3

Innovation and Service

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Appendix

3.1 Sustainable Intelligent Solutions

With the vision of "Enable an Intelligent and Sustainable Planet", Advantech is committed to the sustainable development of the world. IoT technology and complete product solutions are utilized to improve customer resource utilization and production efficiency. Both energy waste and carbon emissions are reduced, thereby promoting sustainable development. IoT software and hardware products and services are developed in scopes such as energy management, transportation and logistics management, smart agriculture, smart factories, telemedicine, education, and operation and maintenance services.

Advantech is also committed to gradually expanding the revenue share of sustainable intelligent solutions. Although Advantech is not within the framework of the EU Taxonomy report, Advantech will still refer to the framework of the EU Taxonomy report and make relevant information disclosure. Advantech's current application fields of sustainable products and the corresponding EU Taxonomy are classified as follows:

Table 3.1.1 Solutions of Sustainable Intelligence Introduced into the EU Taxonomy Reporting Framework Disclosure

Applications invested into sustainable products	Connotation	Refer to corresponding EU Taxonomy	Refer to corresponding levels of detailed activities
Energy Efficiency Management	1. Products and solutions applicable to the power and energy automation industry are provided, including energy computers, energy controllers, energy data acquisition modules, iEMS, etc. Products are used to assist customers in energy management, energy monitoring and energy efficiency improvement. 2. Applications include EV Charger, renewable energy storage and energy creation.	Climate Change Adaptation	● Technological Manufacturing of Renewable Energy ● Manufacture of energy-saving equipment for buildings ● Installation, maintenance and repair of energy-saving equipment ● Data-Driven Solutions for Greenhouse Gas Emissions Reduction ● Professional services related to energy performance of buildings
Smart transportation	AI smart traffic planning and design solutions are provided, and traffic jams or idling are resolved. Traffic obstacles are detected and data is collected to ensure traffic safety.	Climate Change Mitigation	● Manufacture of low-carbon technologies for transport ● Manufacture of other low-carbon technologies ● Low-carbon road transport and public transport infrastructure support
Smart manufacturing	For example, the improvement of equipment utilization efficiency, the improvement of production efficiency, and the improvement of quality yield (AOI). The promotion that lesser equipment operation or manpower hours for lesser material waste or rework can achieve energy saving or carbon emission reduction.	Climate Change Mitigation	Manufacture of other low-carbon technologies
Environmental monitoring	Including: 1. Water treatment (including water supply treatment, sewage and rainwater treatment, etc.) is a process of changing the composition of its contents through man-made or natural phenomena. It can be divided into treating natural water for human use, and treating waste water after human use and then discharging it into nature. 2. It is useful for pollution prevention and control (pollution prevention and control such as: air pollution, noise pollution, water pollution, soil and groundwater pollution and extensive pollution description) 3. Waste monitoring, smart power plants, smart agriculture and other fields.	Protection of water and marine resources Pollution precautions Climate Change Mitigation Biodiversity and Ecosystem Restoration	● Manufacture of other low-carbon technologies ● Renewal of water collection, treatment and supply systems ● Renewal of waste water collection and treatment
Health medical	The medical data platform is assisted in the establishment, including medical computers, medical screens, bedside care information systems, medical tablet computers, mobile nursing workstations, telemedicine solutions, multi-functional medical computers, smart hospital solutions, operating room video streams streaming solutions. The aforementioned products or solutions are used to improve medical quality, doctor-patient satisfaction, quality of care, medication safety, etc.	Protection of social human rights	● Manufacture of other low-carbon technologies ● Residential care activities
Smart logistics	Smart logistics and warehousing can effectively manage inventory and optimize the distribution network, thereby reducing related costs and labor and increasing its competitiveness.	Climate Change Mitigation	Operation of personal mobile devices, circular logistics

The relevant disclosures are shown in the table below, and three cases in this chapter are provided for reference.

Table 3.1.2 Advantech's sustainable intelligent solutions correspond to the financial disclosure of the European Union's sustainability classification report

	Operating revenue		Capital expenditures		Operating expense	
Total (Currency: New Taiwan Dollar)	Total amount (Currency: New Taiwan Dollar) 68,744,701K	100%	1,320,449K	100%	13,580,926K	100%
Economic Activities Related to Sustainability Classification	Amount (Currency: New Taiwan Dollar) 12,717,770K	18.5%	244,280K	18.5%	2,512,470K	18.5%
Economic Activities Irrelevant to the Perpetual Classification	Amount (Currency: New Taiwan Dollar) 56,026,931K	81.5%	1,076,169K	81.5%	11,068,456K	81.5%

The survey method for 18.5% of revenue from sales of products or solutions for sustainable use is: classification and judgment are performed based on customer business items and sectors. There is also possibility for refinement of this taxonomy. In particular, it is not yet possible to accurately count the use of end customers for those which sell through channels. The application and connotation of Advantech's own products and solutions are classified with reference to the reporting framework of the EU's sustainability classification and the levels of related activities. The survey methodology is expected to be strengthened in the coming year in order to present more complete results.

Highlight Case 1

Advantech's High-Efficiency, Intelligent and Energy-Saving E-paper Solutions

In the promotion of smart electronic paper, Advantech is actively deploying environmental protection and energy-saving solutions in smart factories, smart hospitals, smart buildings, smart buildings, and interactive information board systems for public transportation. It can display and access information in unlimited places, and connect more external developers and ecological partners.

In terms of quantitative performance, e-paper shipments reached 20,000 units in 2022. The application of intelligent warehousing and production lines has reduced by about 1,350 kg. Carbon emissions and smart buildings has reduced about 720 kg of carbon emissions. The aforementioned saved a total of 2,070 kg of carbon emissions from paper. It creates the equivalent of 1.96 times the annual carbon emission absorbed by Daan Forest Park.

Year	Goal
2023	Smart factories/buildings/transportation/Estimated shipments of 0.5 million units are equivalent to 49.11 times the amount of carbon absorbed by Daan Forest Park.
2025	Smart factories/buildings/transportation/Estimated shipments of 1 million units create equivalent to 98.22 times the carbon emissions absorbed by Daan Forest Park.

* Note: A Daan Forest Park (25.8 hectares) can absorb 384.6 metric tons of carbon per year, based on the conversion of 15 metric tons of carbon per hectare of forest per year by the Council of Agriculture.

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The sustainable intelligent solutions of electronic paper has its positive influence. The levels it affects are environmental aspect, social aspect and consumer aspect. In terms of environmental aspect, unnecessary energy consumption can be saved and the service life of products can be extended. In terms of society aspect, consumers and users can be assisted to manage information more efficiently, so as to achieve the purpose of improving the efficiency of seeing a doctor in a medical institution.

Applicaiton 1: It is used in the low power consumption mode of the bed card in the medical institution, and the use period can be as long as eight months. The hospital bed card data is updated in a non-disruptive mode through Advantech's DeviceOn/ePaper excellent device management and image processing platform. An easier-to-operate maintenance platform is provided, breaking away from the difficulty of managing and compiling traditional electronic paper. Detail of the case can be viewed at: View Online

Application 2: The case field of the building leasing management company uses it in the smart bulletin board application, saving manpower and providing real-time tenant information announcements. Tenant satisfaction and willingness to renew the lease have been greatly improved.

Highlight Case 2

Advantech Charging Piles Help South Korea's Cities Save Energy

Advantech assists charging pile operators to quickly integrate the architecture of these applications and deploy them in the market to accelerate the popularization of electric vehicles. The number of electric vehicle charging piles built in South Korea is currently ranked fourth in the world. The motherboard in the charging pile is even more critical. In South Korea, more than 70% of the computer motherboards in the charging pile are manufactured by Advantech. We provide packages and services such as climate-resistant products, software information security, and remote control management. In terms of major annual performance, the mass production of 3 projects was achieved in 2022 with a total shipment of 2,087 sets.

