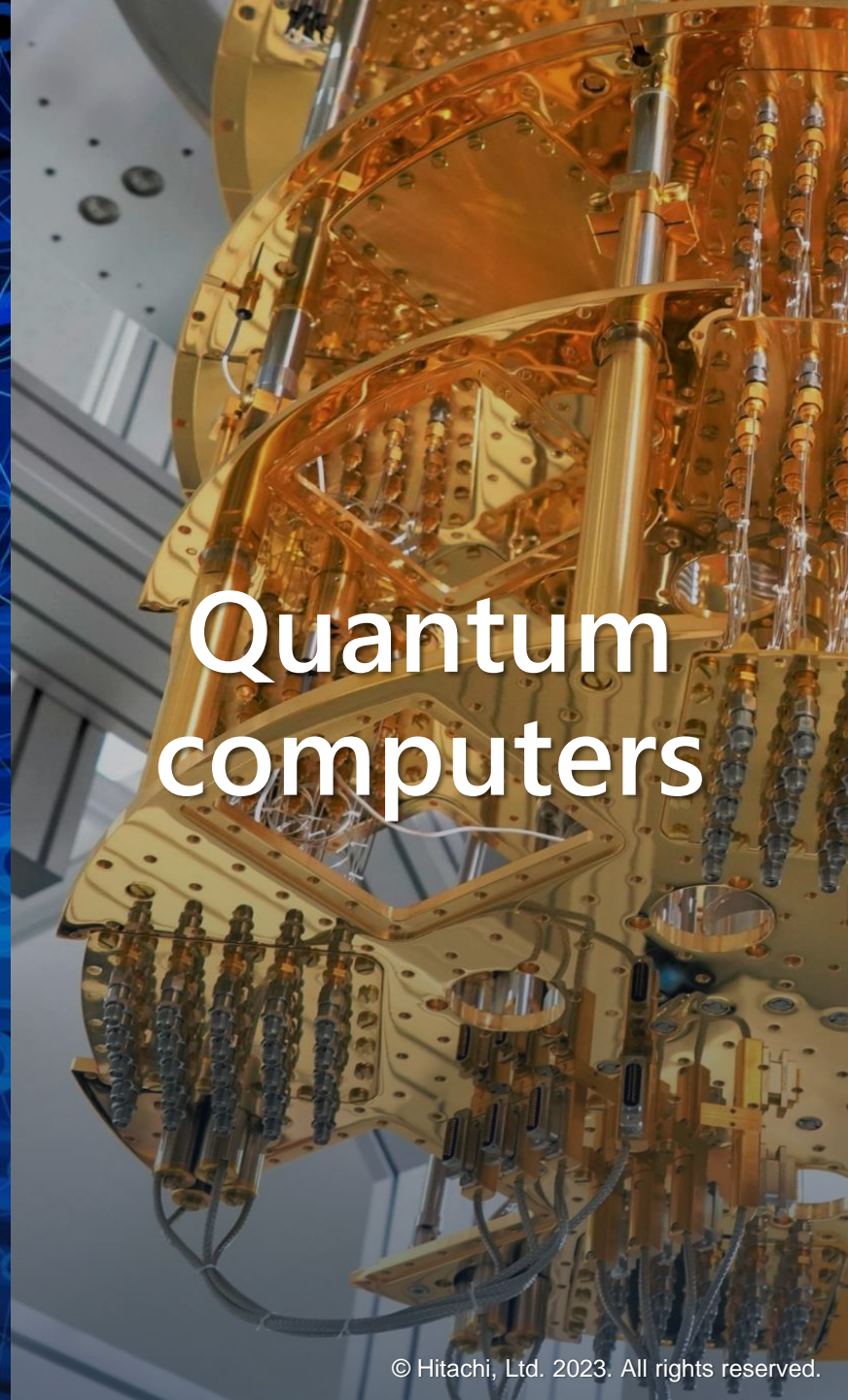
Hitachi Social Innovation is  
**POWERING GOOD**

A microscopic view of several cells, with one cell in the foreground being larger and more detailed, showing its nucleus and cytoplasm. The background is a soft-focus view of other cells.

