Initiatives to Develop Digital Human Capital

MIYAUCHI Yuuki   ISASHI Ryosuke   TAKINO Shinsuke

1　Introduction

These days, all industries need to obtain or develop digital human capital[Note 1]. KYB has also systemized internal education and training to develop its own digital human capital. This report introduces KYB's initiatives to develop digital human capital.

> Note 1) KYB prefers to use the term "human capital" instead of "human resources". This report uses "human capital" accordingly.

1. 1　The Outset of Development of Digital Human Capital

The outset of the development of digital human capital was a cross-company activity project in 2016 that applied data mining[Note 2] to analysis of casting failures in the group companies. The activities included learning statistics and promoting the use of data mining tools. The project eventually helped employees understand the necessity of data analysis in the company. Then, another activity was launched in 2018 to develop artificial intelligence (AI) human capital.[1] The participants learned the knowledge and technologies necessary for more advanced analysis using machine learning[Note 3] or deep learning[Note 4].

In this activity, KYB gathered participants who were interested in AI throughout the company and asked engineers who had AI knowledge and technology to give lectures. A regular meeting was held every month to provide programming courses using e-learning and to carry out original small tests for participants along with their explanation. Based on the results of their daily learning, participants used various approaches to try to resolve challenges related to AI implementation given by Administration. The final part of the activity was group work to resolve actual administration challenges left unsolved in the company by means of AI. For a challenge related to vibration data of active suspensions for railroad applications, many participants built machine learning models taking into account cost and even processing speed on the assumption that the models would be introduced to the actual system. Thus, the activity yielded marvelous human capital development. The first term of the activity in FY2018 was followed by the second term in FY2019.

> Note 2) The process of analyzing large amounts of data using statistics and other analysis techniques to obtain useful insights such as hidden patterns of data.

> Note 3) A technology to learn regularity and patterns of data from a variety of data including alphanumeric characters so that computers can determine the current condition and predict the future.

> Note 4) A technology to automatically extract features to be focused on from data and use them for determination of the current condition and future prediction.

1. 2　DX Promotion and KYB-IoT Platform

During these activities, the world has been focused on digital transformation (DX). In Japan, the government and industry insisted on the necessity of using data and digital technology. KYB established the Digital Transformation Improvement Dept. in 2019 to accelerate the use of digital technology. Fig. 1 shows KYB's original data utilization steps[Note 5]. The first step is digitization that turns analog information into data. This is followed by data collection and data saving in databases. The process thus advances toward digitization. It is further assumed that the process evolves into digital transformation based on the premise that all business communications and transactions will be done digitally .
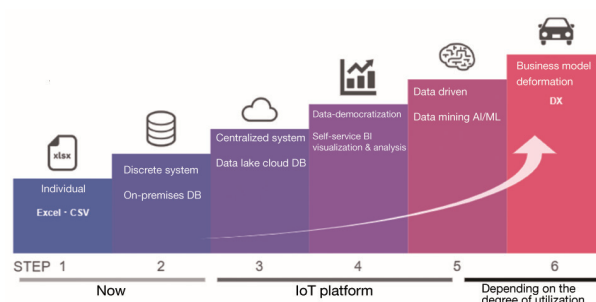

Fig. 1　Data utilization steps

To accelerate the data utilization, KYB constructed itself a KYB-IoT platform on the cloud. The platform supports Steps 3 and 4 of the data utilization process. At the outset, KYB promoted "defensive DX" mainly in the production domain.[2] Now it has just begun with preparation for "offensive DX" in the product development domain and new business development.[3]

> Note 5) In 2021, some functions had already promoted the use of clouds and AI, but the whole company was still in Step 2.

1.3 Implementation of Digital Human Capital Development

Along with the construction of the KYB-IoT platform where employees can flexibly use data with no constraints on time or location, the company is addressing the development of human capital who can effectively use the platform. These human capital should be familiar with business intelligence (BI) toward data-democratization, which is indispensable for the data utilization steps, and AI that enables more advanced analysis. Besides these technologies, employees are required to understand the significance of DX and foster proper IT literacy. They are given an explanation as to possible business losses that may arise without the use of data and digital technology and educated to raise their awareness of the necessity of preventing such losses.

In this way, we have established the digital human capital development program from a broader perspective covering not only AI but also BI, IT, and clouds. We are also trying to systemize these activities into a cross-company project through collaboration with Engineering Planning and the Human Capital Development Center.