For more case information, please refer to: The arsenal behind South Korea's leading charging pile, Hyundai Motor, is hidden in Taiwan - BusinessToday (businesstoday.com.tw)

Advantech's sustainable smart energy-saving solution can also improve the awareness of green energy construction and environmental protection. For example, household charging piles can be combined with the construction of household solar photovoltaic and energy storage systems to assist in the transformation of urban energy.

Highlight Case 3

Pingtung Veterans General Hospital's Smart Medication Solution

Pingtung Wing took the lead in Taiwan's hospitals, and the entire hospital was introduced to Advantech's smart medication solutions, including smart pill box setting stations, smart pill box transport vehicles, lightweight smart medicine cabinets, mobile smart medicine carts and Smart medication management system. The closed loop of medication management has been successfully built, and the Internet of Things technology has been used to improve and optimize the process of medical operations. Medication safety is improved and manual errors are reduced.

Major Performance in 2022

- Assisted in building the first hospital in Taiwan to construct a closed-loop medication administration (CLMA) system.
- Nursing carts of 150 medical computers were introduced.

Year	Goal
2023	- The AMiS smart medication solution and the nursing trolley with a target of 400 medical computers have been promoted to all medical centers in Taiwan. - Other smart medical solutions have been promoted and penetrated into Pingtung Veterans General Hospital. The goal is to introduce solutions such as smart emergency and war situation center in 2023.

The positive impact on economy, environment and human rights (crowd) is as follows: In terms of environmental aspect, the electronic paper label of the hospital bed can be updated with the latest patient information in real time to practice paperless ward. In terms of benefiting the population (human rights), the operating unit of the hospital improves the satisfaction of the public with medical treatment, reduces the burden on manpower, and ensures the safety of patients through the introduction of intelligent solutions. In the aspect of medical staff, the chip of the pill box is paired with the barcode information of the patient's wristband, which can reduce the nursing staff's medication errors. Advantech's smart medication management system integrates information about patients' medication orders. Omissions caused by traditional single-sheet operations are avoided to ensure the safety and correctness of medication for patients.

This project combines the "medical computing" and "mobile medical" products of Advantech's smart medical business unit, as well as the cross-unit "electronic paper" product, with the software of "smart ward (emergency)" to help Pingtung Veterans General Hospital to introduce a large-scale closed-loop medication management system. In the future, these plans will be introduced, such as cold chain solutions, medical management centers...etc. Advantech will continue to promote them to more hospitals in Taiwan and around the world. Taiwan's goal of becoming a model of smart medical care in the world has been promoted, and the efficiency and quality of global medical services have been further improved. More information can be obtained through watching the online video.

3.2 Innovative Mechanism

Advantech's innovation mechanism includes product, technology, business, academic cooperation, etc., which are all led by the chairman and senior executives to practice, including three categories and six projects:

Business Innovations are Linked to Emerging Business Opportunities.	Innovative Products and Technologies	Industry-University Research and Co-Creation
IMAX-C: Including innovation strategies and practical plans of business units, such as breakthroughs in product, business, and organizational reforms. **EBO**: With regard to the emerging opportunities observed, Advantech's global colleagues draw up a business plans for Advantech's new growth curve through rigorous analysis and planning.	**A+X**: The chairman and senior executives of the product department directly empower product innovation to guide resources to accelerate new product development. **MCT/TSU**: The technical committee composed of R&D supervisors centralizes and horizontally manages the core technologies of each business unit, and makes the TSU-Technical Sharing Unit modular.	**University co-creation**: We conduct in-depth research and field verification with domestic and foreign universities to jointly create breakthroughs in new technologies and applications. **InnoWorks**: We provide software, computing resources, online teaching, etc. to universities and colleges around the world to encourage the new generation of students to develop creativity and practice.

Advantech's blueprint for innovative development brings innovation and business development ideas to existing business units through the IMAX-C mechanism. It includes the cultivation of new organizations, the connection with external partners, the development of new products and new services, and the integration of internal resources. The other end of EBO is to explore new business opportunities, new markets, new technologies, and new businesses with low market maturity or beyond the scope of the original business. Also, these new opportunities are nurtured in the development of Advantech. Among these two endpoints, A+X is a new product strategy that extends existing business groups from the perspective of market development. Meanwhile, it expands its business territory and uses high-level empowerment and cross-unit integration to achieve its goals. However, MCT/TSU plays the role of core technology integration management under the footsteps of new products and new business innovations of these business units. In the direction of industry-university co-creation and Innoworks blueprint development, new ideas are stimulated through university-research cooperation, including the new generation's ideas for the future Internet of Things and product concepts. It is beneficial for Advantech to enter AIoT integrated applications and services, and to do early thinking and exploration.

This innovative mechanism fosters new business units and launches new products every year. In addition to winning awards, it has also created outstanding business achievements, allowing Advantech's core business to grow rapidly through mainstream trends and innovations in leading R&D technologies. Through internal innovation projects, the effects and trends of innovation are examined, innovative product development is stimulated, and product strategies are adjusted at any time.

Innovation Effectiveness Management

When the innovative mechanism is promoted, different effectiveness indicators are given according to the attributes of the issues that each mechanism focuses on in order to ensure that the innovative measures and mechanisms can exert their maximum benefits. Each innovation mechanism has a way of defining goals (KPIs), conditions for achieving goals, and follow-up actions. For example, the number of research projects of industry-university research conferences and the results also set a certain proportion for technology transfer or continuation of cooperation with public institutions. Also, for example, extra awards for product innovation and industrial design are given with the International Industrial Design Award. In addition, the revenue benefits generated by new products after they are commercialized and launched are tracked. For the EBO mechanism of business innovation, the Executive Committee is composed of senior executives. For the planning or results of innovative business and business models, substantial support is given, and the business development results of institutions are tracked.

3.2.1 Business Innovation and Emerging Business Opportunities

IMAX-C

Goal

Advantech works together to promote the operation of business management and construct the organization in the form of Business Unit, including SBU (Strategic Business Unit) focusing on strategy and product development, and RBU (Regional Business Unit) focusing on sales and regional development. Among them, the concept of innovation and business development was brought to SBU through the IMAX-C mechanism. I stands for incubation which is the cultivation of new organizations. M and A stand for M&A and Alliance, respectively, which are links with external partners. X stands for X-Product which is the development of new products and new services. -C stands for Convergence & Consolidation which is a product or unit that integrates internal resources to avoid duplication.

Measures

Each SBU product unit proposes IMAX-C proposals based on business levels and focus on market bottom-up. In addition, each single product line, product division that gathers multiple product divisions, and business group composed of multiple product divisions are converged and integrated hierarchically, to become the overall innovation and management of SBU strategic policy.

After the product unit proposed the IMAX-C innovation action, multiple units within Advantech were linked. Research analysis and discussions are jointly conducted for product service innovation, business model innovation, and organizational innovation. After the decision is finalized, it become the cornerstone of SBU's continuous growth and development to continue to launch the annual business promotion plan of SBU's ABP (Annual Business Plan).

Results

In 2022, a total of 70 plans for the IMAX-C strategic guidelines of business units have been produced.

EBO

Goal

Advantech follows the growth model of "Niche Division Clustering", promotes core business goals and vision, focuses on industries and concentrates on business strategies. Advantech introduced EBO (Emerging Business Opportunity) proposal management mechanism for emerging business opportunities. The goal is to discover opportunities for innovative businesses other than Advantech's core business, verify the feasibility of emerging business models and technologies to expand the business territory and increase the source of turnover.

Measures

Topics on emerging business opportunities are raised twice a year at home and abroad. Also, the Top 5 topics with the most commercial potential and innovation were selected by senior executives at home and abroad. After a detailed new business business plan, resources are invested in the establishment of new business units.

