

New business development

Message from CSO



Masahide Yamada

Executive Officer
Chief Scientific Officer

Our R&D toward achieving our Management Plan “Mission 2030” is based on the core value “Initiative,” and is implemented with a strong focus on timelines and a strong will to achieve goals.

While selecting research topics and optimizing resources based on market trends and market evaluations, we also ensure that researchers themselves actively collect information on customer needs and technology trends at other companies by drawing on our external networks. To expand and enhance research areas, we are also focusing on promoting open innovation through industry-academia-government collaboration and automating evaluation and experimental processes using DX.

In new business development, in addition to collaborating with startup companies utilizing the corporate venture capital that we established in 2023, we will strengthen collaboration with existing business divisions to quickly commercialize themes derived from existing business areas.

For our intellectual property strategy, we are working to provide advanced analytical information such as IP landscapes that support business strategies, new business development, and management decisions, with a focus on implementing intellectual property reforms that maximize customer value.

Research & Development Policy

The Denka Group is accelerating the creation of attractive new businesses and products that create new value by expanding our range of the “technologies that we do best” and promoting the development of products unique to Denka that can contribute to a sustainable society. To this end, we will promote research and development that leverages the Group’s collective strengths to integrate multiple disparate technologies and generate synergies across the entire Denka Group that transcend organizational boundaries and domains.

Strategy in the Management Plan “Mission 2030” (road map for achieving M30)

[FY2024 Results]

- Enhancement and promotion of R&D according to the megatrend
- Establishment of an R&D portal site to share effective technological information across the company
- Introduction and development of new processes to reduce CO₂ emissions and to achieve a recycling oriented society

[FY2026 Targets]

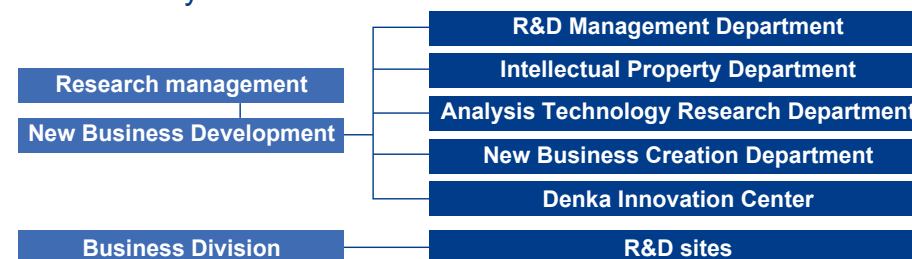
- Capture the future customer needs, develop research themes, and create new business at speed
- Optimize research resources and promote R&D through in-house synergy effects
- Promote MI* and IPL* usage initiative and establish an R&D platform

* Materials informatics
* Intellectual Property Landscape

[FY2030 Target (Ideal Form)]

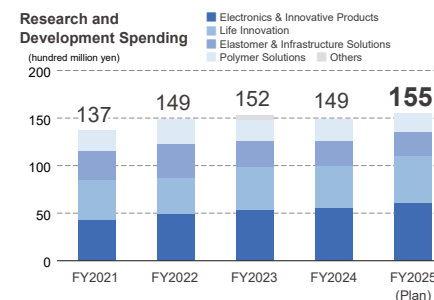
- Create new businesses by making the most of the research assets and contribute to society with new values
- Deepen seeds-needs matching and provide products and service offerings that suit the needs of society and markets
- Make the most of the R&D platform to promote efficient product development and technology development
- Provide opportunities for capable research human resources with insights and due diligence to build business models

Promotion System



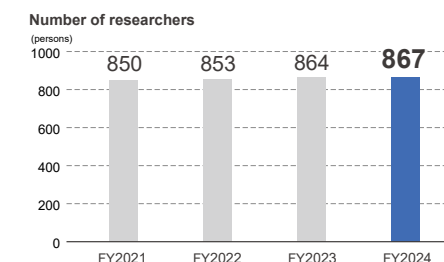
R&D Spending (Consolidated)

The annual average of the five-year R&D budget between FY2019 and FY2023 was 14.8 billion yen, and the budget in FY2024 was 14.9 billion yen.



Number of researchers (consolidated)

The number of researchers in FY2024 was 867, which increased by approx. 30 in 4 years.



Intellectual Property Initiatives

1 Intellectual Property Vision

MISSION

Provide high-value-added intangible assets to directly and indirectly increase the corporate value.