2 Overview of Digital Human Capital Development

2.1 Definition of Digital Human Capital

Before the start of the digital human capital development, the Digital Transformation Improvement Dept. preliminarily discussed which digital human capital we should try to develop with the related functions. As a result, the digital human capital KYB should develop were defined as "human capital who have both the technical skill to use digital technology and business transformation skill". This is because, to implement DX, KYB needs human capital who not only have acquired technical skills by participating in internal and external training courses but also have business transformation skills with which they can continue addressing challenges to achieve their purpose.

2.2 Roadmap of Digital Human Capital Development

Fig. 2 shows a roadmap of digital human capital development established in 2020. In addition to IT Education for improving AI, BI and IT literacy, KYB has started DX Education to teach the basics of all necessary subjects for DX implementation.
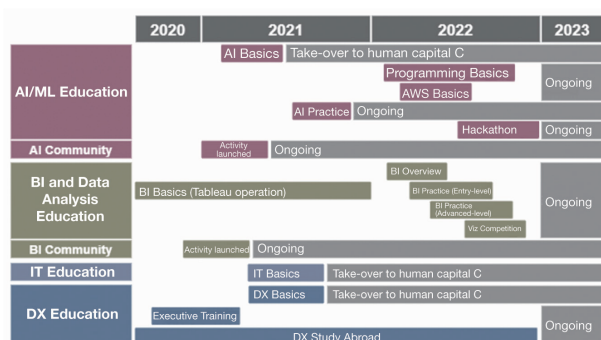
DX Basics is a lecture course aimed at ensuring that the concept and understanding of DX take root properly throughout the company. Trainees learn why the company needs digital technology and why they need to be aware of digital transformation. They also take a lecture on how to reform the organization to implement DX. Executive Training is conducted with support from Amazon Web Services, Inc. (AWS)

2.3 Systemization of Digital Human Capital Development

Fig. 3 shows the relationship of scale and specialty among the courses. Centering on the AI and BI human capital development, the figure indicates DX Basics and other training courses to be provided to employees who are temporarily sent to the Digital Transformation Improvement Dept. for "studying abroad". As the digital human capital development is expanded, the map in Fig. 3 will be updated accordingly.
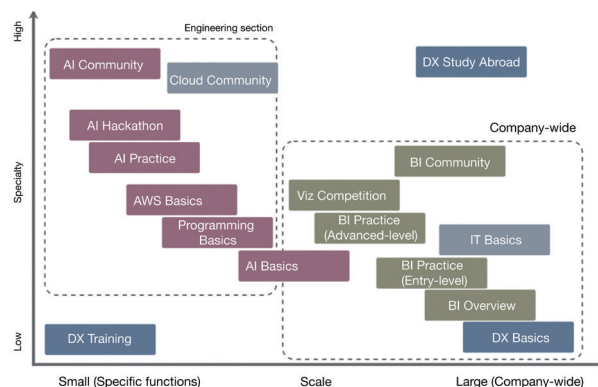

Fig. 3 Scale and specialty of digital human capital development

To establish a scheme or system of digital human capital development, the Digital Transformation Improvement Dept. has worked with the Engineering Planning Department and Human Capital Development Center since 2022 to create a skill level chart as shown in Fig. 4. Its creation is based on our idea that such a chart will help employees figure out a specific skill level they should try to reach next and will appropriately support their growth as individuals. Besides this chart focusing on AI and BI, we plan to develop additional skill level charts for other digital technologies.

Fig. 2 Roadmap of digital human capital development

Fig. 4 Digital human capital skill level chart (under discussion)

2. 4　Year-round Digital Human Capital Development Curriculum

Fig. 5 shows the current year-round education curriculum in 2022. The first course of the curriculum is DX Basics that lectures the necessity of DX and an outline of digital technology. Trainees will broadly understand the purpose of learning about these issues. The curriculum is designed to connect this DX Basics to AI and BI human capital development and further to IT Education as a means of implementing DX. We will describe AI human capital development in Chapter 3 and BI human capital development in Chapter 4.
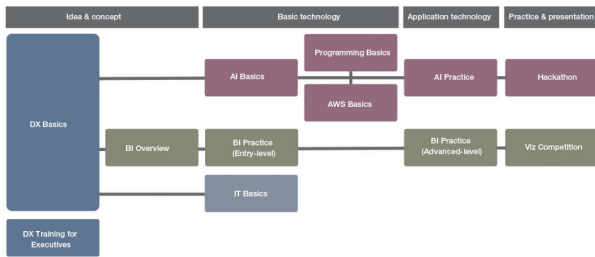

