# R&D, Intellectual Property, and Standardization

(As of October 1, 2023)

## Research and Development Efforts and Directions



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The Corporate Research & Development Group works towards the mission of contributing to achieving a sustainable society by creating and expanding new businesses through the creation of a new ecosystem based on the world's first and best unique technologies that impact society.

The group accelerates new business development in digital healthcare and strengthens efforts to contribute to carbon neutrality through collaboration and cooperation as One SHARP. In doing so, the group aims to implement ESG-focused management. Furthermore, the Corporate Research & Development Group pursues the creation of unique technologies by expanding industry digital transformation solutions through the application of AI technology, which is undergoing ongoing technological innovation.

The group focuses on creating innovative technologies that drive innovation throughout Sharp in addition to building platforms with our unique technologies. Through these efforts, the group aims to further strengthen our technological capabilities.

In addition, our open incubation activities include collaborating with companies that generate technological innovation and supporting startups in developing their businesses. Aiming to develop R&D results into

new business areas, the Corporate Research & Development Group established a specialized task force within the group to pursue collaboration with internal and external parties and we are actively engaged in cross-industry co-creation centered on industry digital transformation.

The group aims to help make society both people and environmentally friendly by tackling the challenge of new business creation and accelerating innovation achievement through the rapid deployment in society of the fruits of development.



### **Intellectual Property Strategy**

Sharp positions its intellectual property strategy as one of the most important management strategies, pursuing it together with business and R&D strategies. We work to enhance our business advantage and strengthen our management foundation by actively obtaining patents. In 2016, we spun off the Intellectual Property Department and established ScienBiziP Japan Co., Ltd. (SBPJ) with the aim of making the department a profit center. SBPJ has thorough knowledge of Sharp products, technologies, and businesses. Utilizing this knowledge, SBPJ will provide advanced services as the company further enforces improvements in the quality and efficiency of professional services. In doing so, SBPJ will enhance the driving force of intellectual property management and generate strong patents and various economic values with the advanced technologies of Sharp.

In regard to patent acquisition, Sharp clarifies the core technological fields for each of our businesses and works closely with the field to make strategic patent applications. We also actively work to obtain useful patents generated through alliances with other companies or industry-academia collaborations.

### Standardization Strategy

In recent years, standardization activities have become increasingly important as a tool for corporate management strategies, such as strategies to create markets and secure competitive advantages. At the same time, there is an urgent need in Japan to strengthen competitiveness by acquiring international standards.

In 2003, we established a research institute to acquire patents for wireless communication technology standards and participated in the standardization of LTE launched at the 3GPP\*1 meeting in 2004. Since then, we have continued to participate up through the standardization of Beyond 5G. Our stock of more than 6,000 communication standard essential patents in more than 50 countries around the world serves as an important management resource to the company.

Furthermore, we actively engage in international collaborations with overseas companies and universities, focused on pursuing international standardization of next-generation communication and video coding technologies in particular. We also actively send young employees to international conferences to gain various experiences, aiming to develop highly skilled human resources.

#### Contributions

#### Contributed to formulating the 5G-Advanced standard specifications

Contributed to the development of the world's first physical layer standard specification for 5G-Advanced, which aims to expand the functionality and improve the performance of 5G

(5G-Advanced is expected to be put into practical use in the late 2020s)

#### Awards

2022 Industrial Science and Technology Policy and Environment Bureau Director-General's Award\*<sup>2</sup>, given to industry standardization projects

Recognized for our contributions to the development of the HEVC/VVC standard used in video transmission around the world as well as the extended standard that enables multi-view video and multi-bit high-precision video recording

- \*1 Abbreviation for 3rd Generation Partnership Project, an organization that develops international standard specifications for mobile communication systems
- \*2 The Ministry of Economy, Trade and Industry (METI) sponsors awards in recognition of achievements in activities to promote industrial standardization, such as standard formulation and conformity assessment activities