**Bio-  
technology**

A network diagram with a dark blue background. It features a complex web of thin white lines connecting various nodes. Some nodes are represented by small blue circles, while others are larger and more prominent. The overall effect is a sense of interconnectedness and data flow.

**Generative AI**

A close-up view of a quantum computer's hardware. The device is highly complex, featuring a dense array of gold-colored components, including what appear to be qubits and control lines. The lighting is dramatic, highlighting the intricate details of the machinery.

**Quantum  
computers**

**Actions**

**Bio-  
technology**

Extend healthy lifespan  
and improves activity

**Information**

**Generative AI**

Gain insights effectively  
from a large volume of  
documents

**Science**

**Quantum  
computers**

Discover new scientific  
findings more quickly

# Generative AI





# Modeling intelligence based on language

# Mechanism of generative AI

Large volumes  
of knowledge

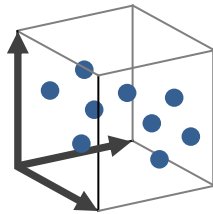
Natural (human)  
language information



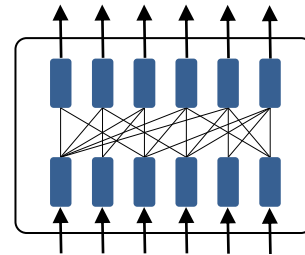
Accumulate



Transformer  
-based learning



Convert words  
into vectors  
(Recognize multidimensionally)



Rapidly learn word  
relationships and context  
(Iterate word connection predictions)

Large Language Model

Transformer-based  
large neural networks



Questions

Answers



**The accuracy of the intellectual work improves dramatically when the language model scale exceeds a certain number of parameters**



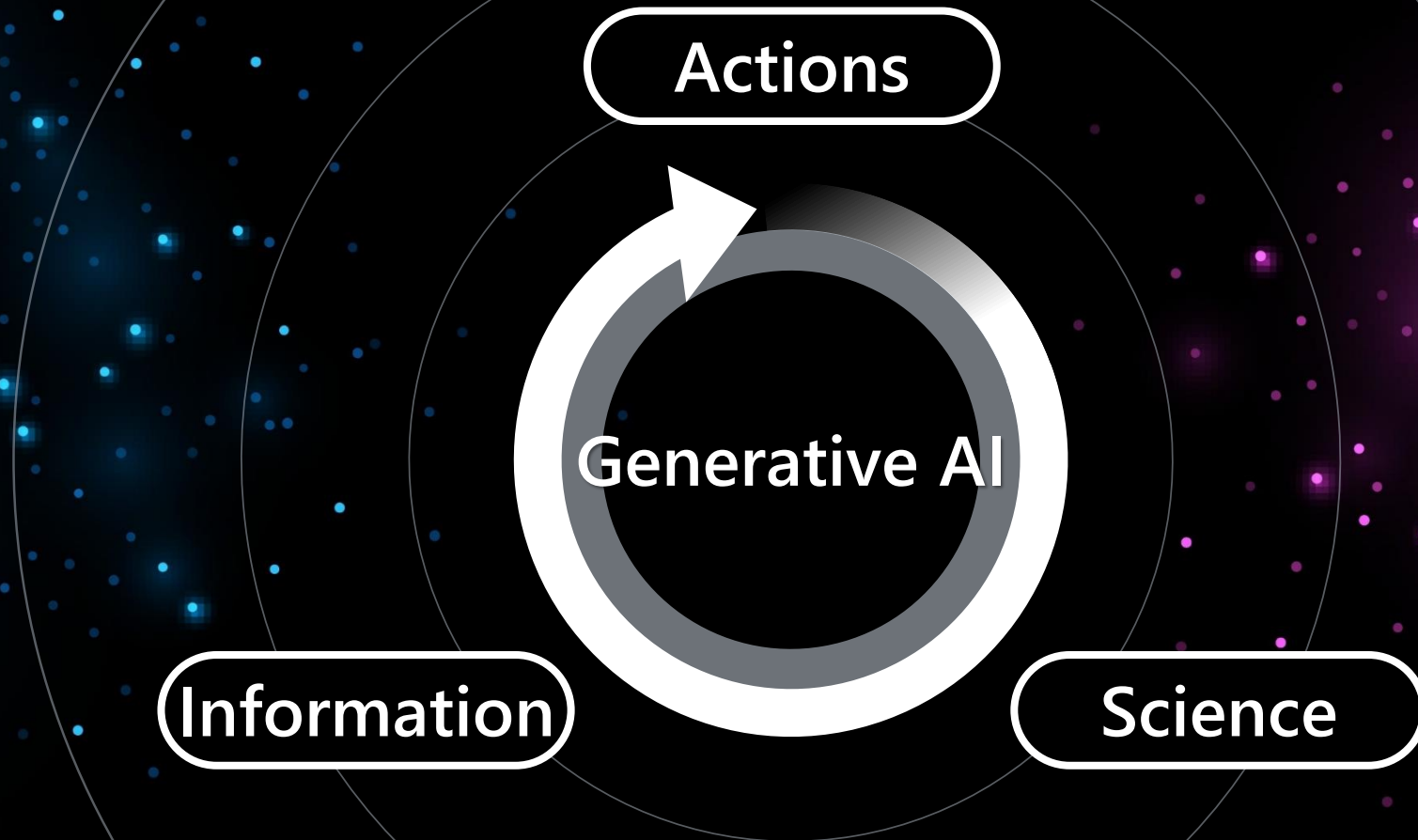
**Present ideas and options even for questions with no clear answers**