Fig. 5　FY2022 digital human capital development education program

3　AI Human Capital Development

3. 1　AI Human Capital Development Initiative

Currently, KYB has two pillars of AI human capital development: AI Education Curriculum and AI Community. The AI Education Curriculum covers a wide range of education from basic courses designed to learn knowledge and skills to ensure that no employee is ignorant of AI/ML[Note 6] to practical courses to learn the knowledge and skills necessary for appropriately operating the machine learning models that have been implemented. These education courses will be described in detail in section 3.2. AI Community provides places for employees to openly communicate with each other or to actively use the knowledge and skills they have obtained through education courses for resolving challenges facing the company. This will be described in detail in section 3.3.

Note 6) AI services that only need data are differentiated from ML (machine learning) that can build machine learning models itself.

3. 2　AI Education Curriculum

3. 2. 1　Background

The AI human capital development initiative launched in 2018 has yielded certain results so far. To further expand the AI human capital and further increase the practical cases contributing to the company's business, KYB decided to introduce MLOps[Note 7], which had gained recent attention, to the education system and provide opportunities for employees to learn the operation of machine learning models. This decision was made with the background that, although a constructed machine learning model increases in value only if it yields results to end users as expected, the building and operation of an

IT system with such a machine learning model is recognized as a function involving many issues to be considered. It is impossible for a single role, such as data scientists, to cover all domains. To resolve the issue, data scientists, data engineers, and machine learning engineers should technically cooperate with each other through smooth mutual communication toward a final common goal, rather than independently promote their own development work. Then, an education curriculum with MLOps taken into account was started for all trainees. This allows them to imagine during their education what will specifically take place after the introduction of AI/ML and to build the knowledge and skills necessary for establishing a sustainable machine learning system.

The lecture materials used in the AI Education Curriculum, except for programming courses, have been prepared by in-house engineers. With these internally prepared materials, the lectures can provide familiar topics including in-house failure cases.

Note 7) A paradigm that aims to connect the development process of machine learning with the operation process of the same to achieve continual improvement after the supply of services.

3. 2. 2　Track Record

The AI Education Curriculum in 2022 has four courses including those launched in 2021:

(1) AI Basics

AI Basics is an entry-level course of the AI Education Curriculum and intended to make AI widely popular among employees. This course has been provided to ensure that no employee is ignorant of AI/ML.

The course consists of lectures by chapter that begin with data collection, followed by data preprocessing/visualization, feature extraction learning, hyperparameter[Note 8] tuning, and inference, according to the proper machine learning workflow. In the introduction of the lectures, the difference in definition between AI and machine learning is explained. In addition, the lectures widely cover different specific approaches of machine learning and the basic theory of deep learning. Materials used in the lectures include not only simple explanations of individual technologies but also actual cases in KYB, for example, what employees doubted in the past AI hu-
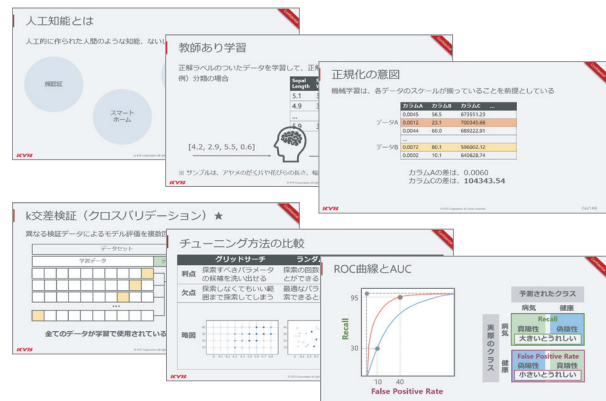

Fig. 6　Education materials for AI Basics

man capital development and what they were confused about during implementation. Thus, these materials have been designed to be suitable for the current skill level of the company's employees. Some of the textbooks provided in the lectures are shown in Fig. 6.

> Note 8) Parameters that are not automatically learned by machine learning algorithms. Hyperparameters are generally decided based on the developers' experience and/or optimization methods used.