Results

28 EBO Topics were recruited twice in 2022, and a total of 10 Top 5 Topics were selected to develop the EBO BP (Business Plan).

Table 3.2.1 2022 EBO achievements over the years

Quarter	EBO Topic Call for Proposals	Phase 1 Screening	Results of Final selection
2022Q2	13	8	5
2022Q4	15	12	5

3.2.2 Innovative Products and Technologies

A+X

Goal

A+X is the mechanism for strategic development of innovative products. In innovation and management mechanisms such as IMAX-C, KOM (Kick-off meeting), EBO, and BLM (Business Leadership Model), SBU proposes new product strategy proposals for specific markets, technologies, or industries. In addition, the A+ product plan is developed in the A+X mechanism, and goals such as target market, product positioning, industrial design, business development, and cross-departmental cooperation are determined.

Measures

The topic of A+ new products is regularly collected with aspects such as market development, technology trends and so on. The product department was invited to conduct a commercial and technical feasibility analysis. Also, market demand and opportunity points are aimed at to formulate strategic guidelines and new product goals. Some discussions are carried out on product conceptual design, functional application planning, business promotion, and resource allocation. After the planning of the A+ new product is completed, the strategy of the A+ product is set and communicated and discussed through the decision-making meeting. Then it was delivered to the SBU for implementation and development.

Results

In 2022, a total of 21 strategic plans for new products or product integration was completed.

Figure 3.2.1 2022 A+X Case
「iContainer LEO-L50 Asset Management Devices & Solutions」

ADVANTECH

LEO-L50 Asset Management Devices

iContainer tracking solutions

Rugged Design — IP67, UV-Cut, Salt Spray | Long Power Design — Battery life up to 5 years* *Depends on user scenario | Zero Maintenance | Modular Design — Battery Module, Solar Module | Global Operation | Compact Design

⚠ MCT/TSU

Goal

The senior executives of R&D set up the new technical committee MCT – Meeting of Corp. Technology and Engineering to horizontally manage the core technologies of each business unit. Advantech's forward-looking technology sharing modularization (TSU-Technical Sharing Unit) was deployed in advance. Three major points are focused: R&D digital transformation, sharing IP (Intellectual Property) across SBG technologies, and the management and collaboration platform for core technologies.

Measures

The Share TSU sharing and intercommunication mechanism was established, and the R&D teams belonging to each business group are connected in series with their respective core technologies to exert synergistic effects through horizontal series connection and intercommunication. The topic is divided into "Engineering" focusing on the expansion and breakthrough of TSU R&D, including IP Sharing module sharing. Also, "Innovation" focuses on advanced technology research and develops forward-looking issues. Each business group creates a complete design together, shortens the R&D timeline, and empowers innovation to products.

Results

Through improvement and innovation in 2022, Advantech launch 523 new product projects such as industrial computers, computing modules, edge computing equipment, network equipment, sensing devices, and industry software and hardware integration solutions.

At present, the MCT R&D Technical Committee is held every two months and chaired by senior R&D executives, aiming at the long-term implementation of three major technical strategy issues. Please refer to Table 3.2.1 for details.

Table 3.2.2 MCT/TSU Technology Strategy Issues

R&D Interoperability Mechanism	Blueprint for intelligent material selection & parts development	Product Development Platform
• Complete digitalized and comprehensive IP digital platforms to provide solutions for the overall services required by various industries • Intelligent automatic generation of design blueprints, development of circuits completed by intelligent IP • Data transparency platforms sharing the same resources	• Precise recommendation of mainstream materials to allow products to be mass-produced precisely and accurately and win the trust of customers • Concentrated materials are shortened to achieve economical scale usage to make material purchase costs drop rapidly	• The real-time data transparency of the full amount of R&D data and all elements, PM/R&D/manufacturing does not hinder communication but saves time and is efficient • Digital design of building blocks, link processes to accelerate product development

3.3 Application Advocacy and Education of IoT

Bridging the Gap: Advantech's Leadership in IoT Drives Industry-Academia Collaboration

Through the implementation of an industry-university cooperation mechanism, Advantech has developed "three main axes and five programs" to cultivate IoT talents and shorten the gap between industry and academia by leveraging industrial resources. This collaborative effort connects academia, Advantech's internal employees, and partners within the industrial ecosystem, enabling them to create applications and solutions jointly by operating the "Co-Creation" value chain by aligning strategic thinking with Advantech's core capabilities and resources to contribute to society and drive the growth of the IoT industry. Additionally, this approach facilitates integrating academic research into industrial development to create more job opportunities.

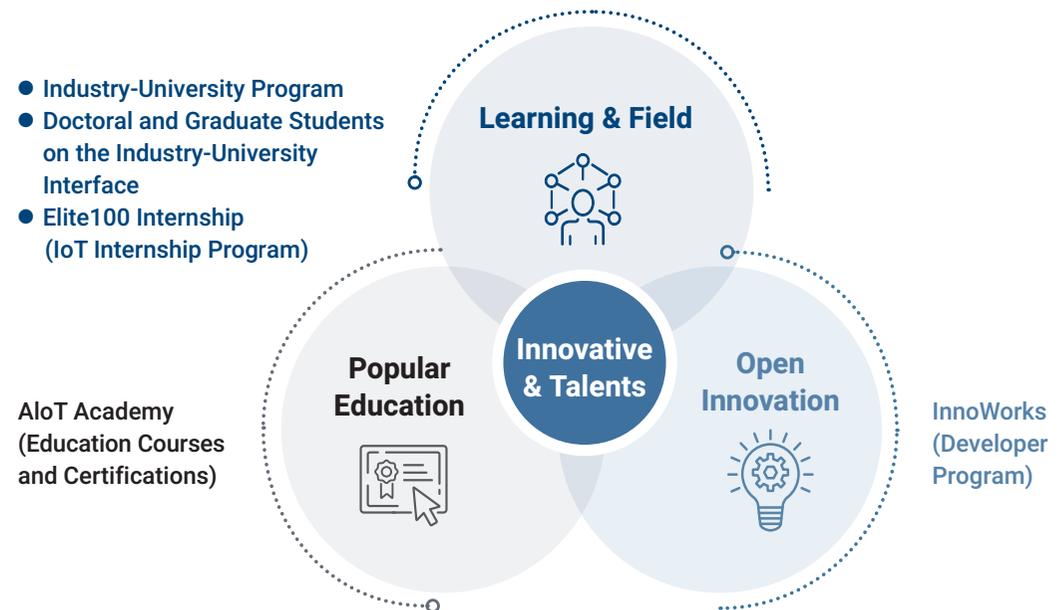## IoT education combined with the advantages of Advantech's core business

The WISE-IoTSuite platform is provided to flexibly carry leading technologies based on device intelligence, digital twins, industrial big data analysis, and artificial intelligence to meet the needs of different fields and industries. We join hands with partners to create new value in the IoT industry and build an open and inclusive ecosystem.

Advantech's Co-Creation Business Model

Advantech is committed to driving the three-stage growth momentum of AIoT IoT development through the concept of co-creation. The company has progressed from the first stage of hardware innovation to actively promoting IoT platform operations in the second stage. By integrating various technologies such as IT, OT, Cloud, and AI, Advantech has built the "WISE-IoTSuite," a comprehensive IoT cloud platform. Advantech is advancing toward the third stage of AIoT, focusing on solution development and ecosystem expansion. This involves connecting with diverse industry demands and providing integrated AIoT solutions. To achieve this, Advantech invites internal teams: "WISE-IoTSuite platform development and technology support team and product department" to join the industry-university co-creation (Co-Creation) to create high-quality application services. In this way, Advantech's ecosystem for the Industrial Internet of Things is constructed.

