

Digital Transformation

Message from the Executive Officer for DX

“Co-creating “healthy living” and “a future world full of smiles” through borderless connections enhanced by digital innovation”



**Noriaki Harada**  
Lead Executive Officer  
Executive Officer for DX  
Senior General Manager,  
Digital Value Co-Creation

The mission of DX in value creation for Asahi Kasei is to transform our business structure and accelerate the growth of GG10 businesses to drive future growth. A major key will be whether we can maximize the use of the vast amount of data we have accumulated, and master the use of digital technology, while we accelerate development, streamline production, and create new businesses to respond promptly to customer needs.

So far, we have advanced digital transformation from three perspectives: people, data, and organizational culture. One of the methods we have employed is a personnel training curriculum that utilizes the Asahi Kasei DX Open Badge Program. Asahi Kasei’s strength lies in the power of its human resources, which comes from its bottom-up organization. We believe that investing in people and continually improving the skills of each individual is the key to transformation. In fiscal 2021 we launched a plan to train and develop 40,000 personnel as digital human resources, and we are targeting 2,500 digital professionals globally.

To transition to the Digital Normal Period, a state in which reforms using digital technology can be continuously implemented through on-site initiative, we introduced three new key phrases for fiscal 2023: participation by all members, on-site

initiative, and co-creation. Now in the fourth year since we began developing digital human resources, we are beginning to see clear results as digital technology is used in a variety of areas and those human resources play an active role. The contribution of DX to profits growth has already reached a cumulative total of ¥7 billion as of fiscal 2023.

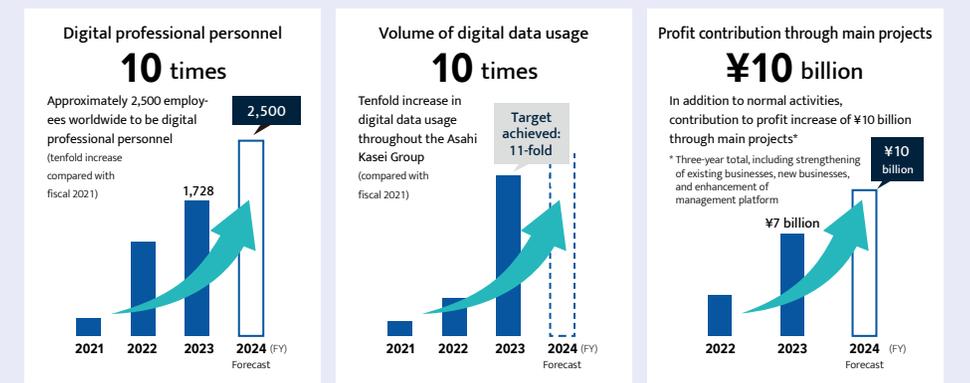
The business environment surrounding Asahi Kasei is changing rapidly, and the transformation of our business portfolio is now imperative. We must shift management resources to growth businesses as quickly as possible, with rapid decision-making and an agile approach. Furthermore, we will expand our solutions-based business by making the most of our abundant intangible assets through the Product-based Platform as a Service (P-PaaS) concept, which contributes to enhanced value for customers based on the added value of our materials and products. This is a new challenge that will not only advance the Asahi Kasei Group, but also the entire supply chain, which I see as the embodiment of our DX vision of “making borderless connections enhanced by digital innovation.” Asahi Kasei’s DX is evolving, deepening, and moving to a stage where it can demonstrate its true value and effect societal change.



**Key DX initiatives**

Enhancing management	
Group-wide projects	<ul style="list-style-type: none"> <li>DX for visualizing business conditions and carbon footprints</li> </ul>
Shared value chain subjects	<ul style="list-style-type: none"> <li>DX related to sales, marketing, and customer support</li> <li>DX related to research and development, such as promoting materials informatics (MI)</li> <li>DX related to production and manufacturing, such as smart factories</li> <li>DX related to quality assurance</li> </ul>
Reinforcing digital foundations	
HR/organizations	<ul style="list-style-type: none"> <li>Planning and operation of program to foster digital personnel</li> <li>Building mechanisms and organizational culture to accelerate DX</li> </ul>
Data/security	<ul style="list-style-type: none"> <li>Development and operation of core systems</li> <li>Configuration of company-wide security platform</li> </ul>