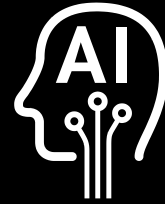
**Enables the intuitive use of huge volumes  
of information**

## **Generative AI**

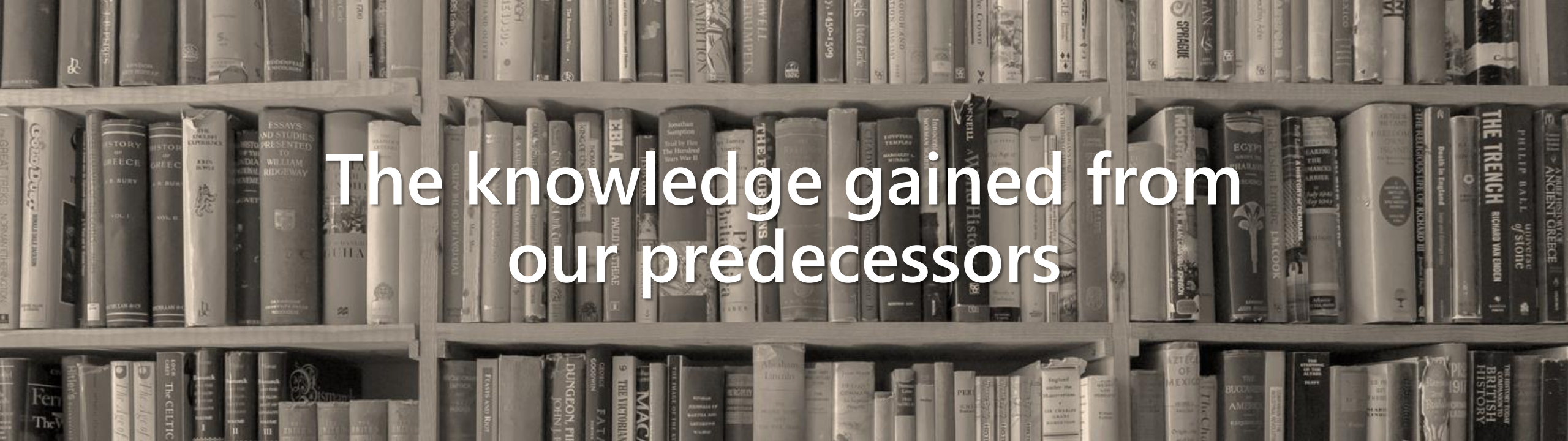
**Provides powerful assistance in human intelligence  
tasks and illuminates information that remained  
hidden in the past**

# Increasing the power to create innovations





**Generative AI draws out  
the hidden potential of companies**



The knowledge gained from  
our predecessors



The knowledge within  
the organization

The background of the slide is a composite image. The top half shows a close-up of bookshelves filled with books, with some titles like 'THE TRENCH' and 'BRITISH HISTORY' visible. The bottom half shows a person standing in a long, brightly lit aisle of a library, looking at a laptop. The overall color scheme is a dark, muted blue.