Promoting practices: Three main axes and five programs to promote industry-university co-creation and incubate IoT innovations and talents

Figure 3.3.1 Three main axes and five programs

- Industry-University Program
- Doctoral and Graduate Students on the Industry-University Interface
- Elite100 Internship (IoT Internship Program)

Learning & Field

Innovative & Talents

Popular Education

Open Innovation

AIoT Academy (Education Courses and Certifications)

InnoWorks (Developer Program)

❶ Integration of learning and application: The Co-Creation ecosystem is promoted, and the R&D energy of the school and the technological development needs of the industry are linked. Innovation and talents are further incubated through "industry-university project cooperation" and then "industry-university master and doctoral students combined with enterprise internships" to "transfer to the industry".

● **Industry-University Program**

Advantech conducts themed cooperation with major universities every year to understand the key development trends of the Internet of Things. It is used to link the practical needs of the industry with the energy of academic research, and to promote the implementation of innovation. Also, a virtuous circle of industry-university collaboration is created through two modes of Inside-out & Outside-in.

- Inside-out: The internal technology development roadmap corresponds to the school's AIoT R&D plan. The demand and the research and development energy of the school are deeply linked to the model market of the enterprise. In addition, Advantech's internal and external (clients and partners) actual fields are combined to carry out the pre-development verification (Proof of Concept, POC) of the innovative application of the Internet of Things. In this way, the results of the industry-university collaboration can be commercialized.

- Outside-In: The research and development plans and energy of university laboratories with potential for commercialization are reviewed. Therefore, the topic of external innovation and the energy of internal productization are linked. External innovation can stimulate the internal roadmap of new product and new technology development planning, or further become an important source of innovation for new business units developed by enterprises.

Figure 3.2.2 The virtuous infinite cycle of Advantech's industry-university cooperation plan

Figure 3.3.3 Advantech's Industry-University Co-creation Mechanism

UCC Research Projects : the ∞ Strategy

Advantech Tech Roadmap

2025
2024
2023
2022

AIoT Research Projects
(University Labs w. PI, postgraduates)

Project #1
Project #2
Project #3
Project #4

Headline

Talent incubation
& Potential new Advantechers

Roadmap items
→ Create research projects & new subject of interests
← Enriched and expanded by research outcomes

Research exploration
→ Themed projects with focus & outcome
← New value in product & technology

AIoT Industry-University Co-Creation Model

Drafting of Topics
- The direction of the topic is defined with Advantech's Senior executive and combined with the technology of the product department to develop the roadmap.
- IP content is jointly defined and blueprint is developed with professors.
- The results have industrial practicability with the verification of the index field after the completion of the project in the specific field.
- Doctoral and Graduate Students on the Industry-University Interface is combined with the mechanism of corporate internships to ensure the implementation and continuation of results.

Project Results
- Clarification of project deliverables (IP, Prototype)
- Market opportunity assessment and commercial feasibility analysis

Continuity of Results
The productization of the solution is ready to enter the marketing stage and form a commercial promotion plan.

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Management   Vision and Goals   and Governance   and Cultivation of   Benefit
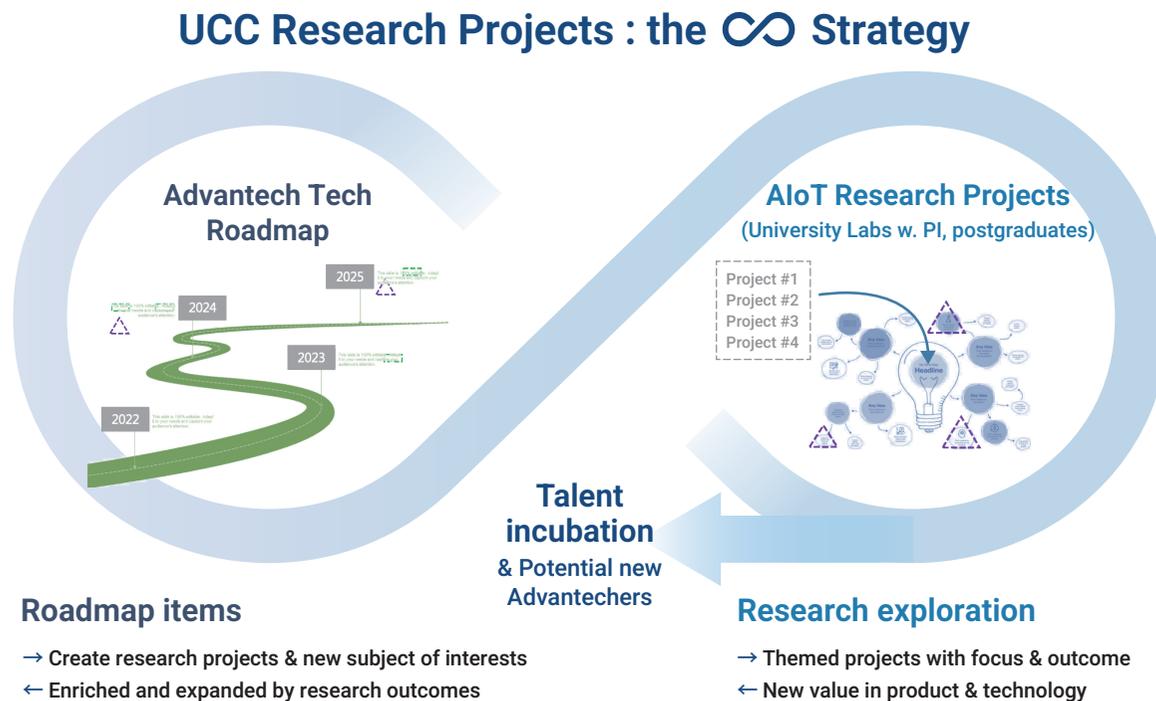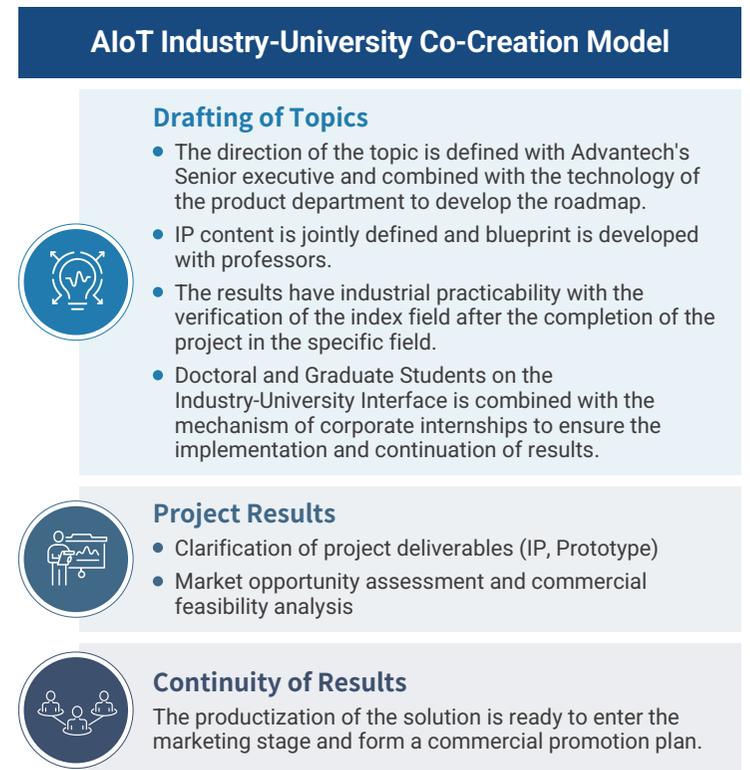   Industrial Talents

● **The establishment of the enterprise R&D center -**
  IoT System Research Center of National Yang Ming Chiao
  Tung University

