Innovation & DX

Innovation supporting the Mid-Long Term Business Strategy

To continue to provide social and customer value as a sustainable solutions company toward 2050, the Bridgestone Group will strengthen its sources of competitive advantage through innovation.

In April 2022, it kicked off full-scale operation of Bridgestone Innovation Park, in Kodaira, Tokyo, as its global innovation hub to create new value with various stakeholders. In its tire business (core business), solutions business (growth business), exploratory business and diversified products business, the Group is promoting co-creation with various internal and external partners across the value chain. The Group will accelerate innovation by utilizing the Bridgestone Innovation Park as a site to promote interaction with empathy among society, partners and customers about the Group's DNA and vision, cultivate the relations through co-ideation and co-R&D, and then realize co-creation of new value.

● Bridgestone Innovation Park: Global innovation hub earning empathy and promoting co-creation for creating new value through innovation

In Kodaira, Tokyo, Bridgestone's Tokyo plant was established in 1960 and a technology center was built later in 1962. Bridgestone has supported motorization in Japan with high quality products which were developed by collaboration with the plant and technology center facing one another at the same site. It has also contributed to the development of regional community in Kodaira, and evolved together for more than half a century. As one of the critical strategic growth investments within the Mid Term Business Plan (2021–2023), the Group renovated the technology center as a site to create future value from Kodaira, the birthplace of Bridgestone's technology at the timing to accelerate the transformation toward a sustainable solutions company, together with the "Bridgestone E8 Commitment."

Bridgestone Innovation Park consists of mainly three facilities:

Bridgestone Innovation Gallery[1], a place that serves for interaction with empathy between the company and its customers, stakeholders and society by introducing the Group's history, DNA, business activities and initiatives for the future.

Bridgestone Innovation Gallery

B-Innovation[2], an innovation center that leads from interaction with empathy to co-creation, which will realize:

1) Co-ideation with potential partners by seeing the Group's core technologies and products, and exchanging ideas about the concept of technology and business model, etc., with the aim of giving rise to new ideas.

2) Co-R&D which gives shape to ideas of technologies and business models by research and development together at the facility combined with digital.

3) Co-creation which realizes new value with various partners and B-Innovation will be the site to create new businesses.


Bridgestone Open Innovation Hub in B-Innovation

B-Mobility[2], a proving ground that can be used to quickly experience and evaluate the prototype mobility technologies and products developed with partners by using real cars.

The Group will promote more agile R&D activities by repeating the process of developing and testing ideas immediately utilizing B-Innovation and B-Mobility, aiming for maximizing innovative value through co-creation with various stakeholders.


B-Mobility

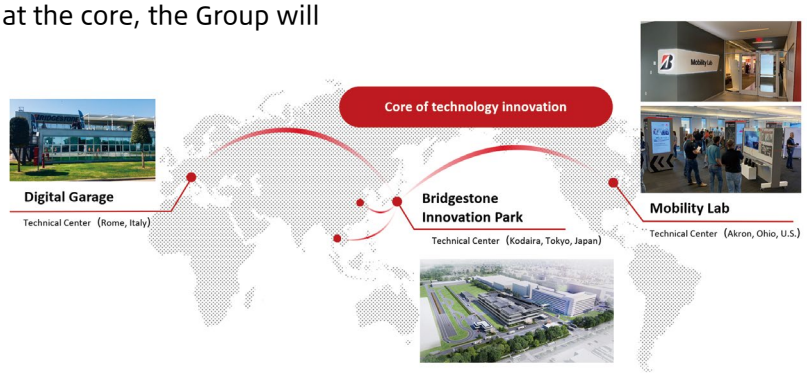
New workstyles to generate innovation

Bridgestone adopts an Activity Based Working (ABW) approach at the Bridgestone Innovation Park that enables each employee to freely design their own personal workstyle no matter when, where, and with whom they choose to work. At the same time, the company is driving the culture transformation to realize both "each employee's growth and happiness" and "growth of Bridgestone," valuing each employee who takes the initiative in work activities. The Company will be making the most of the Bridgestone Innovation Park that encourages interactions among various technologies, information, and people by transforming workstyles as well as its workplace. That will maximize each employee's performance and promote innovation through co-creation.

[1] Bridgestone Innovation Gallery was opened in November 2020.
[2] B-Innovation and B-Mobility were opened in April 2022.