(2) Programming Basics

The Programming Basics course provides a place for trainees to output the knowledge they obtained in the AI Basic course. Trainees who finished the AI Basic course can implement machine learning through programming. Based on what they learned in AI Basics, they try to do programming to build a machine learning model. This course does not involve a dedicated lecturer teaching in a room like hands-on training, although it does start at a specified date and time. Instead, individual trainees access webinars that have been prepared in advance and learn online. Instructors will only respond to trainees who have a question. Trainees can look into what they are not sure about at their own pace and receive support from instructors whenever they like to resolve the problem right away. The use of this online learning is intended to improve the practical skill of trainees.

(3) AWS Basics

KYB widely uses AWSs as a base to implement machine learning, including the KYB-IoT platform. Trainees who have finished the education curriculum are thus required to smoothly get ready for the development environment provided for AWSs. In addition to this background, the AWS Basics course is intended to explain the basic knowledge and techniques about AWS to trainees before they attend the following AI Practice and AI Hackathon courses.

It is very important to learn the necessity of using the cloud environment to implement machine learning and MLOps. If a machine learning system is built in an existing on-premises environment, some technical liabilities would be generated in future. This course presents such liabilities and explains the advantages of the cloud environment where data scientists and machine learning engineers can concentrate on essential tasks including development. Like the Programming Basics course, this course has been designed to allow trainees to freely access webinars within a specified course period and to allow instructors to only respond to trainees who have a question. Fig. 7 shows some of the materials provided in the course.

(4) AI Practice

AI Practice is a hands-on training course where trainees can build machine learning models in a cloud environment based on the knowledge obtained in the AWS Basic course and then implement the operation of these models. This course was internally developed in 2022.

At the beginning of this hands-on course, trainees are supposed to carry out implementation of machine learning models in an assumed existing on-premises environ-
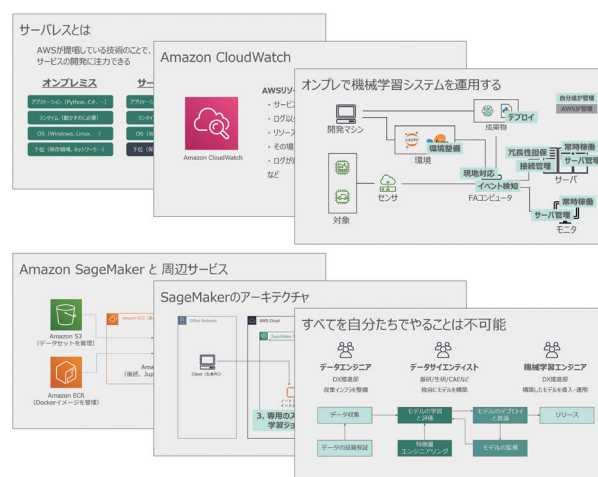

Fig. 7 Education materials for AWS Basics

ment. They not only simply implement machine learning models but also learn effective visualization methods during preprocessing as well as precautions for dividing data sets. The course presents case examples of implementation that can be applied by trainees to development work immediately after they finish the course. Next, they are supposed to use Amazon SageMaker [Note 9] to implement machine learning models in an assumed cloud environment. We have tried to prepare materials for this course to present an overview of the implementation range as needed, with which trainees can clearly identify the functions they have implemented at the moment.

> Note 9) A cloud service that provides an implementation environment for rapid development and deployment of machine learning models.

(5) AI Hackathon

AI Hackathon is an event for trainees to output in teams the knowledge and skills they have obtained through the year-round education curriculum. Trainee teams try to solve hypothetical challenges presented by Administration by using machine learning. This activity involves not only implementation of machine learning models but also the design of peripheral machine learning systems by taking into account the operation system of machine learning models and the Well-Architected Framework[Note 10] proposed by AWS.

During the activity period, an "office hour" for each team is available once a week so that the team can consult with AWS Solution Architects[Note 11] about any questions about implementation of the design or machine learning under discussion in the team . Individual members of each team are given a specific role and required to show check items they should achieve. This check-out system is used to quantitatively evaluate how close the team members are to the goal set by Administration after the completion of the Hackathon. In the Hackathon presentation attended by management and AWS, individual teams report the results of implementation of machine learning models and the unique thoughts they put in when designing the machine learning system. Photo 1 shows how the AI Hackathon presentation was held. Fig.