Since its launch in 2015, Advantech's IoT System Research Center at National Yang Ming Chiao Tung University has cooperated and accumulated 44 projects by 2022 to establish the actual application of the industrial AIoT. The R&D themes mainly include Intelligent video analytics, Industrial 4.0, IoT embedded PaaS, AIoT domain applications, etc. In response to the trend of the Internet of Things industry, the research axis of the center has been adjusted to two major directions: "System and Technology of Industrial Internet of Things" and "Technology and Application of AI", and six new cooperation projects have been produced.
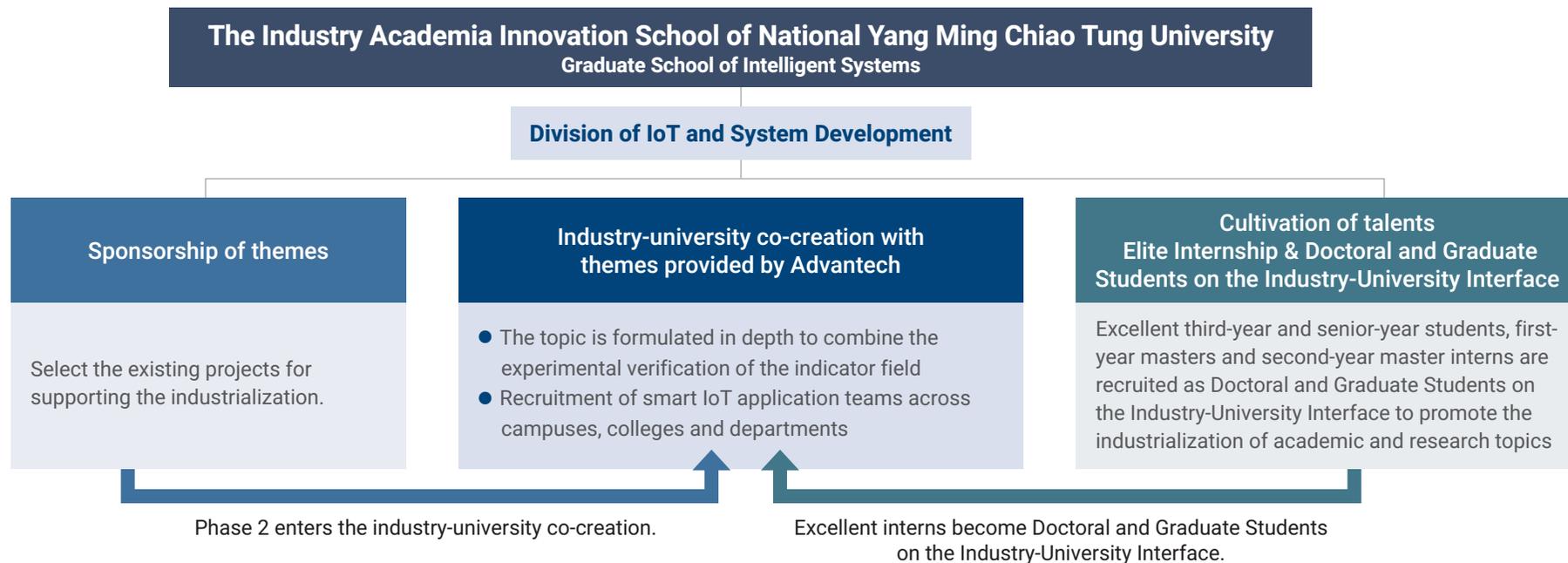
Figure 3.3.4 Advantech's research plan at the IoT System Research Center of National Yang Ming Chiao Tung University in 2022

2022 NYCU Research Project	
Systems and Technologies of the Industrial Internet of Things*2	**AI Technology and Application*4**
The key industrial technologies of the Internet of Things platform and the development of solutions for in-depth application in specific fields are included. The agenda for 2021 includes the development of next-generation wireless communication technology and optimization technology for factory water treatment.	The development of numerical and image-based industrial AI algorithms is included to combine information from Advantech's own commercial buildings, factories, or customer sites. Topics include AI/AOI, 3D image recognition and omen diagnosis, a total of 4 cases

● **Doctoral and Graduate Students on the Industry-University Interface**

Advantech joined with National Yang Ming Chiao Tung University in 2022 to establish the first industry academia innovation school in Taiwan. Talents in the Internet of Things industry are deeply cultivated through mechanisms such as courses offered by corporate teachers, corporate thesis, and graduate students on the industry-university. Also, there is a commitment that sponsors 10 industry-university cooperation master students every year. The goal is to become the cradle of industry-university programs, allowing academia and industry to jointly develop and innovate.

Figure 3.3.5 The structure of Advantech's participation in The Industry Academia Innovation School of National Yang Ming Chiao Tung University

The Industry Academia Innovation School of National Yang Ming Chiao Tung University
Graduate School of Intelligent Systems

Division of IoT and System Development

Sponsorship of themes	Industry-university co-creation with themes provided by Advantech	Cultivation of talents Elite Internship & Doctoral and Graduate Students on the Industry-University Interface
Select the existing projects for supporting the industrialization.	● The topic is formulated in depth to combine the experimental verification of the indicator field ● Recruitment of smart IoT application teams across campuses, colleges and departments	Excellent third-year and senior-year students, first-year masters and second-year master interns are recruited as Doctoral and Graduate Students on the Industry-University Interface to promote the industrialization of academic and research topics

Phase 2 enters the industry-university co-creation.

Excellent interns become Doctoral and Graduate Students on the Industry-University Interface.

One of the characteristics of the industry academia innovation school is the doctoral and graduate students on the industry-university interface. The application talents of AIoT are jointly cultivated by us and the school, and the benefits of industrialization of the research and development results are guaranteed. Master and doctoral students contribute into enterprise projects, and jointly select the research and development topics needed by the industry with the thesis advisors as the co-creation of the thesis theme. Also it is combined with the internship system and campus promotion to promote substantial benefits.

Figure 3.3.6 Internship Mechanism of Doctoral and Graduate Students on School of Industry and Innovation

Advantech IoT Intern

Excellent interns are recommended to Industry Academia Innovation School

College students implement Advantech projects Internship at the enterprise during the semester

The Industry Academia Innovation School Doctoral and Graduate Students on the Industry-University Interface
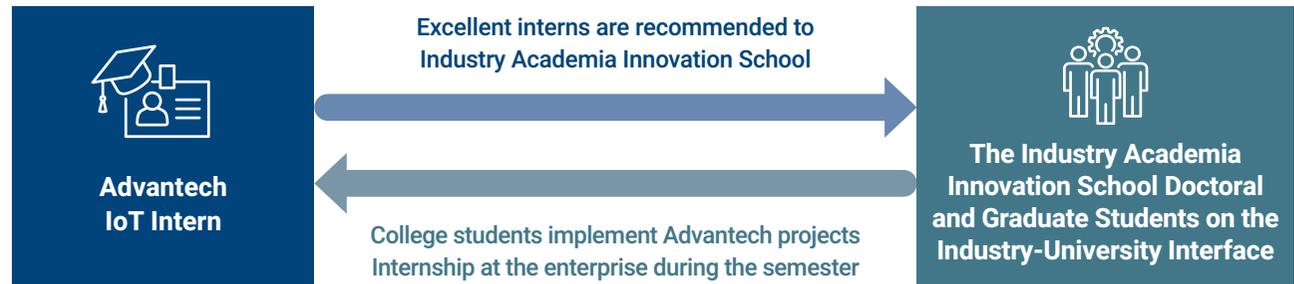
- **Elite 100 IoT Internship Program (Please see Chapter 6)**

2 Open innovation: Students' cross-field co-creation is guided to drive industrial innovation (Please see Chapter 6)

- **InnoWorks Developer Project Competition**

3 Popular Education: shortening the gap between industry and academia in higher education (Please see Chapter 6)

- **Online Learning Platform for IoT [IoT Higher Education Courses & Certification of AIoT Academy]**

Highlight Case

Advantech participated in the establishment of the industry academia innovation school of National Yang Ming Chiao Tung University

National Yang Ming Chiao Tung University established the first industry academia innovation school in Taiwan by the end of 2021. Advantech is mainly involved in the planning of the Intelligent System Research Institute, and its key cooperation results are as follows:
- Six industry-university collaboration projects: Advantech's Internet of Things Center and the energy of the college are combined, and six projects including industrial technology and AI applications in cooperation with teachers in the field of electricity and resources.
- Industry mentors lecture on the topic of "Introduction to Digital Transformation and Cloud Collaboration Platform - Case Sharing of Smart Healthcare and Smart Manufacturing".