**Lessons from success and failure**

**Master skills passed on  
through the front lines**

**Implicit knowledge**



# **Accelerating companies' innovations**

## **Contributing to sustainable economic growth**

**SEKISUI**

**HITACHI**  
Inspire the Next



**SEKISUI**

Comments from customers

**“We want you to deliver more advanced materials even more quickly”**



**SEKISUI**

## **Materials Informatics (MI)**



**Using data and digital technologies  
to accelerate the development of new materials**



It was difficult to centralize digital data for MI

# Minase Innovation Center

SEKISUI

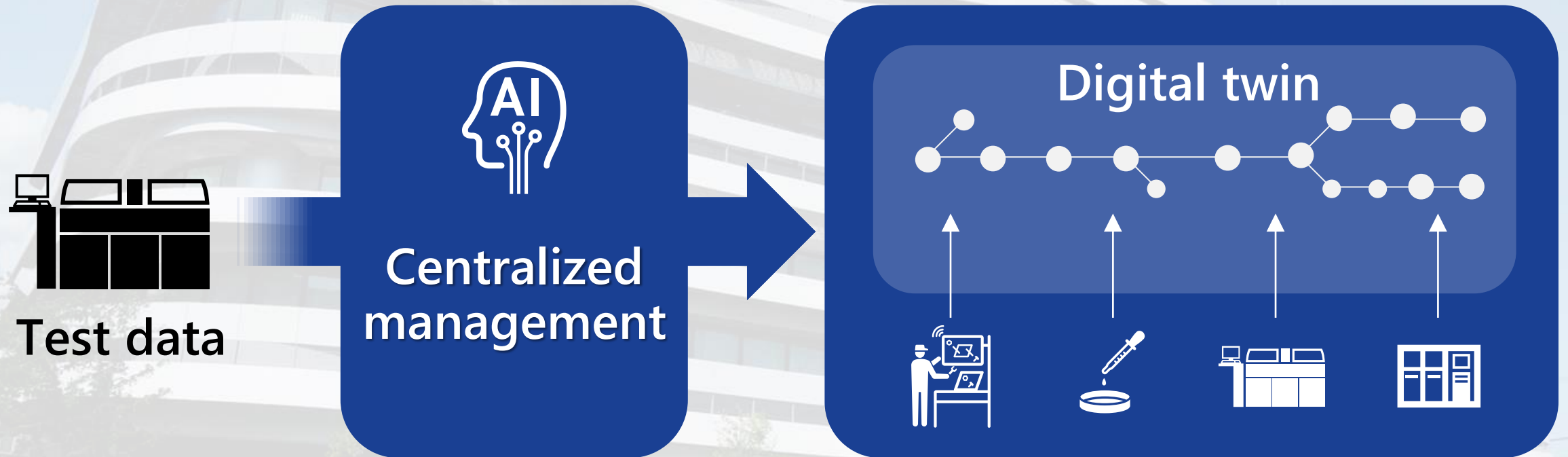


# Gather and organize test data from inside and outside the company




**Making data easy to use**

# Automatic gathering and centralized management of test data



Build digital twins to  
conduct tests in a digital space



A man in a grey suit and blue shirt stands in a modern, brightly lit laboratory or office. In the background, a sleek, futuristic car is visible, along with various pieces of equipment and a clean, professional environment.

