Integrated Annual Report 2020



Please see our website for more detailed information about Advantest.

For Our Investors



Integrated Annual Report



Sustainability Databook



Environment



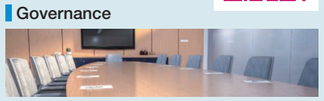
- Climate Change Mitigation
- Green Products
- Environment Data

Society



- Development of Human Resources & Fair Evaluation and Promotion
- Protection and Respect for Human Rights

Governance



- Risk Management
- Compliance

ADVANTEST CORPORATION
Shin-Marunouchi Center Bldg.,
1-6-2, Marunouchi, Chiyoda-ku, Tokyo 100-0005
https://www.advantest.com/

ADVANTEST

The Advantest Way

Since our founding in 1954, Advantest has developed and supplied the leading-edge measurement technologies that customers need, contributing to safety, security, and comfort worldwide through electronics quality assurance.
In 2019, the 65th anniversary of our founding, we codified our mission, vision, and core values in the form of "The Advantest Way". The corporate culture articulated in The Advantest Way is the force that drives Advantest's business growth.







Mission : Why do we exist

Enabling Leading-Edge Technologies

We will continuously improve ourselves so that we can offer products and services that will satisfy our customers worldwide, and contribute to the development of our society through the development of the most advanced technologies.

Vision : What we want to be

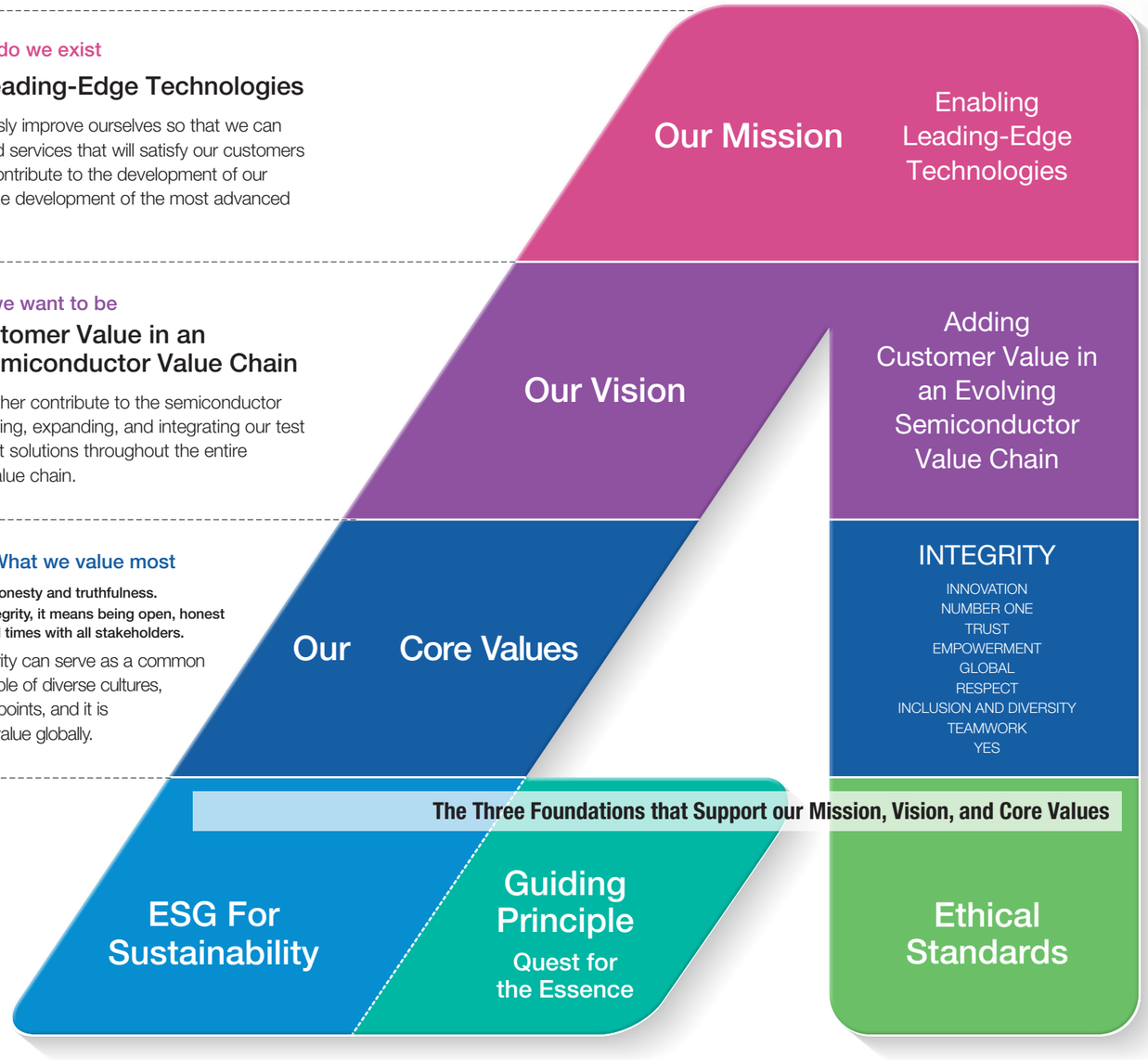
Adding Customer Value in an Evolving Semiconductor Value Chain