For related information, please see Press Release.

3.4 Co-Creation of Customers and Partners

3.4.1 Trends, Strategy Sharing and Co-Creation

In 2022, Advantech is committed to deepening customer connection experience, expanding ecosystem partner management, and institutionalizing distribution authorization management. In terms of customer management and partner co-creation, Advantech aims at "altruistic cooperation for mutual benefit" and "digital service upgrade". Meanwhile, digital platforms such as the customer relationship management system and online technical services have been optimized to improve operational and service efficiency.

Figure 3.4.1: Advantech 2022 Key Contents of Customer Management and Partner Co-creation

Customer Connection Experience

A Connect

Advantech headquarters holds a large World Partner Summit every two years. Branches in various countries also hold large-scale customer forums and dealer conferences every year. We share the latest development strategies and products with our customers through these events. In 2022, Advantech Connect adopts Go-to-Webinar's platform. Each event can accommodate 500 people online simultaneously. In 2022, a total of 76 forums was held around the world. A-Connect Dashboard is built to gain a deeper understanding of the effectiveness of customers watching On-demand Video. It provides information including the number of videos watched, customer member information and video ranking information, etc. Below is a schematic diagram of A-Connect Dashboard's 2022 annual video report. A total of 299 playback videos were uploaded with 72,771 views and 1,899 video shares.

Figure 3.4.2 Schematic diagram of A-Connect Dashboard's 2022 annual film report
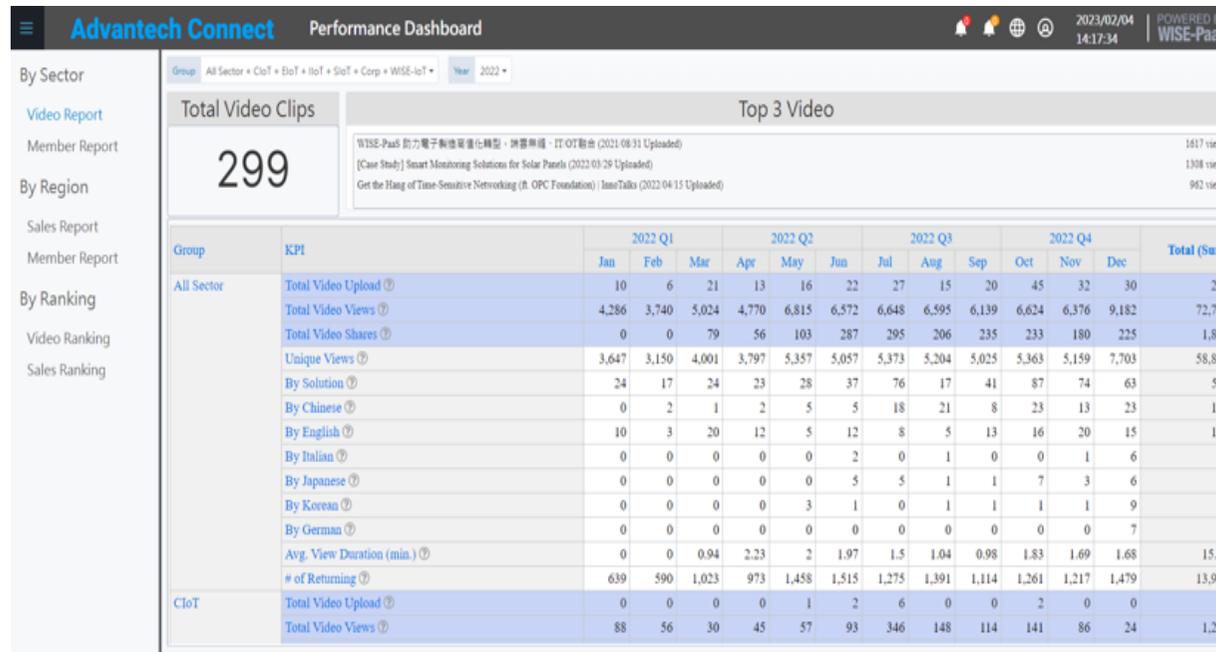

Advantech's digital transformation is accelerated through the Advantech Connect events. Also, stakeholders are encouraged to understand Advantech's development goals and growth strategies. More information as below:

- Advantech Connect Website

- Advantech Connect On-demand Video

- Advantech Connect Dashboard

IoTMart

Advantech satisfies the purchase needs of direct sales customers through eStore and IoTMart. Information localization flexibility and customization online shopping functions are provided to meet the needs of various regions.

The main axis of the project in 2022 is to optimize the customer shopping experience and shorten the manual steps, including the optimization of the checkout process, the recommendation of AI products, and the optimization of the shelves of assembled products. At present, Commerce Cloud is adopted to gradually migrate to the cloud. Existing small and medium-sized sites are consolidated into new sites to streamline repetitive maintenance work. In addition, the information required by customers is accurately provided through data connection and exchange between different clouds to accelerate Advantech's digital transformation.
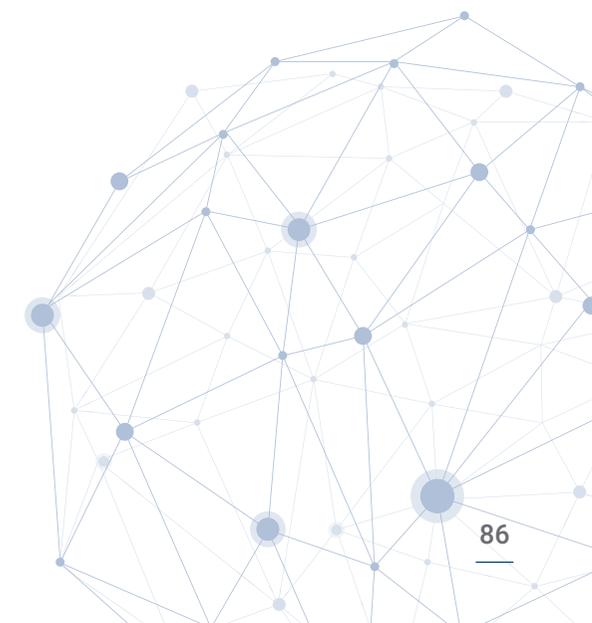
Ecosystem Partner Management

The Internet of Things is a market where multiple industries are integrated. Advantech upholds the concept of creating and co-prosperity with partners. Industry ecological partners are built with IoT platforms and core products. It enables small system integrators, traditional automation system integrators, cloud platform system service providers or industry experts... etc. to enter the IoT industry through this platform. Ecological partners and Advantech work together to expand the market.

Partner Co-Creation

Advantech proposed the concept of "co-creation" in 2017. While meeting customer needs and providing customer service, we also regard customers as partners and invite them to join us in actively creating value through cooperation in terms of technology, products, business models, business marketing, channels, and so on. From 2021, start-ups in Taiwan, China, Europe, the United States, etc. are supported by investing in external funds. We expect these key areas to form a complete ecosystem of the Internet of Things. Relevant contents are shown in Table 3.4.1.

