

Intellectual Capital

Outline of Efforts to Strengthen Intellectual Capital

To continue to provide value to society in an era of dramatic change, starting with the progression of CASE, it is imperative that we truly understand the needs of our customers and take action to meet those needs.

To that end, we are stepping up our R&D activities so that we can refine our strengths in mechanical parts, electronics, and software (which function as the body, nerves and blood vessels, and brain, respectively) and enhance our ability to combine such strengths in an optimized fashion. At the same time, to bolster development efficiency, we aim to increase our R&D expenditures to around the level of ¥450.0 billion in fiscal 2026.

In addition, implementing an IP strategy in an integrated manner with our business strategies is essential to securing a competitive edge. We will therefore support our business endeavors through the building of an IP portfolio primarily in focus fields and the strengthening of IP activities geared toward open innovation.

KPI Targets for Fiscal 2026

R&D expenditures (Including portion of asset capitalization)

¥450.0 billion

Characteristics of DENSO's Intellectual Capital (Fiscal 2022 results)

R&D expenditures
Including portion of asset capitalization
(ratio to revenue)

¥497.6 billion (9.0%)

Number of patent applications filed

Approx. 4,400

Number of patents held

Approx. 42,000

Reinforcing Our R&D Activities

Throughout our over 70-year history of product development, we have expanded our R&D domains from mechanical parts to encompass electronics and, more recently, software with a view to maximizing the value of green and peace of mind. By doing so, we have achieved steady business growth. Software development, in particular, accounts for nearly half of our R&D expenses, and, as such, we are pressed with the urgent task of developing personnel who are software experts. To that end, we aim to cultivate and train 1,000 software engineers by 2025. In addition, with regard to in-vehicle semiconductors, which are playing an increasingly more important role in the fields of electrification and automated driving, we will pursue dynamic development activities by drawing on the strengths that we have cultivated in our over half a century of semiconductor research and on our various business alliances.

Additionally, we will work proactively to form even more allies in our R&D domains from various fields through collaboration and alliances within the Toyota Group as well as collaboration with industrial, government, and academic institutions and technical liaisons.

Balancing Efforts toward Reinforcement with Efforts toward Efficiency

Efficiency is essential in order to gain the best possible results from our limited amount of resources. In terms of businesses nearing the final stage, we are conducting a close examination of projects, including business transfers, and at the moment we aim to reduce the development costs of businesses nearing the final stage by roughly 40% by 2025. In addition, the introduction of D-tote, a DX tool for proof of concept,* is an example of an important DX initiative we are promoting on a Companywide basis. In particular, for software development, which involves intensive work hours, we have been executing DX investments in such areas as automating test processes, and this has led to efficiency enhancements that have had an impact equivalent to over double the amount of our investment. We are also moving forward with the process for new business creation, from planning to verification, in short periods and making decisions based on a "go/no go" criterium. Furthermore, by assessing the feasibility of commercialization on a rolling basis and reshuffling our project portfolio, we are implementing swift, highly disciplined investment.

* Process of verifying the feasibility of an idea through demonstration before the prototype development phase

Promoting IP Strategies with a Focus on the Progression of CASE

Added value for automobiles is beginning to shift toward the CASE domain. Under these circumstances, DENSO is promoting three main initiatives in order to win out against the competition, which now includes not only major players from the automotive industry but also ICT companies and start-ups. These initiatives include the following: (1) establish a competitive edge both inside and outside the automotive industry by increasing the number of patents that can be used by other companies; (2) create partnerships with companies in other industries based on IP collaboration (promotion of alliances); and (3) promote the external procurement of IP (prompt acquisition of the necessary IP). Guided by these three initiatives, we are realizing a sustainable business ecosystem through the utilization of IP and seeking to enhance our competitiveness and corporate value.

Initiatives to Strengthen Our IP Portfolio

For patent application and management of owned IP, we are working to increase the percentage of IP rights we possess in focus fields while at the same time striving to enhance the efficiency of de-emphasizing and discontinuing businesses. By doing so, we are actively reshuffling our IP portfolio, which we place in a high position among our intellectual capital.

Also, to accelerate the value of the products we offer in the CASE domain, it is imperative that we pursue thorough industry-wide collaboration in terms of international standardization and rulemaking. To that end, we actively participate in activities to help establish necessary regulations and standards for the future automotive industry and are working wholeheartedly to promptly develop measures to comply with such regulations and standards. As part of these efforts, we are taking steps to identify technologies for which we should collaborate with other companies and technologies that we need to maintain internally to achieve differentiation, and are applying for patents in accordance with the purpose of a technology's utilization. By doing so, we are working to contribute to the automotive industry and realize (1) and (2) listed above.

Furthermore, to increase the number of patents that can be utilized by other companies, from 2021 we have been confirming implementation status of other companies and have added an internal award program for the acquisition of standard-essential patents. Through these efforts, we are striving to enhance employee awareness and increase the number of patents that can be utilized by other companies.