Advantest will further contribute to the semiconductor industry by enriching, expanding, and integrating our test and measurement solutions throughout the entire semiconductor value chain.

Core Values : What we value most

- **"Integrity" means honesty and truthfulness.**
- **When you have integrity, it means being open, honest and respectful at all times with all stakeholders.**

The value of Integrity can serve as a common thread uniting people of diverse cultures, religions, and viewpoints, and it is Advantest's core value globally.



Core Values「INTEGRITY」

I — INNOVATION is our Lifeblood
- We challenge the status quo.
- We embrace technologies and entrepreneurship to create superior customer value.

N — NUMBER ONE is our Aspiration
- We earn our leadership position in our business fields every day.
- We establish an impeccable standard of excellence.

T — TRUST is our Foundation
- We are a trusted, collaborative partner.
- We have confidence in each other's capabilities and intentions.

E — EMPOWERMENT is our Motivation
- We are empowered to make decisions with an owner's mentality.
- We own Advantest's success.

G — GLOBAL is our Reach
- We embrace a world of constant change.
- We are always ready. Anytime. Anywhere.

R — RESPECT is our Heart
- We respect different cultures, customs, and laws.
- We never compromise on our ethical standards.

I — INCLUSION AND DIVERSITY is our Commitment
- We are proud of and appreciate the range of different backgrounds that our talents represent.
- We believe that strength can come from differences as well as similarities.

T — TEAMWORK is our Approach
- We work smart and best utilizing our talents across teams and regions to do extraordinary work.
- We inspire each other, encourage openness, and recognize team results.

Y — YES is our Attitude
- We deliver on results promised to each other.
- We recognize that impossible is an opinion, and with imagination, we can change the world.

Disclaimer Regarding Forward-Looking Statements
This report contains statements about Advantest's current plans, estimates, strategies and outlook. Anything that is not historical fact is a prediction of future performance based on the best judgment of management, derived from the information available at the time this booklet was published. The semiconductor test system market is constantly subject to fluctuations that affect Advantest's core business. In addition, important factors that can affect actual business performance include economic trends, rapid exchange rate fluctuations, intensifying competition, and natural disasters. Due to these risks and uncertainties, our future performance may differ materially from what is described in this publication. Therefore, it should not be assumed that the goals set forth herein will necessarily be achieved.

Scope of This Report This report covers FY2019 (April 1, 2019 - March 31, 2020). However, it also mentions dates before and after this period as necessary. The data aggregation range is identical with the scope of Advantest's consolidated financial statements, unless otherwise stated.