Table 3.4.1 Advantech's 2022 list of activities supporting AIoT innovation

Ecosystem Fund Investment		
Region	**Fund size**	**Field of investment company**
European and American	USD 30 million	Smart Manufacturing, Smart Energy Management, Edge Computing, AI, Information Security, Smart Positioning
China	RMB 100 million	Industrial control security, IoT security, smart 5G mine, integrated energy service integrator
Global	USD 50 million	Internet of things, new energy
Sponsorship of events for incubators, accelerators and IoT innovations		
Region	**Number of sponsors**	**Sponsorship fund**
Taiwan	3	NT$3.9 million
Support for start-ups		
Region	**Content supported**	
Malaysia	Sponsoring partners US$60,000 to develop smart hospital solutions	
Taiwan	We and AAMA (Asia America Multi-Technology Association) launched the AIoT co-learning and co-creation project. Advantech's product department and 10 Internet of Things start-up companies were deeply connected through entrepreneurship, business model and industry workshops. Product and business development experiences were exchanged, and potential innovative IoT solutions and market cooperation opportunities were expanded.	
Taiwan	We and IndustrialAI jointly create a smart water testing solution. The start-up company's AI analysis technology, Advantech's IoT platform and market resources are combined. Therefore, market opportunities for sustainable water treatment solutions are co-created.	

WISE-PaaS

Advantech's IoT platform is a platform based on cloud-native platform services. It includes five core services: equipment management, asset management, visualization, data integration and analysis, and AI services. Eco-partners are developed based on these five major services. Equipment preventive maintenance is a typical application of IoT. Advantech combines its partners' equipment to analyze expertise, and jointly develops equipment health status estimates and early warnings. The energy application of smart city Internet of Things is also one of Advantech's key development directions. The WISE-IoT platform provides a cloud device management service platform, which is applied to large field management. There are multiple solar management case sites in Asia. Local operation and maintenance management is integrated with energy analysis applications to efficiently provide overall power generation and reduce operation and maintenance costs.

WISE-Marketplace

WISE-Marketplace is an end-to-cloud solution platform for the industrial IoT industry. It provides a rich introduction of solution content, a simple purchase transaction process, hybrid cloud remote deployment compatible with connection scenarios, and open and flexible expansion functions. It focuses on smart factories, smart energy management, smart devices, smart medical care, and smart retail vertical industries, including more than 100 selected industrial apps, as well as related education and training courses, certification and engineering support. In order to assist customers in accelerating digital transformation, WISE-Marketplace also assists system integrators and channel partners in different fields in the joint marketing, as well as the software developer's shelf mechanism, so as to jointly create a prosperous industrial ecological system.

WISE-IoT Solutions

The IoT cloud platform business group which WISE-IoT newly established for Advantech represents Advantech's first step in digital transformation. Various domain-type situational applications are developed by using the upgraded version of WISE-IoT Core Services of WISE-PaaS. The five areas of focus include WISE-iMachine, WISE-iFactory, WISE-iEMS, WISE-iService, and WISE-iHospital.

In 2022, the territory expanded to Europe, and the diversity of partners was gradually completed. It includes CP (Channel Partner), VAD (Value Added Sales Partner) and DFSI (Domain SI Partner). Moreover, it strengthens the cooperative relationship, such as customers served together, products jointly developed, industries in specific fields entered, and strategic investments carried out. Consultant partners who are more based on the development of the field have entered the global energy-saving field market. In 2022, about 160 partners continued to carry out in-depth cooperation with WISE-IoT to establish a more consolidated and strong business ecosystem for WISE-IoT.

Message from Management

Sustainability Vision and Goals

Company Management and Governance

Innovation and Service

Green Operations

Employees Relationship and Cultivation of Industrial Talents

Altruism and Social Benefit

Appendix

3.4.2 Management of Customer Relationship, Distributors and Channels

Global Customer Relationship Management System and Dealer Management Platform - MyAdvantech

Advantech has gradually converted the branch CRM system from Oracle Siebel to Salesforce CRM since 2014. So far, about 52% of the global business has been converted, covering the United States, Europe, Taiwan, the Middle East, Africa, and Latin America. In 2023, the introduction of Salesforce in the Japanese and Korean offices will be completed.

The CRM system is the starting point for business to serve customers, so Salesforce will accelerate the cross-system integration of important customer information into CRM. Advantech's internal systems are also committed to shortening the process time from demand to response to improve service efficiency and quality. In addition, Advantech attaches great importance to the security of customer data, so it has fully enabled Multi-Factor Authentication. It protects against challenging cyber-attacks such as phishing, credential stuffing, account compromise, and more. The legitimacy of system users is also ensured.

MyAdvantech is a customer and order platform that supports key global partners. It provides users with one-stop service and avoids additional time-consuming internal and external confirmation. Strong brand trust and reputation are built through an intuitive interface experience. In 2022, the Chinese channel management project was introduced and the European project registration system was upgraded. Customer management efficiency was improved to track quotes and orders.

3.4.3 Customer Satisfaction Survey and Customer Audit

Customer Satisfaction Survey

In respect to Advantech's customer satisfaction survey method, the headquarters regularly sends out questionnaires to a portion of those customers who have purchased Advantech products. This is aimed at understanding customer satisfaction levels in five aspects, including "sales services and pricing," "delivery efficiency," "product quality," "technical services," and "after-sales services." We take the customer satisfaction survey results as one of the performance measurement indicators of relevant units. For items with poor performance, relevant units are requested to propose improvement plans. Improvements are tracked by business units with a view to completing them within a time frame.

Regarding 2022 customer satisfaction survey methods, A total of 748 customers were sampled, including 325 customers in Taiwan, 102 customers in mainland China, 134 customers in North America, and 187 customers in Europe for customers whose accumulated sales in each region accounted for top 80% . The average coverage of this survey was 60.76%, the average recovery rate was 32.89%, and the average customer satisfaction score was 92.66. Set the goal for 2023: the average score is not less than 90 points on the basis of expanding customer coverage.

Lowest average of the top five surveyed items: Delivery quality. The main reason is the lack of cores and stock and the epidemic, which has led to delays in the output time of products and needs to be continuously improved. Satisfaction with "Delivery Quality" was improved compared to the previous year. In addition, the other four items all scored lower than the previous year. It is understood that the increase in surveys and coverage in regions (such as Taiwan, etc.) help to collect customer opinions more comprehensively. The results are expected to be surveyed to feed back the continuous review and improvement of relevant internal units. The future goal is to increase the coverage of customer satisfaction surveys year by year and maintain an average satisfaction rate of over 90 points.
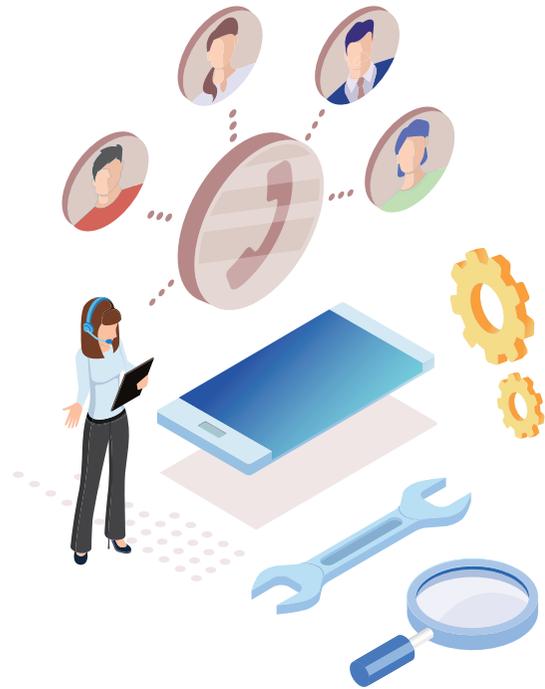
Table 3.4.3.1 Score and Coverage of Customer Satisfaction Survey in 2018-2022