PURPOSE

To serve as a compass to guide to business value creation through merging IP and our specialties.

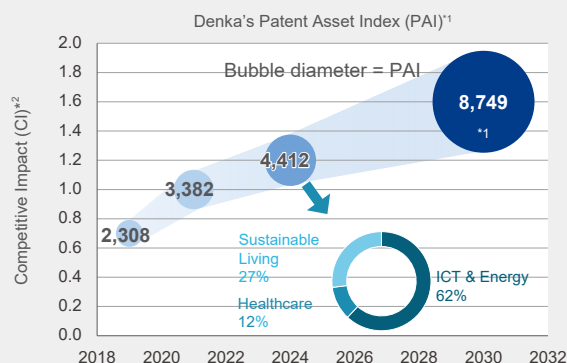
CORE VALUE

Specialty : Each individual becomes a human resource with unique value.
Diversity : Acknowledge and empathize with different backgrounds and viewpoints to grow together.
Co-creation : Respect each other and tackle work with integrity.

2 Intellectual Property Strategy for Achieving Management Plan “Mission 2030”

To achieve our management plan “Mission 2030” goal of ¥100 billion in operating profit by fiscal 2030, we analyzed the relationship between past and present “operating income” and “patent asset value” (Patent Asset Index: PAI)*¹, as well as “relative patent value” (Competitive Impact: CI)*². As a result, we estimated that the PAI (8,749) and CI (1.6) at the time of achieving the Mission 2030 operating income target would be higher than our current PAI (4,412) and CI (1.2). We are therefore working to maximize patent value that is effective for our business, and are also considering setting KPIs linked to business strategy.

Patent Asset Value Based on Operating Income



*¹ Patent Asset Index (PAI value) refers to a metric that represents competitive advantage and total value of the patent portfolio calculated using LexisNexis' PatentSight

*² Competitive Impact (CI value) refers to a metric that represents the competitive strength and quality of the patent family, calculated from the number of the references to the patent family and the size of the global market where the patent family members exist.

3 Activities to Maximize Intellectual Property Value

(1) Intellectual Property Strategy that Contributes to Realizing Business Strategy

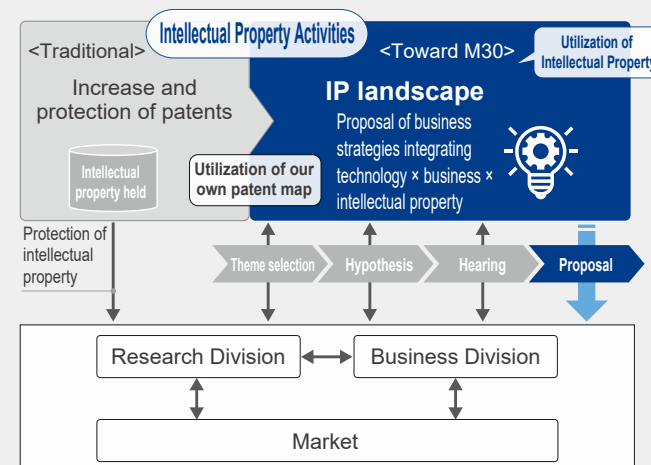
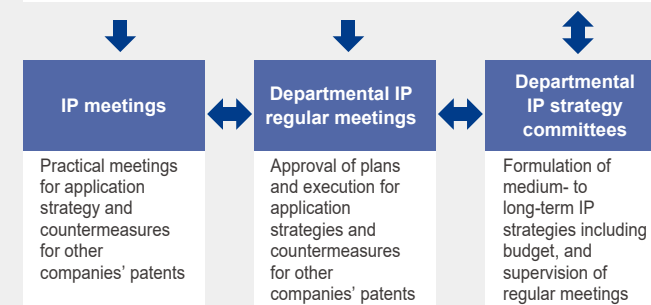
The Corporate Governance Code revised in 2021 clearly states that the Board of Directors should oversee activities related to intellectual property strategy. In response, we have established a new committee to which each department brings its intellectual property strategy based on business strategy. We have also consolidated each department's intellectual property strategy and made them available company-wide. By assigning IP personnel to business and research divisions, we promote the use of intellectual property, more conscious of commercialization. We will optimize our intellectual property portfolio and maximize its value.