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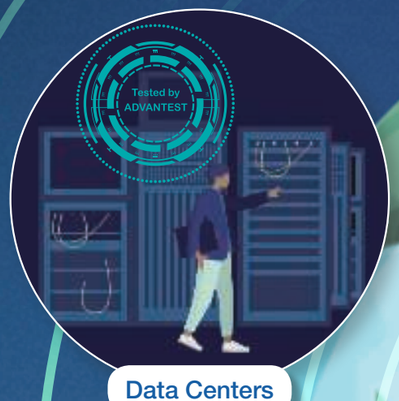
About Advantest

Advantest is a provider of test and measurement solutions focusing on electronic measurement technology. Our core product line is semiconductor test equipment. These systems measure and test semiconductors with high accuracy and efficiency to ensure that they operate properly and meet performance and reliability requirements.
In their diverse roles in products used throughout the world, and especially in the processing and storage of large volumes of data, semiconductors are now a form of social infrastructure. Advantest plays a key part in the creation of a sustainable future for humanity by assuring their quality and reliability.



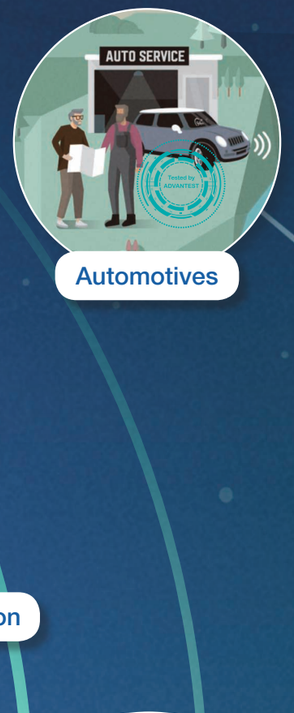


Data Centers



Medical Equipments

Greenhouse Gas emission reduction



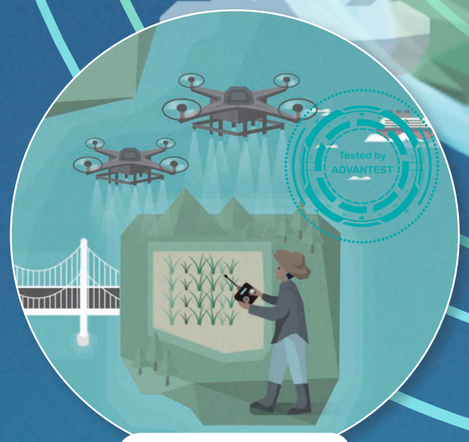
Automotives



VR & Game consoles



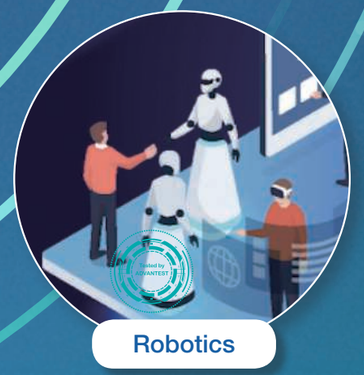
Base-station



Smart Agriculture



Smartphones



Robotics

Advantest's History

[Measuring the Future] Advantest's 66-Year History

Since Advantest's founding, we have paved the way for successive waves of innovation by providing leading-edge measurement technology. We will continue to support technological innovation and semiconductor production volume growth through test, contributing to the sustainable development of the world we all share.

1954 Takeda Riken Industries founded with four employees.
1957 TR-124B Electronic Counter for digitally measuring frequency became a hit product.
1963 Launched the Digital Multimeter, the first Japanese-made digital voltmeter.
1972 Launched the first Japanese-made semiconductor test systems, the T-320/20 and T-320/30.
1979 Launched the VLSI test system with a test frequency of 100MHz, boasting the highest performance in the world.
1982 Established a local subsidiary in the United States. Facilities were later established elsewhere around the world.
1985 The company's name was changed to Advantest Corporation. Obtained the No. 1 share in the semiconductor test equipment market, according to VLSIresearch.
1993 Launched the T6691, a VLSI test system featuring an industry-best test speed of 500MHz/1GHz
1995 250MHz S-DRAM memory test system T5581 launched; become a best-selling product.
2003 Acquired Japan Engineering Co., Ltd.
2008 Acquired Credence Systems GmbH.
2011 Acquired major semiconductor test equipment provider Verigy Ltd. and started selling the V93000 Smart Scale test system
2018 New mid- to long-term management policy announced.
2019 Acquired the system level test business of Astronics, Inc.
2020 Acquired US company Essai, Inc. and announced a partnership with US company PDF Solutions Inc.



Our founding team. Founder Ikuo Takeda is second from left in the front row.