**Fiscal 2024 KPI: DX-Challenge 10-10-10**



Note: Total DX-related investment of approximately ¥30 billion planned (IT investments and cloud usage fees for digital transformation)

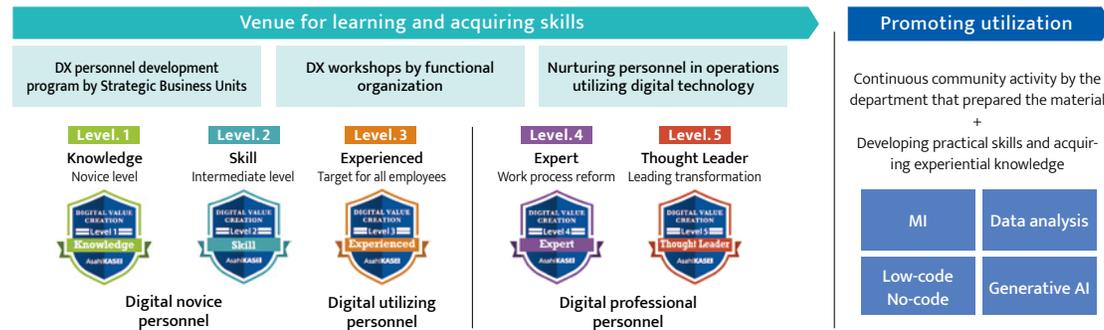
Digital Transformation

# Digital Normal Period with participation by all, on-site initiative, and co-creation

The “digital normal” we aim for is a state in which transformation using digital technology can continue to be driven by on-site initiative. In addition to developing all employees worldwide into “digital-utilizing personnel,” we are providing on-site support to develop digital professional personnel who can use advanced digital technologies and data to solve business issues and create business models.

## Asahi Kasei DX Open Badge Program Personnel training

Since fiscal 2021 we have offered the Asahi Kasei DX Open Badge Program to all employees. In fiscal 2023 we established a new course on generative AI in response to the rapid spread of the technology. We are also working on opening new courses to cultivate digital professionals. Community activities that bring together employees eager to put what they have learned into practice are also gaining momentum, with some communities having more than 1,000 participants. Lively communication that transcends organizational boundaries is leading to business transformation and individual growth.



## Future Digital Personnel Club External collaboration

The Future Digital Personnel Club, which commenced full-scale activities in December 2023, shares and discusses digital human resource development efforts among member companies. Through mutual cooperation and partnership, the club aims to achieve advanced digital human resource development and, in the future, contribute to the development of digital human resources throughout society.

## Results of fostering power users

As we aim to turn out 2,500 digital professionals globally, we have prioritized the development of human resources that can lead practical data analysis at individual workplaces within the company, rather than simply attending courses.

Hence, we are focusing particular attention on our program to foster “power users” which was launched in fiscal 2019. Since previously, Asahi Kasei has provided materials informatics (MI) training to researchers in the fields of chemistry and materials, and data analysis training to engineers in the fields of production and manufacturing. Now, to promote group-wide data utilization, we are training employees in a wide range of functions, including quality assurance, logistics, sales, and intellectual property, to foster power users who can analyze and utilize data. This program is a six-month course in which on-site engineers who are potential power users work to analyze data on actual on-site issues on a three-party basis under the coaching of a data scientist from Digital Value Co-Creation who is an expert in data analysis, and an advisor on rules and principles who is well versed in on-site matters. The aim is to develop problem-solving skills through data analysis by identifying the causes of problems and taking action to improve them based on analysis results.

### Further efforts to fostering power users

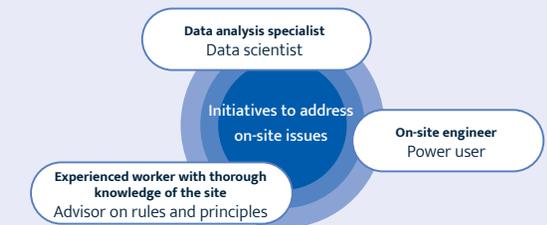
**Nakajima** We trained approximately 300 power users on 288 projects from fiscal 2019 to fiscal 2023, with approximately 80 people in fiscal 2023 alone, and we have expanded the scope of the program to accept participants from overseas subsidiaries. In addition, through the implementation of improvement actions, the cumulative benefits expected from the departments to which the power users belong amount to approximately ¥2 billion. It’s a wonderful experience to compare historically accumulated insight and knowledge with the data we analyze, and to work together to solve problems from various fundamental perspectives. Above all, this three-party structure is the most important element.