8 shows some of the materials available in the presentation.
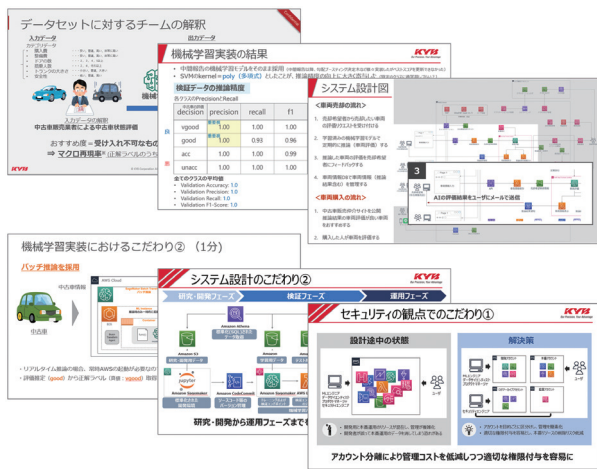

Photo 1　AI Hackathon presentation

Fig. 8　Hackathon presentation materials

Note 10) Major concepts and design principles for designing and executing solutions on the cloud proposed by AWS.

Note 11) A professional who provides appropriate solutions for customer needs including cloud services.

3.3　AI Community
3.3.1　Background and Purpose

Independent AI development by AI human capital within their own department would be inefficient from the viewpoints of proliferation of technology and formation of culture. This might generate barriers to immediate contribution to business. the Digital Transformation Improvement Dept. thought that a medium or a continual hub for all employees to communicate with each other beyond their functions or titles was needed. Then, we decided to plan and operate a place for employees with a common passion to openly share technologies by discussing what they were concerned about and introducing the latest technical information and newly published books to each other. This is AI Community. An initiative to use your own knowledge and skills to resolve concrete challenges that was launched in 2022. We thought that AI Community would become a group contributing to business, thereby enabling the members to continue challenging new things all the time. We will disseminate the success stories of AI Community both inside and outside the

company, with the aim of further expanding our AI human capital.

3.3.2　Track Record

Since its establishment in 2021, human capital with advanced AI/ML knowledge and skills have gathered from various domains including product development and production engineering to be members of AI Community.

(1) Information sharing and promotion support

Discussions among AI Community members using chatting tools are opened within the company. Examples in the past include introduction of AI/ML development themes addressed by Community members, troubleshooting support for other members based on member's own experience in development, and deployment of manuals for building a Python[Note 12] environment for easier implementation of machine learning. AI Community also plays the role of supporting the promotion of latest technologies, including verification of pilot versions.

Note 12) A general-purpose programming language that is the de facto standard for AI development.

(2) Group work

The group work program, which was launched in 2022, is intended to contribute to the company by utilizing the AI/ML knowledge and skills owned by the Community members. The program solicits concrete challenges faced by individual members during their daily development work. Other members then participate to resolve selected challenges through mutual cooperation. The following introduces some of these activities:

[1] Research on a new analysis approach where structural analysis with FEM has been reduced for machine learning

CAE Improvement Dept. has been discussing integrating a detailed FEM (finite element method) based model of laminated leaf valves into the SA analysis system to achieve high-accuracy prediction of the performance characteristics of shock absorbers (hereinafter "SA"). FEM can take into account detailed physical phenomena that cannot be covered by conventional theoretical calculations, such as the fastening axial force and the partial contact of leaf valves. However, it takes a long time to complete the FEM calculation. Then, the department has improved the prediction accuracy without increasing the calculation time by reducing the order of the FEM-based laminated leaf valve model to a machine learning model and integrating it into the SA analysis system. This technology has been highly rated both inside and outside the company.

AI Community implemented and verified various machine learning models proposed by its members, trying to enhance the prediction accuracy. This activity eventually helped substantially improve the accuracy of predicting the SA performance characteristics.

[2] Improving the product stamp inspection performance through deep learning

The Production Technology R&D Center is promoting the automation of appearance inspection in the SA mass production system through deep learning. The current ac-

curacy of identifying stamped characters on products using deep learning is 99.92%. However, the current deep learning method has not been adequately verified through comparison with other similar methods.

To achieve an even higher accuracy of the stamping identification, AI Community has implemented and verified various methods other than the one that was already scheduled to be introduced into the mass production system. Unfortunately, none of them was found to be superior to the current candidate. However, many of them were the first ever methods implemented by the members who participated in the activity including YOLO[Note 13]. Community members could distinctly feel their own technical growth through the group work.

> Note 13) One of the physical object detection algorithms that can recognize the contour of an object at a high speed with high accuracy.