(2) Utilization of IP landscape: “Proactive Use of Intellectual Property”

As the importance of IP information has increased in Japan, the use of “IP landscape” has become mainstream in the IP industry as a whole since around 2018. We also began activities in 2020. We effectively utilize our broad patent map to integrate technology, business, and intellectual property, and propose business strategies. Furthermore, we are working to make intellectual property strategy a driving force for sustainable innovation by providing useful information for M&A and new business creation, and by formulating open & closed strategies.

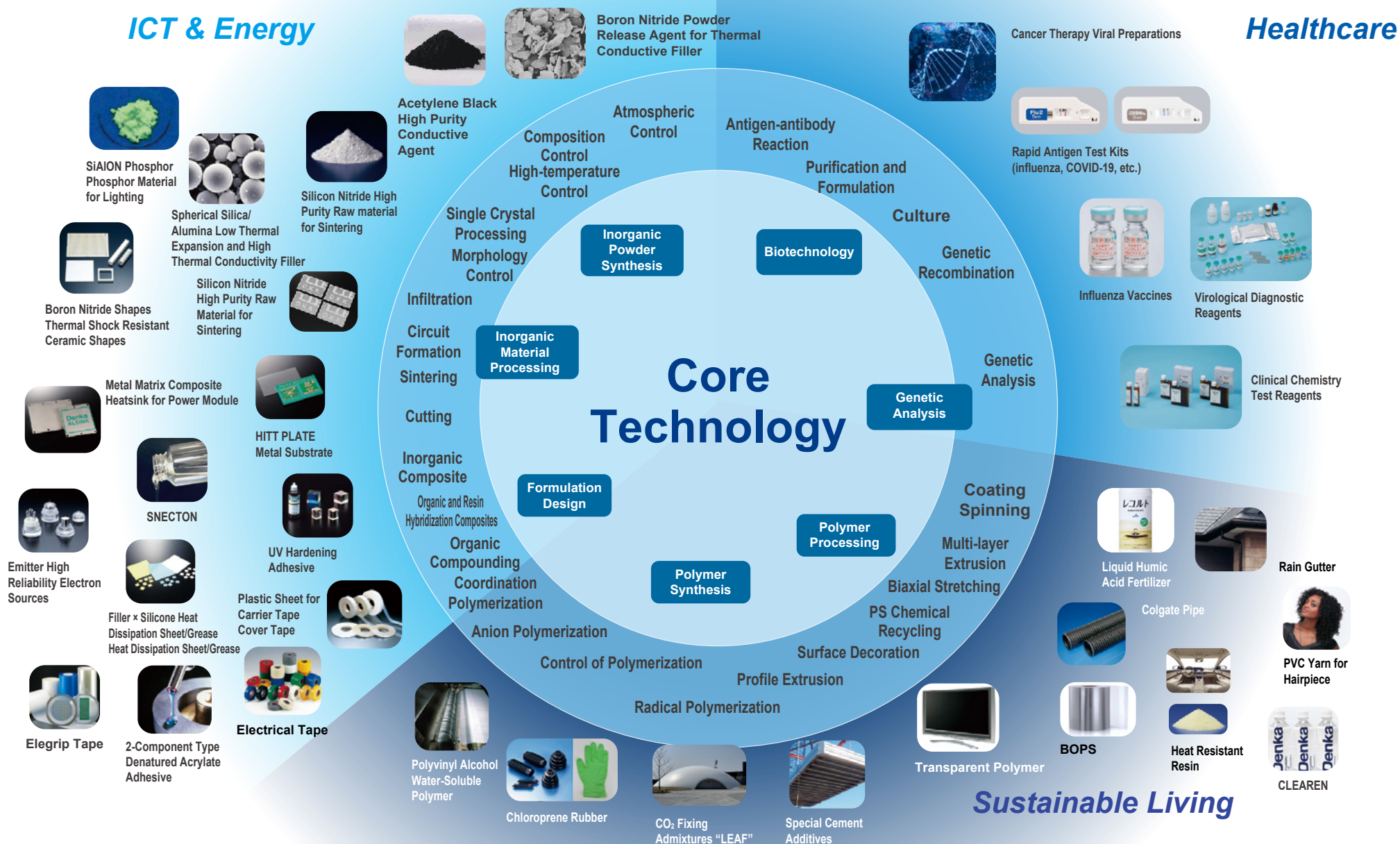
Deliberation by the Board of Directors (Intellectual Property Strategy Council, about Once a Year)

Discussion and deliberation of basic policies for intellectual property strategy, including company budget allocation, and supervision of the departmental IP strategy committees



Technology Platform Diagram

Core technology is one of the intangible assets that are the source of Denka's value creation. These were built by predecessors who worked to solve social issues, and many businesses have been created from them. Currently, we are focusing our R&D resources on three priority areas that capture megatrends. Here are the product groups generated by Denka's core technologies.