**Ueda** Initiatives aimed at reducing quality defects, improving yields, and raising operating rates have produced particularly significant results. Power users in individual departments take action within their departments, and, with our help, get even their superiors involved. In fiscal 2024, to solve the issues of creating data suitable for analysis and data processing, we plan to create training materials on key points of data processing and digitization using Excel, and launch courses aimed at a wider range of people.



Digital Value Co-Creation (data scientists) Shinya Nakajima (left), Hiroyuki Ueda (right)

### 3-party data analysis activity



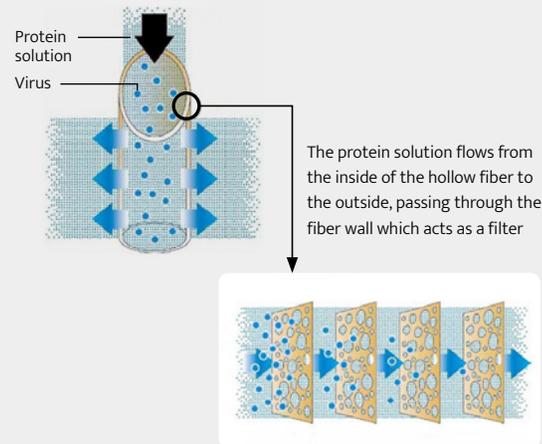
Example of R&D-based DX

# Use of MI to improve performance of Planova™ virus removal filter

Asahi Kasei is implementing a wide variety of DX initiatives in the value chain, such as smart factories, marketing automation, and IP landscaping. Here is an example of how MI accelerated development and contributed to profits, enabled by improved on-site digital literacy through digital personnel training.

## Difficulties of filter development

The development of virus removal filters for use in the manufacturing processes of biotherapeutics requires both excellent filtration flux and high virus removal performance. However, there is generally a trade-off between the two performance characteristics. Larger pore size results in increased flux, decreased ability to capture selected viruses. There were more than 20 manufacturing process conditions to explore in our search for potential means of improving these two characteristics in tandem, and even if we chose only three variations of each condition, the number of experiments required to confirm the results would be more than three to the power of 20—far too many to be practical.



## Utilization of MI

In cases like this, MI can be extremely effective. We designed over 500 experiments for more than 20 process conditions, and discovered combinations of manufacturing process conditions that would not have been found through experimentation alone. This enabled us to develop a filter that offers more than twice the filtration flux while providing high virus removal performance.

The reason we were able to utilize MI was that there was a large amount of unbiased experimental data in important

areas, which data scientists were able to analyze efficiently. The use of MI in this development produced remarkable results, significantly reducing the time spent on experiments compared to conventional methods.

Furthermore, clogging, which was not a target for MI, was also significantly improved, leading to the development of the highly competitive, high-performance Planova™ membrane.

## Comment from an engineer involved

At the time of this development, DX was still something new that had not yet been widely adopted in the company, and expectations for MI were not very high, so we were astonished by the surprisingly good results. There are a lot of digital tools available these days, and I think the most important thing is to give them a try. There are limits to what humans can think of when combining explanatory variables, and this project clearly showed that MI vastly expands possibilities.

We quickly got results that exceeded our expectations, and I am convinced that MI-driven development will become mainstream throughout society over the months and years ahead. There was a lot of interest within the department in this new product developed using cutting-edge MI technology, so we swiftly established an environment, including personnel training, to facilitate the use of MI in other development projects as well. MI has now become an indispensable part of development.

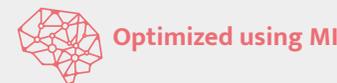


Shota Nakashima  
Bioprocess Division  
Asahi Kasei Medical Co., Ltd.

### Experiments based on knowledge and experience

Experiments with over 500 patterns among over 20 process conditions were repeated and data accumulated (targeted performance unobtainable without MI)

### MI



### New product Planova™ S20N was created with more than double the flux of conventional products