Co-creation with Bridgestone's global innovation sites

The Group is developing innovation sites in each of its global regions. With the Bridgestone Innovation Park in Kodaira, Tokyo, at the core, the Group will strengthen collaboration with Digital Garage in Rome, Italy and Mobility Lab in Akron, Ohio, United States and accelerate innovation toward co-creation.



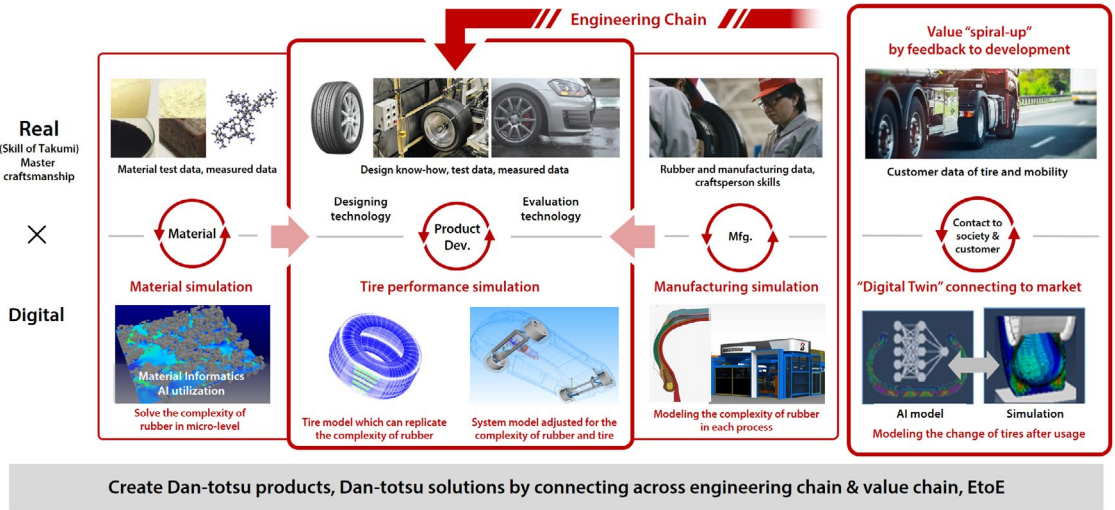
Accelerating innovation through co-creation

Based on the "Bridgestone E8 Commitment," the Group will accelerate innovation of its technologies, business models and designs through co-creation. The Group thereby will continue to contribute to the realization of a sustainable society, together with employees, society, partners and customers. As an important factor for innovation, the Group will evolve DX by combining the strong "real," its core competencies, such as "mastering rubber" and "mastering road contact" that have been cultivated over the 91-year history since its founding, with "digital" such as simulation technology.

● Innovation through the combination of strong "real" and "digital"

Rubber, which has the unique property of viscoelasticity, is extremely difficult to develop and for manufacturing sites to handle. "Mastering rubber" technology "to see, analyze and manage rubber," which is supported by the overwhelming amount of experience and data used to overcome this difficulty, and "mastering road contact," which has been developed through its experience with various environment and conditions of use, have led to the Group's strong "real."

By connecting this strong "real" with "digital" including unique simulation algorithms, the Group will expand and develop Dan-Totsu Products and Dan-Totsu Solution through co-creation across the engineering and value chain, end to end combining its knowledge, know-how and technology.



Advanced design simulation

By using advanced design simulations that combine the Group's accumulated high-quality market data and tire databases with structural computer-aided engineering (CAE), it is possible to simulate the deformation and contact behavior of tires not only on snow and wet road surfaces, but also on soil and sand. In addition, by combining this data with other models, it is also possible to perform combined simulations of tires and suspensions, tires and vehicles, etc. The Group's Dan-Totsu tire for mining, Bridgestone MASTERCORE, and innovative tire technology optimized for EVs fitting, ENLITEN, were developed using this strong "real" and advanced-design "digital" simulation.

Material and compounding simulation

The vast amount of laboratory data the Group has about a wide variety of rubber materials is the core of its strong "real." Advanced material and compounding simulations become possible by combining this data with nano-level molecular CAE. This will accelerate the development of innovative materials with advanced functions beyond those of conventional materials currently available in the marketplace.