Denka Technologies - Contributing to a Sustainable Society

Denka is vigorously strengthening our core competencies that contribute to sustainability in order to become a company with a superior competitive edge that is consistent with ESG initiatives.

Denka Technology Supporting Renewable Energy

Technologies that support the development of renewable energy include acetylene black, used as a raw material for ultra-high voltage cables that efficiently transport electricity generated by clean offshore wind power to various locations, and silicon nitride, which is used in bearing balls for wind power generation.

Silicon nitride assists in the transmission of **clean wind power**



Acetylene black efficiently carries **clean energy**

Denka Technology Supporting 5G

There are many technologies that support high-speed data communications required in an advanced information society, such as technology to protect semiconductors from heat, technology to reduce energy loss, and technologies to prevent static electricity and contamination of semiconductors by foreign matter during transport to ensure absolute quality.

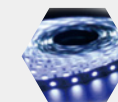
Spherical silica and SNECTON reduce **energy loss**



Carrier tape sheets and top cover tape prevent **static electricity and foreign matter contamination**



Spherical alumina reduces **heat**



Denka Technology Supporting Carbon Neutrality

In addition to promotion of energy conservation and expanding renewable energy sources, namely hydroelectric power generation, we are also studying the introduction of innovative technologies such as CCUS, which separates, recovers, utilizes, and stores CO₂ from plants at the source, as well as the use of hydrogen. Moreover, we will push ahead with efforts to reduce the environmental burden attributable to our entire value chain by expanding the scope of our initiatives to address issues associated with the total life cycles of our products.



LEAF

PS chemical recycling



Hydroelectric power plants

Denka Technology Improving QOL

We possess outstanding technologies in each area of prevention, diagnosis and treatment—such as influenza vaccines that protect society from recurring influenza outbreaks, diagnostic agents essential for maintaining health and testing for infectious diseases, and oncolytic virus preparations that meet unmet medical needs—thereby supporting the improvement of quality of life (QOL) around the world.

Oncolytic virus is meeting **unmet medical needs**



* Unmet medical needs refer to medical needs for which there is no effective treatment available



Influenza vaccines protect **your health** and wellbeing

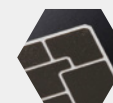


Rapid Antigen Test Kits help protect **society**

Denka Technology Supporting Next Generation xEVs

There is a wide range of technologies that support the electrification of automobiles, including the circuit boards for CPUs that control the power of xEVs that run on motors, heat resistance modifiers that make automotive components lighter and paint-free, and high-purity special carbon black used in lithium-ion batteries.

Aluminum nitride and silicon nitride substrate **conduct heat to enhance vehicle safety**



Heat resistance modifiers enhance **heat resistance**



Acetylene black increases the storage capacity of **lithium-ion batteries**



Innovation

New Business Roadmap for the Three Priority Areas

Developing New Business Based on Customer Needs to Achieve Early Commercialization