Our first product, the Micro Micro Ammeter.



T3380 VLSI test system.



The T3340 LSI test system being delivered to a US customer in 1982



A blockbuster product of the 1990s, the T5581 memory test system



T2000 open architecture test system.



Press conference announcing Advantest's acquisition of major semiconductor testing equipment provider Verigy in 2011.



Advantest Developer Conference VOICE (2018).



System level test system.

1954 - 1980

Advantest Enters the Semiconductor Test Equipment Market by [Measuring the Future]

Under founder Ikuo Takeda, who began his career at the Electrical Testing Laboratory of Japan's Ministry of Communications, the company released a string of hit products. We continued to grow in step with the Japanese electronics industry, and calibrated our R&D investments to the coming era of semiconductors by applying our measurement technology to the development of test equipment. Overcoming a management crisis in the early 1970s, we succeeded in developing world-class semiconductor test systems combining high-speed, highly accurate measurement capability with mass-production performance that can measure up to thousands of semiconductors simultaneously.

1981 - 2000

Advantest Grows by [Measuring the Future] of the Semiconductor Industry

In the last decades of the 20th century, semiconductor demand expanded enormously with the popularization of personal computers and the Internet. Advantest's semiconductor test systems, combining state-of-the-art measurement technology with support for mass production, helped to enable semiconductor evolution and production growth, which in turn led to further demand for our products. In 1985, we gained the leading market share in the world semiconductor test equipment market for the first time, marking the central importance of our test system business to the company.

2001 - 2016

Advantest Overcomes Intense Competition by [Measuring the Future] Better

With the bursting of the dot-com bubble and through 2008 financial crisis, the main semiconductor demand driver shifted from PCs to smaller, more affordable smartphones. In response, the semiconductor test equipment market demanded higher efficiency and lower costs, kicking off an era of intense competition when loser companies were weeded out. Advantest emerged stronger than ever, thanks to our industry-leading measurement technology, the cost advantages we offer for mass production, and our aggressive M&A policy.

2017 -

As the Market Enters a New Growth Phase, Advantest Continues to [Measuring the Future] of Semiconductor Evolution

Semiconductors now play a central role not only in smartphones but also in automobiles, data servers, and various other devices that support our safety, security, and comfort. As devices gain in functionality, complexity, and capacity, reliability demands also continue to grow. Semiconductor test items and test times are increasing, underlining the importance of leading-edge test technology. To capture this opportunity, we formulated a new mid- to long-term management policy in 2018. By adding new value in the evolving semiconductor value chain, including system-level test and cloud-based services, Advantest aims to become a company that will last for a hundred years and more, while proudly upholding our founders' focus on unique technology and dedication to meeting customer needs.

The Value Creation Process and Advantest's Business Model

As our lives become ever more digitized through the IoT as well as the shift to online, value creation is increasingly driven by data rather than physical objects, a change that can be described as "the digital transformation" (DX). The explosive increase in data volumes, and the diversifying roles that applied data plays in society, are accelerating demand for semiconductors, while functionality and performance requirements are dramatically evolving. Advantest supports the reliability of semiconductors by "Measuring the Future" to contribute to safety, security and comfort worldwide.

Input

See pages 33-34

Broad customer base

See pages 37-38

Technology / R&D capacity
"Measuring the Future"

See pages 27-30

Strong and healthy financial structure

See pages 41-42

Human resources
(global, diversity)

See pages 43-54

Sustainability based on ESG

SCM for low cost and high quality

*SCM : Supply Chain Management

Diverse Needs & Issues

Digital Transformation
- Higher semiconductor functionality
- High reliability requirements

SDGs
- Climate change
- Urbanization
- Respect for human rights
- Aging Society

ESG management
- Expectations for sustainable growth over the medium to long term

Value return
- Return of value to stakeholders

See pages 31-32

Reinforce core business, invest strategically

Explore value to reach a higher level

Seek operational excellence

Pioneer new business fields

Mid-to long-term management policy

Grand Design

See pages19-20

Materiality / Risk Management

See pages 21-26

Cloud, software, data analytics

Design /evaluation | Mass production of semiconductors | Product /system level test