3. 4　AI Human Capital Development Challenges and Their Solutions

This section describes challenges related to the AI education curriculum and AI Community as well as solutions to these challenges.

3. 4. 1　AI Human Capital Development Challenges

(1) Follow-up support of the curriculum

Currently, continual follow-up support to employees who have finished the education curriculum is not available. These employees may fail to maintain the skills they learned if they are not involved in AI/ML in their development work.

(2) Group work activity period

The term of a single course of group work activity of AI Community is as short as three months. In many cases members failed to fundamentally resolve challenges.

(3) Evaluation with objective measures

No specific measures have been established to evaluate the education curriculum or AI Community. What results the total human capital development initiatives have brought about is unclear.

3. 4. 2　Solutions to Challenges

To resolve these challenges, we reviewed the total activities and discussed the following solutions:

(1) Encouraging trainees to take part in AI Community

Among trainees who have finished the education curriculum, some do not have an opportunity of getting involved in development work despite being interested in AL/ML. It is effective to encourage such employees to actively take part in AI Community. Once involved in the Community, they can receive continual follow-up support through group work after finishing the curriculum. It is also expected they will maintain the skills they have learned.

(2) Reviewing the group work period

The group work activity period of AI Community should be changed to one year so that members can try to fundamentally resolve challenges. Challenges to be selected should be quantitatively evaluated for business impact, necessary resources, and other factors using their own methods. Then, themes that are believed to be most effective should be selected.

(3) Strengthening the group work scheme

With an eye toward operation as a machine learning system, the group work scheme should use AWSs as its development environment. Group work should be promoted with technical support from AWS. The results of group work activities should be evaluated by determining whether AI/ML challenges have been resolved by Community members (trainees of AI Education).

4　BI Human Capital Development

4. 1　BI Human Capital Development Initiative

Like the AI human capital development initiative, KYB's BI human capital development initiative has two pillars: BI Education Curriculum and BI Community.

4. 1. 1　BI Education Curriculum

The BI Education Curriculum provides employees with training courses to build important skills for data utilization, including data preprocessing, visualization, and analysis while practically using Tableau[Note 14], which has been introduced into the company as a standard BI tool.

> Note 14) A BI tool provided by Salesforce Japan Co., Ltd.

4. 1. 2　BI Community

BI Community is an in-house community consisting of trainees who are taking or have finished the education curriculum as well as those who are interested in in-house data utilization. Community members share their knowhow, case examples both inside and outside the company, and BI-related information.

4. 2　BI Education Curriculum

4. 2. 1　Background

BI originally refers to the process of "collecting data, putting it together and accumulating it in a location, analyzing it according to a purpose, and visualizing it into a user-friendly format". However, the BI Basics course provided in 2020 mainly focused on how to use tools. The course might have misled its trainees to believe that BI is just data visualization using tools. Moreover, the course was rather focused on attracting new users, failing to provide an adequate approach for trainees to "self-propelling" the data utilization themselves.

After learning this lesson, we modified the curriculum for 2022 so that trainees can learn step-by-step according to their interest in BI.

4. 2. 2　Track Record

The BI education curriculum in 2022 has three courses: BI Overview, BI Practice (Entry-level), and BI Practice (Advanced-level). Firstly, the following describes the breakdown of trainees in different courses of the curriculum in 2022.
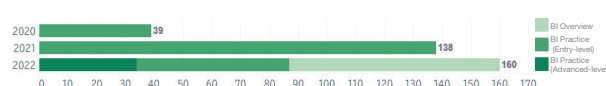

Fig. 9　Trainees of BI education by fiscal year

Fig. 9 shows the number of trainees of the BI education curriculum in these fiscal years. The accumulated total number of trainees is 337. In 2022, 160 employees took the courses. The majority were employees from the Engineering Division, AC Operations, or Production Division. These functions are those involved in data analysis in their research and development or improvement activity. Still, participation in the curriculum has been gradually expanded to include affiliated companies and management divisions. We have found more and more employees from different functions being interested in BI education.

Now let us explain the details of these BI courses:

(1) BI Overview

To provide an opportunity for employees to be interested in BI, it is essential to make them understand the current situation in which we are surrounded by a data-abundant environment and for them to have data literacy[Note 15] for implementing BI to begin with. Then, this BI Overview course was set up for all employees to deepen their understanding of the preconditions for the use of BI, such as the definition of BI and data literacy with support from Salesforce Japan Co., Ltd. (hereinafter "Salesforce Japan").