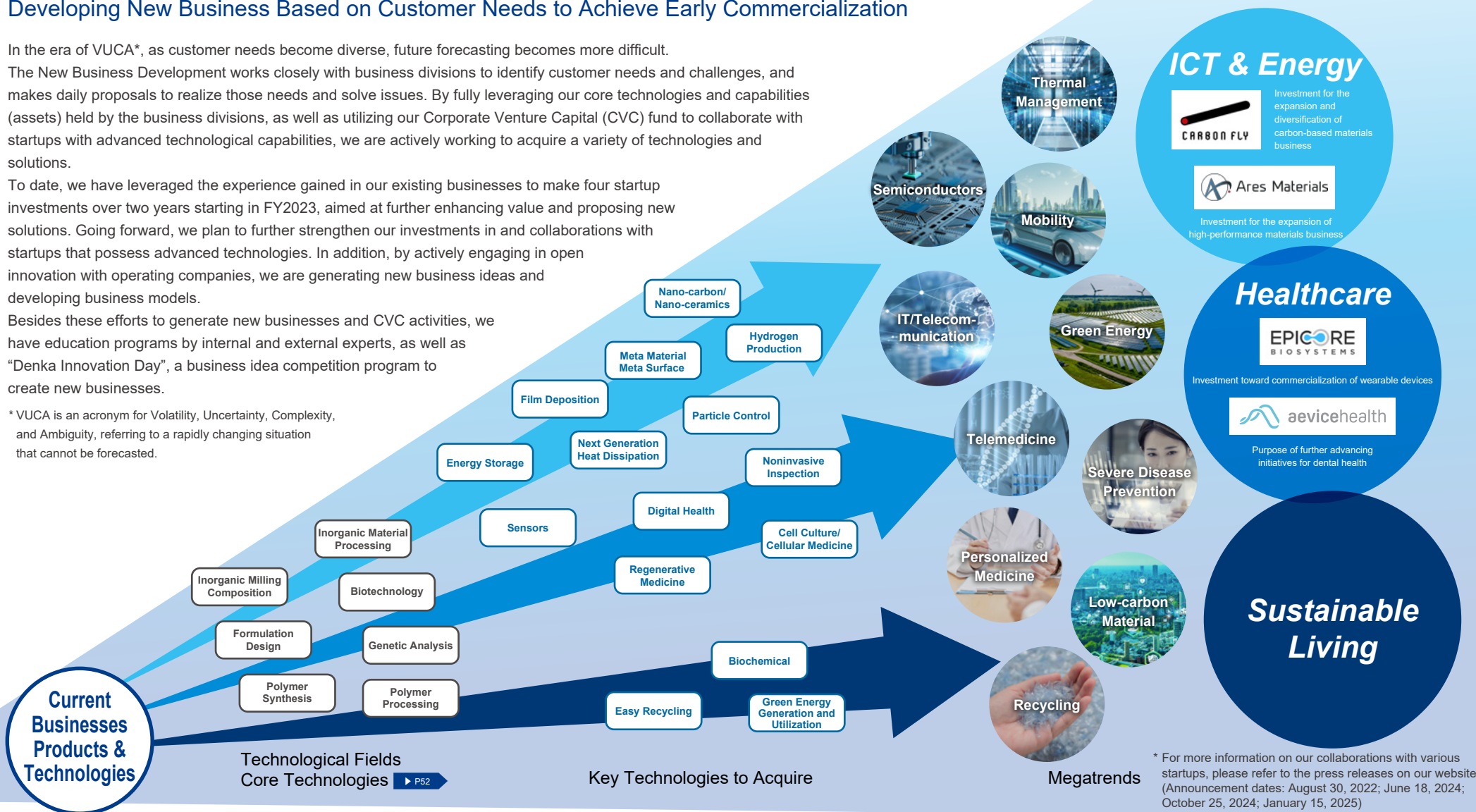
In the era of VUCA*, as customer needs become diverse, future forecasting becomes more difficult.

The New Business Development works closely with business divisions to identify customer needs and challenges, and makes daily proposals to realize those needs and solve issues. By fully leveraging our core technologies and capabilities (assets) held by the business divisions, as well as utilizing our Corporate Venture Capital (CVC) fund to collaborate with startups with advanced technological capabilities, we are actively working to acquire a variety of technologies and solutions.

To date, we have leveraged the experience gained in our existing businesses to make four startup investments over two years starting in FY2023, aimed at further enhancing value and proposing new solutions. Going forward, we plan to further strengthen our investments in and collaborations with startups that possess advanced technologies. In addition, by actively engaging in open innovation with operating companies, we are generating new business ideas and developing business models.

Besides these efforts to generate new businesses and CVC activities, we have education programs by internal and external experts, as well as "Denka Innovation Day", a business idea competition program to create new businesses.

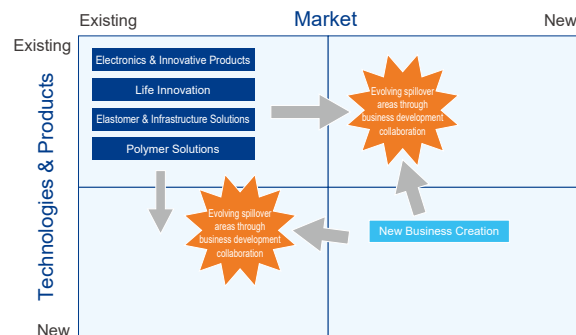
* VUCA is an acronym for Volatility, Uncertainty, Complexity, and Ambiguity, referring to a rapidly changing situation that cannot be forecasted.