Unique algorithm used for advanced simulations

By using advanced simulations to analyze customer driving data in real time, the Group can determine an accurate condition on the current state of the tires on the vehicle being driven. This is made possible by the Group's unique algorithm based on its knowledge of the world's roads and its ability to obtain highly accurate data from customers worldwide. The Group will continue further strengthening the development of such algorithms to accelerate the development of Dan-Totsu Solution that provides new social and customer value.

Bridgestone's DX

The Bridgestone Group promotes Bridgestone's DX to continuously support evolving mobility society such as MaaS and CASE, where vehicles become smarter and more connected to information and technology, from the ground up.

The Group's unique DX enables it to operate "with greater data, faster, easier and more accurate." In its 91-year history, it has cultivated its strong "real," including technology of "mastering rubber" and knowledge and Takumi — craftsperson skills — on tires. With the combination of its strong "real" with "digital," which provides digital simulation technology and enhances solutions business such as digital fleet solutions, the Group continues to promote its unique DX to accelerate innovation across entire value chain from material and product development to providing solutions to society and customers.

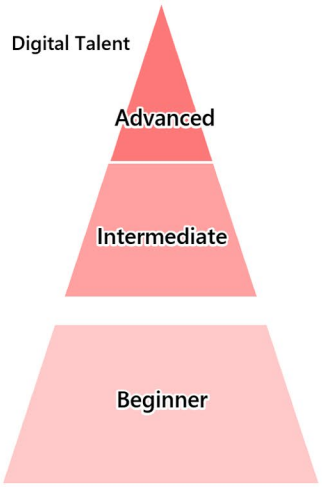
● Enhancing digital talent development

The Group's DX is indispensable for accelerating innovation, creating social and customer value with innovative tires and solutions, and providing ongoing support for an evolving mobility society.

To this end, the Group is particularly focused on developing high-level digital talents at the intermediate level and above tasked with the expansion of DX and solutions businesses. It is also encouraging talent exchanges with employees of Webfleet Solutions and Azuga, which became members of the Group through M&A. Additionally, the Group reinforces the recruitment and development of digital talent by partnering with external organizations. As one example, the Group has established Bridgestone endowed chairs at universities where students can practice and conduct research with Bridgestone employees.

Targets and Results

The 2021 acquisition of Azuga resulted in the addition of approximately 300 digital talents to the Group, increasing the number of the Group intermediate level and above digital talents to approximately 1,200 people. The Group plans to continue hiring and training in 2022, expanding to approximately 1,400 people. Going forward, the Group will continue to accelerate digital talent development as part of its organizational capability enhancements facilitating the realization of Bridgestone's DX and the evolution toward a sustainable solutions company.



Full DS : Reinforce external collaboration

Full DS*
: AI / Algorithm Expert

Recruit/develop AI/algorithm expert candidates through cooperation with universities, etc.
・Launch Digital talent development project:
Establishment of "Bridgestone x Tohoku University Co-creation Lab"
University: Participation of young engineers, Coaching backed by advanced specialized technology & expertise
Bridgestone: Dispatch of engineers, Study theme-setting & offering of data

Associate DS
: Solution Field Engineer

Develop Solution Field Engineers
・Develop engineers who can be close to customers at Genba and solve problems through using digital data
・Acquire data science & AI knowledge through internal real-life examples & exercises, become capable of solving problems

Associate / Assistant DS : Expand internal development opportunities

Assistant DS

All engineering staff: **Expand internal development opportunities for DS**
・ Acquire basic knowledge / method of data analytics (understand analytics / prediction model and the way to evaluate)
⇒Compulsory for new engineering staff from 2019
It is becoming established as an internal development program

Company-wide: **Talent development to support the Group's DX**
・ Acquire data literacy (understand and make use of data)
⇒ Compulsory for new staff from 2021, expanding from Technical Center (Tokyo-Kodaira)

* DS: Data Scientist

Cooperation with educational institutions: "Bridgestone x Tohoku University Co-creation Lab"

In October 2021, the Group established a base for academic-industrial collaboration with Tohoku University and launched a joint project to develop digital talent supporting the Group's DX. The objective is to develop Artificial Intelligence/Algorithm Experts who create solutions businesses using their expert skills. Efforts also are underway to prepare Solution Field Engineers capable of identifying issues at business sites and linking them to solutions proposals utilizing digital technologies. The Group will also develop digital talent possessing advanced skills through the leadership cultivated in various research and education activities, including advanced data science at Tohoku University, practical unique programs that fully leverage solutions-based learning know-how, and joint research and exchanges with participating laboratories.