Annual	2018	2019	2020	2021	2022
Satisfaction (score)	94 .94	94.59	95.16	94.83	92.66
Ratio of operating revenue of sampled customers to total revenue (%)	17.36	16.80	16.98	17.45	60.76

Table 3.4.3.2 Sub-item scores of customer satisfaction survey in 2022

Annual	Sales service and pricing	Delivery efficiency	Product quality	Technical Services	After-sales service
Score (out of 5 points)	4. 68	4.52	4.66	4.69	4.65
Satisfaction (score)	93.60	90.40	93.25	93.70	93.05

Satisfaction with Website and Customer Entry Endpoints

Advantech's customer satisfaction survey method for digital entry endpoints is to design satisfaction surveys at customer journey nodes on the official website and e-commerce site respectively. Surveys and collections were conducted on a satisfaction five-point scale. For satisfaction below 3 points, the customer shall be asked to leave suggestions for improvement or matters that need assistance. Also, the improvement plan needs to be put forward and the improvement situation is tracked by the business unit in order to complete the improvement within the time frame.

In the 2022 customer satisfaction survey on digital entry points, the official website collected a total of 51,580 customer feedbacks. The average satisfaction rate was 3.71 points, and about 93% were satisfied with more than three points. A total of 112 customer feedbacks were collected for the e-commerce site. The average satisfaction rate was 4.03 points, and about 90% of them were above three points. The digital entry point experience will be continuously optimized in order to provide customers with a better online experience.

Figure 3.4.3 Schematic diagram of a survey of ingress endpoint satisfaction

How would you rate this content?

A A A A A

Do you need further assistance? *

○ Yes   ● No

我不是機器人
reCAPTCHA
隱私權 - 條款

Submit

3.4.4 Customer Service

▲ Global Online Technical Services Platform

In 2022, the online technical service teams in Europe and North America and the headquarters RMA team have completed the introduction of the cloud technical service management platform Zendesk to accelerate Advantech's response to customers. Customer requests from different channels will be automatically created and assigned, ensuring continuous service. In 2022, a total of 88,116 technical service requests was closed, an increase of 47% over last year, and the closing rate is 98%. In 2023, Advantech will expand this automated process to Japan and South Korea's online technology services and headquarters on-site service teams.

Advantech has also introduced chatbots to serve North America and emerging markets, such as Central Asia and Africa. Customers are directed to self-help support, allowing our service to continue throughout the day. Advantech looks forward to the future that AI technology will be continuously researched to provide a realistic and natural AI response assistant. In 2023, in addition to chatbots being introduced to more regions, the one-stop online customer service center will be improved. Advantech Knowledge Center provides in-depth solution technical support and is integrated to create a closer cooperation framework.

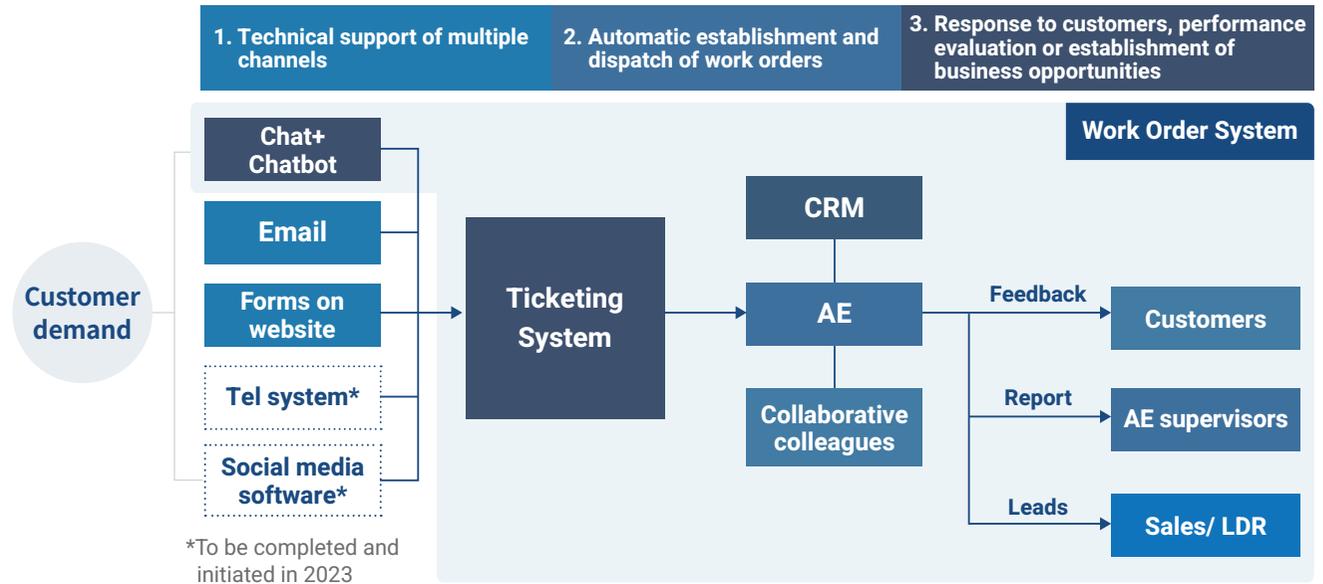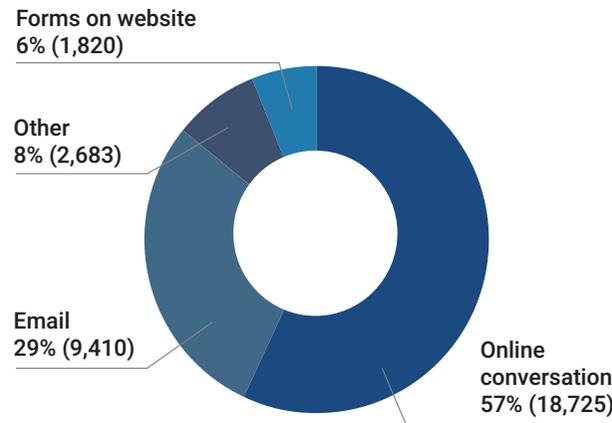Figure 3.4.4.1 Advantech's online technical support process

*To be completed and initiated in 2023

Figure 3.4.4.2. Analysis of Technical Support

Source of Technical Support Analysis

Forms on website
6% (1,820)

Other
8% (2,683)

Email
29% (9,410)

Online conversation
57% (18,725)

*Source analysis of all technical needs in the regions that have introduced automated processes (online technical teams in North America, Europe, and the Taipei headquarters) in 2022.

22% of our customer needs can be handled independently by chatbots

Independent processing by chatbots
22% (2,280)

Transfer to human customer service
78% (8,163)
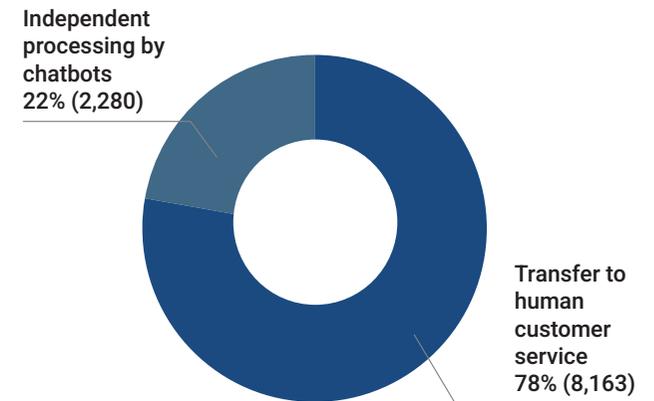
*Regions where Chatbots have been introduced: 2022 Analysis of Line pairs in North America and Emerging Markets Region.