Data literacy involves analyzing data, which can be implemented by Tableau. Lectures of this course cover data analysis. Lecturers present trainees with familiar data examples such as weather reports and sales data, so that they can learn, for example, why data visualization is effective for the analysis. The latter half of the lectures includes a recreation program for trainees to answer an entertainment quiz by operating screens created on Tableau. The program makes trainees easily understand what they can do with Tableau, helping them to proceed to the next step, namely, the BI Practice (Entry-level) course.

(2) BI Practice (Entry-level)

In the BI Practice (Entry-level) course, trainees can receive hands-on practice of basic operation and data classification of Tableau, including simple plotting such as drawing line and bar graphs, data filtering, and learning differences between continuous and non-continuous data.

Each section of the course has exercises. Two dedicated assistant instructors support a group of five or six trainees and respond to their questions. Assistant instructors consist of volunteers from BI Community so that these individual instructors can also improve their understanding of BI.

The course uses lecture materials that have been prepared by Salesforce Japan. These materials are brushed up reflecting feedback from trainees and lecturers.

Some of the results of trainees are shown in the following figures. Note that these results are in the preparation stage before being put in service. They were temporarily created to verify practicality in the case of using in-house actual data. Fig. 10 shows the dashboard of communication terminals for oil status, vibration, and temperature sensors along with their battery status. Fig. 11 shows the dashboard for changes in patent applications of different countries that has been developed by

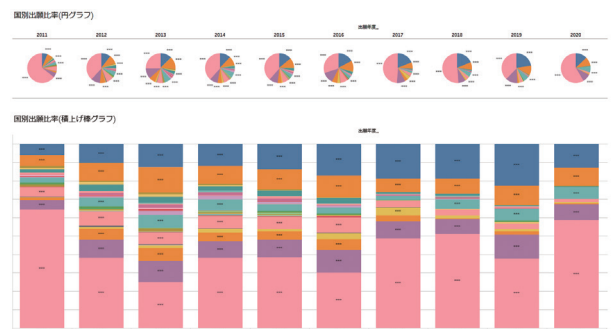**Fig. 10** Layout of sensor communication terminals and their battery status

Fig. 11 Analysis of changes in patent applications of different countries[Note16]

the Intellectual Property Department.

(3) BI Practice (Advanced-level)

The most likely difficulty for users in performing data collection, analysis, and visualization may be the development of a data environment. Particularly when users have just started using Tableau, they often handle existing data. That is' why the BI Practice (Advanced-level) course is focused on how to organize existing data. We designed the course to include data splitting and data coupling for linking two or more data sets using Tableau Desktop[Note 17] and Tableau Prep[Note 18] as well as data preprocessing such as name-based aggregation by correcting orthographic variants.

Using a data set consisting of several files, the lecturers explain in a storytelling style how to organize the data set by identifying any inconsistent parts of the data. All materials used in the lectures were internally prepared.

We believe that trainees can vividly experience the process of data processing, which is important for proper visualization and analysis of BI data. We have received feedback from trainees that they have successfully resolved remaining issues.

Note 15) The generic name for the capability to read, analyze, use, and describe data.

Note 16) Concrete numbers and names have been blurred.

Note 17) A specially designed tool for data analysis and visualization. One of the Tableau products.

Note 18) A specially designed tool for data pretreatment. One of the Tableau products.
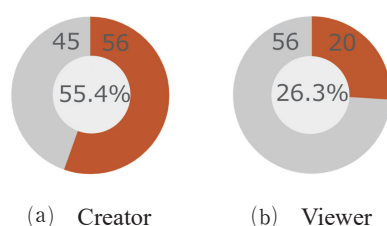
4. 3　BI Community
4. 3. 1　Background

It may be difficult for trainees alone to identify challenges or organize data of their own function. Then, a cross-function community was established to support them to achieve "self-propelling". This BI Community mainly consists of trainees of the BI Education curriculum. Community members can freely consult with each other about their concerns over how to use Tableau or data-related issues.

4. 3. 2　Current Challenge

BI Community has 177 members consisting of 101 Creators[Note 19] and 76 Viewers[Note 20]. However, active users of Tableau in the last three weeks are not more than 50% of licensed users.

(a)　Creator　　　　(b)　Viewer

Fig. 12　Ratio of active users to licensed users

Thus, the Community activity has not been vitalized as planned. We recognize that a data-driven culture has not yet been successfully developed.