1. Creation of New Businesses in Spillover Areas of Existing Businesses

The New Business Development further strengthening collaboration with business divisions that have a deep understanding of market and customer needs. By sharing development resources of the New Business Development Division with them from the early stages of development, we are able to make proposals that are closer to customer needs and deliver faster development. We are also allocating development resources to spillover areas* of business divisions and actively working on development that leverages our core technologies and assets.

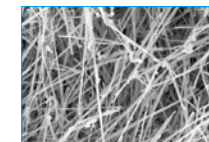
* New business areas with high affinity to existing businesses, where our technologies and customer needs can be applied and expanded



Examples of New Businesses

Boron nitride (BN) is attracting attention as a next-generation heat dissipation material with excellent thermal conductivity and electrical insulation, and is beginning to be applied to heat dissipation components for electronic devices and heat dissipation substrates for high-power devices.

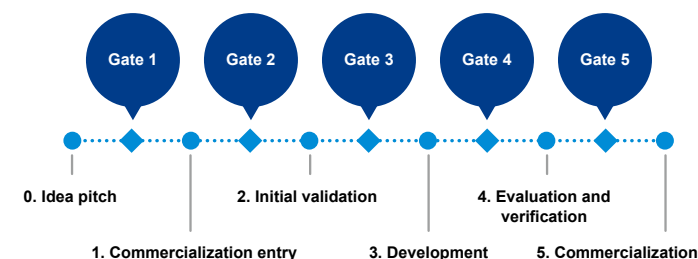
We are developing and proposing various forms of hexagonal boron nitride powder to customers. Currently, we are collaborating with promising startups on development, and plan to propose new forms of hexagonal boron nitride powder to customers in the near future. By further strengthening the creation of new businesses in these spillover areas, we will be able to provide more timely value propositions.



2. Creation of New Businesses unconstrained by Existing Businesses

For new business development unconstrained by existing businesses, we operate a system that manages the process from idea generation to commercialization. We divide the development process into several "stages" and set up "gates" to evaluate whether certain criteria are met before moving to the next stage.

Ultimately, products that pass through the gates are launched to the market. Idea pitches and business entry are also part of the initial stages. In the early idea generation stage, ideas are highly uncertain and not yet refined, but by putting a mix of ideas through this stage-gate process for business consideration, the potential of each idea becomes clearer. This is a very important mechanism for reducing uncertainty on the path to commercialization and for creating sustainable new businesses.



Idea pitch

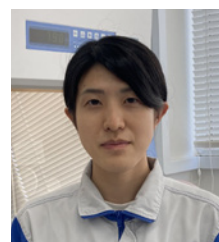
As the first stage gate for screening business ideas, we regularly hold idea pitch sessions. The purpose of these sessions is to gauge the audience's empathy and resonance with the ideas in real time. Its primary purpose is to communicate ideas at an early stage. Through such discussions, the participants can grasp the target customers and obtain new ideas for solutions.

Gate 1 | Hypothesis testing

Business ideas that have passed the idea pitch are then subjected to hypothesis testing from both customer and technology perspectives. Projects where the hypotheses are recognized as FACT* move on to the next stage gate, "Business Entry." At this stage, external experts also participate, and results of verification, marketability, and business viability for each project are thoroughly discussed from a wide range of perspectives at an early stage to determine whether the project should proceed to the next stage.

* Customer needs or issues must exist, and feasibility must be confirmed in light of our core technologies and capabilities.

VOICE Researcher's Voice



Yuko Fukuda

New Business Development
Denka Innovation Center
Advanced Polymer Research
Department

We are focusing our research on cultured meat using cell culture technology to address the issue of food shortages caused by population growth. Cultured meat is edible meat produced by proliferating cells taken from animals, and is already being sold in places like Singapore and the United States as chicken and beef. However, in Japan, the system for sales is not yet in place and rules are still being developed. Therefore, we are participating in a consortium led by IntegriCulture Inc., a cultured meat startup, to gather information on regulatory discussions at relevant ministries and to collaborate with external parties toward commercialization of cultured meat. There are still many technologies, such as manufacturing methods and flavor, that have yet to be established. We are discussing with relevant departments how we can provide value and how to approach development. By leveraging our technologies, we are actively considering entering new businesses as a place to provide new value. Our goal is to become a company that supports food in the field of cell-cultured foods, which is expected to become a future trend, just as our calcium cyanamide fertilizer has supported agricultural production since our founding.