**Together with  
Hitachi's sales staff and engineers,  
we are striving to improve the efficiency of  
data gathering and analysis, and to  
develop even more advanced materials.**

**Innovative Informational Intelligence Center,  
Advanced Technology Institute,  
R&D Center, SEKISUI CHEMICAL  
Yoshikazu Masuyama**



**Digitize the implicit knowledge and expertise  
of skilled employees and developers**



**Draw out the organization's full potential  
to create more advanced materials**

# Issues in the new era of AI

Reliability

Copyrights

Ethics

Energy consumption

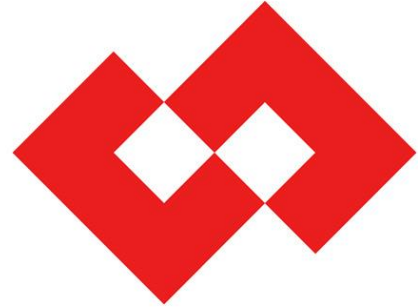
# Electric power demand in data centers



Source: Japan Science and Technology Agency (JST)  
"Impact of Progress of Information Society on Energy Consumption (Vol. 2)" (February 2021)

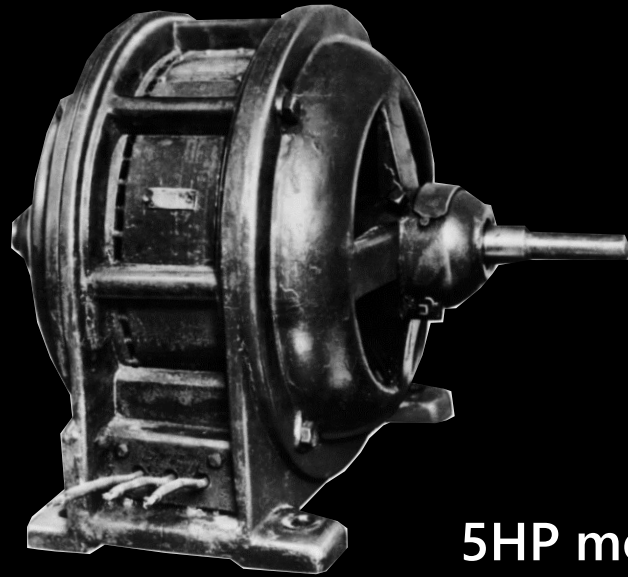


Developed energy management technologies  
to make further use of  
renewable energy at data centers