Note 19) A type of license that authorizes the use of Tableau products. Developer license.

Note 20) A type of license that authorizes the access to screens that have been created.

4. 3. 3　Cause Analysis

We analyzed the behavior of users to figure out the cause of the challenge. The analysis has revealed the following:

About Creators

[1] 16 Creators make their own results open to the community.

[2] Creators do access the results [1] (within the same function).

[3] Creators do use Tableau but have not yielded many results.

About Viewers

[4] Viewers access the screens that have been made open to the community by the Digital Transformation Improvement Dept.

- Equipment predictive maintenance support system

- Equipment data collection/analysis system (MES service) [4]

[1] and [2] imply that Creators have started to proactively act in the functions. According to [3], however, they have not yet reached the stage of creating screens to be made open to the community. They may face some challenge. Otherwise, they may have completed analysis, but just produced results that are locally accessed by a limited number of users.

On the other hand, Viewers usually use Tableau to access screens they want to view. It can be estimated from [1] and [2] that Viewers are likely to use Tableau if data or screens that relate to themselves are available. In other words, the screens made open to the community may not be those wanted to view by the Viewers who do not use Tableau.

From the above, it can be concluded that a support system for the user group applicable to [3], which is a bottleneck, must be developed.

4. 3. 4　Solutions

To resolve the challenge, the operation of the education curriculum should be revised to focus on user support. We discussed the following solutions:

(1) Providing on-demand learning contents

The live lectures, which have been prepared and held by members from the Digital Transformation Improvement Dept. on an as-needed basis, will be changed to a video streaming service, ensuring the support man-hours. With this service, trainees can take on-line lectures whenever they like. It can be expected that the number of in-house users will increase.

(2) Creating a skill map

Along with the video streaming service described above in (1), a skill map will be created and made available. The skill map should be linked to the existing lectures so that trainees can obtain visualizations of their own skill set and maintain their motivation for self-learning.

5　Future Prospects

Since its launch of full-scale initiatives to develop digital human capital in 2021, KYB has promoted the development of an education curriculum and the operation of communities. Through these activities, the company has enjoyed an increase in AI and BI human capital and new cases of data utilization that have never been seen before.

We will continue considering measures to increase the in-house digital human capital. For AI human capital development, we will build a development platform where even more AI human capital, ranging from beginners to masters, can flexibly use AI. We would also like to generate more cases of establishing an MLOps environment for AI's contribution to business. To do so, it is necessary to establish a cloud environment operation rule for wider deployment throughout the company. Besides this, it will be even more important to carry out DX promotion to expand the KYB-IoT platform appropriately according to the scale of function or project. For BI human capital development, we would like to facilitate data linkage among the business functions centered on the improvement of data analysis skills of individuals. To achieve this, we should discuss the company's general data governance, including how data should be, how data should be available, where data should be compiled, and who is responsible for data management, to provide data to users in an easier-to-use way.

6 In Closing

This report has introduced KYB's initiatives to develop digital human capital. The true purpose of education is achieved only if employees apply the knowledge and skills they have learned to their daily development work contributing to business. Toward the implementation of DX, we would like to continue to generate more cases of in-house data utilization and expand the education curriculum needed by the company being aware of world trends.

Finally, we would like to take this opportunity to sincerely thank all those concerned in the related functions who extended great support and cooperation to the promotion of the initiatives.

References

1) NAITO: "AI x IoT Initiatives in the Production Technology Domain at KYB", KYB Technical Review No.60 (April 2020)
2) FURUKAWA, ISASHI: "Development of an Equipment Predictive Maintenance System", KYB Technical Review No.63 (October 2021)
3) OHUCHIDA, MIYAUCHI, SAGEHASHI: "Use of AI Technology in Development of SA Elements", KYB Technical Review No.66 (April 2023)
4) YUBUKI, GABURIELLA: "Building the Foundations for MES Services in the New Era", KYB Technical Review No.64 (April 2022)

Author

MIYAUCHI Yuuki

Joined the company in 2017.
DX Improvement Dept., Engineering Div.
Engaged in system development using AI and promotion of AI human capital development.

ISASHI Ryosuke

Joined the company in 2017.
DX Improvement Dept., Engineering Div.
Engaged in building of data visualization/analysis foundations and promotion of BI human capital development.

TAKINO Shinsuke

Joined the company in 2006.
DX Improvement Dept., Engineering Div.
Was engaged in promotion of digital human capital development.