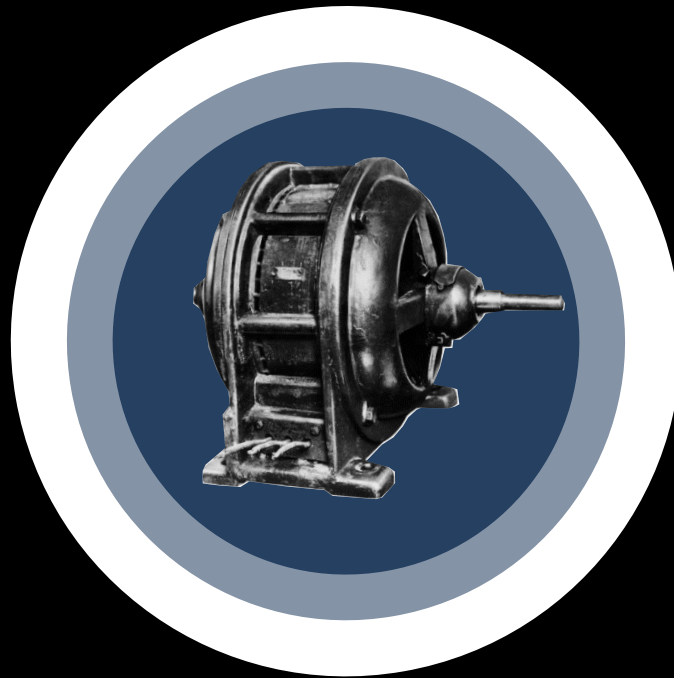
**TEPCO Power Grid, Inc.**

**HITACHI**  
Inspire the Next



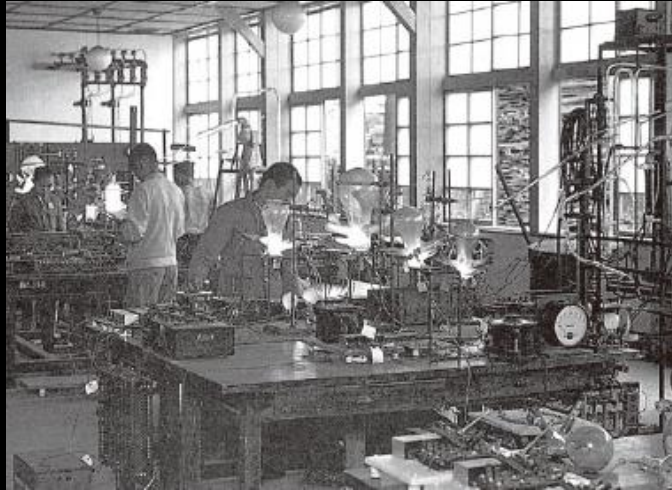
5HP motor

**A strong will to develop machinery  
with Japanese technologies  
for the country's growth**



**Founder Namihei Odaira**





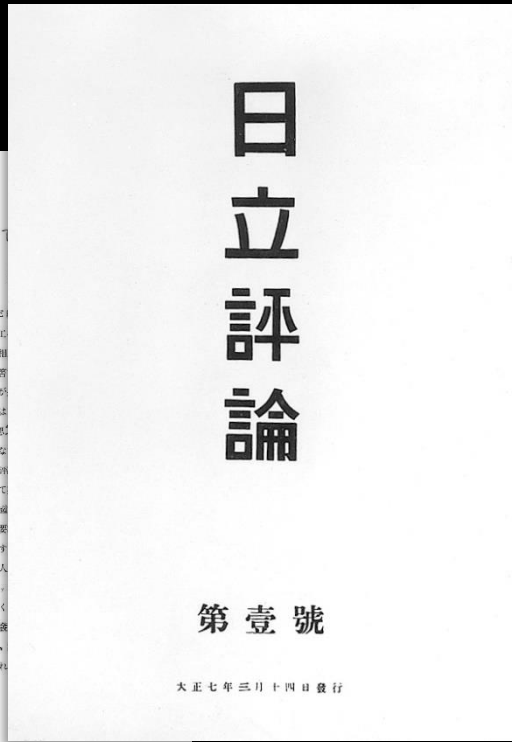
**Newly set up R&D Unit**

**Founder Namihei Odaira**

# Japan's first industrial technology magazine by a company "Hitachi Review"

日立評論發刊に就いて

製作所が業を創めてから速くも拾年近くに成つた。其間随分とも角役員兼人及び職員の職工で有つたものが數給人で數百の職工を擁して數百の機軸が數千の職人と共に毎月一つの巨額の下に數千の製作家が一團に成るものと思ふし念慮なくてはならない。其小見を成むるに巧の矢を以てし一本一本ださず容易に手折れるがれ基くはない。後小供等も必ず心を合はして遊りに場に關いでは事古閑い話であるれきも吾々の場合にはも正にフィットすると思ふんでは一國家も其強弱は能く富強になつて居るか。なつて居るも亦能く富強になつて國柄をして益々強固ならしめぬ。本日立評論にするの用に供したいものと思はれる。殊に秀實の人下百を以て本立ちで有る能く富強になつて居るかは結局は無論の事實に依る状態を見るさ其だ能く統一せられて居るらしい。製作家も職工も及製作家等自身の内輪に於ても決して同く別々の意見を有るや廣くもない範圍の知識が度々甲論乙駁の記事を見る事がある事と思はれる。本誌は以て多くの氣鋭人士の説をアノジしホソフ。米國電氣工師會談及び日評論を併したるが如き形に應る所くダーに成つて欲しい。新特許を紹介する事、新発見の研究事項を彼の功績を評する事、其他多くの人が知つて欲しい所を發表する事、するを便さるかと思ふ。蓋し蓋し改革は斯くの如くして得られ此の希望を永抱さならざらしめよ。



Founder Namihei Odaira

**Actions**

**Will**

**Information**

**Science**



# Contributing to sustainable economic growth

**Will and actions to improve society**



**The driving force behind innovations**

A woman with her back to the camera, wearing a bright yellow sweater, stands on a green hillside. She is looking towards a city skyline on the right and several wind turbines on the left. The entire scene is overlaid with a blue network of glowing nodes and lines, symbolizing connectivity and technology. The background is a clear blue sky.

Hitachi Social Innovation is  
**POWERING GOOD**