Mission Enable Leading-Edge Technologies

Vision Adding Customer Value in an Evolving Semiconductor Value Chain

Core Values INTEGRITY

ESG for Sustainability

Guiding Principle
Quest for the Essence

Code of Conduct
17 Ethical Standards

The Advantest Way

See pages 01-02 and 41-42

Output

Value created

Products and solutions that support customers' business by "Measuring the Future"

See pages 33-34

+

**Semiconductors are brought to life with "Measuring the Future" technology that ensures their reliability.
Semiconductors support safety, security, and comfort as a form of social infrastructure.**

Outcome

Returns to stakeholders

Shareholders
(dividends, highly efficient capital management)

Customers
(high-quality products and solutions)

Employees
(compensation, job satisfaction)

Supply chain
(business opportunities)

Community
(tax payments, job creation, environmental protection)

Our planet
(contributions to the SDGs)

Further reinforcement of competitiveness through ROIC*-based business management and efficient investment management

*ROIC : Return On Invested Capital

CEO Message



Achieving the Goals of Our Grand Design One Steady Step at a Time

Representative Director, President and CEO

The unprecedented global difficulties triggered by COVID-19, which broke out during Advantest's fiscal year 2019, including the economic and political impact of the pandemic, as well as the changes forced upon us individually and collectively, have made a deep impression on me. The restrictions imposed by our response to the virus will likely continue for some time around the world, but it is my sincere hope that we will soon be able to put the pandemic behind us and resume safe and healthy lives.

The unforeseen scale and speed of COVID-19's global spread has prompted rapid changes in our daily lives, unavoidably accelerating the digitalization of social life. My longstanding belief that semiconductors are the foundation of social infrastructure in the modern world is being confirmed day by day, in Japan and beyond, as the crucial role of these devices rapidly expands to arenas such as education, remote work, and electronic payments.

The mission of the Advantest Group is to deliver safety, security, and comfort for people around the world by guaranteeing the reliability of the semiconductors that enable their daily lifestyles. From FY2020, our value proposition will be put to the test more stringently than ever. As a company that specializes in test, we are confident that we can continue to meet the ever higher expectations placed on our technology.

FY2019 Results

Net sales
275.9 billion yen

Operating income
58.7 billion yen

Operating margin
21.3%

Net income attributable to owners of the parent
53.5 billion yen

Return on Equity (ROE)
24.9%

Earnings per Share (EPS)
270 yen

Numerical KPI Targets for FY2018–FY2020 Mid-Term Management Plan (three-year average)

	Net sales	Operating margin	ROE	EPS
Base scenario	250.0 billion yen	17%	18%	170 yen
Conservative case	230.0 billion yen	15%	15%	135 yen
FY2018 results	282.5 billion yen	22.9%	35.3%	302 yen
FY2019 results	275.9 billion yen	21.3%	24.9%	270 yen

A Look Back at the FY2019 Market Environment & Advantest's Results

For two consecutive years we have achieved record high orders, hitting our targets under our current mid-term management plan (FY ending March 2019 – FY ending March 2021). The success of the measures we have steadily promoted under this plan is starting to show up in our business results. Meanwhile, our investments in R&D and M&A will power the company's growth in the medium to long term. We intend to continue making these strategic investments even if upfront costs temporarily suppress profits.

Market Environment

Historically prey to cyclical downturns every two years on average, the semiconductor test market has been supported since about 2015 by continuous demand growth fueled by the "digital transformation" now taking place in society. Advantest also saw steady growth during this period. However, in 2019, factors such as the prolonged trade friction between the United State and China, and the ripple effects of their competition for technical hegemony, depressed demand for end products and capital investment across a wide range of areas including electronics, automobiles, and industrial equipment. Manufacturers have adjusted production and reviewed their capex plans. On the other hand, the rising demand around the world for full-scale commercialization of 5G communications is stimulating need for higher performance and enhanced reliability assurance for high-end SoC (System on Chip) semiconductors, such as devices for smartphones and HPC (high performance computing) that are manufactured on advanced process nodes, which in turn supported strong test demand throughout 2019. Memory and automotive semiconductor device inventory adjustments also entered a recovery phase in the second half of FY2019, creating high expectations for growth in FY2020. Although demand will inevitably rise and fall periodically in the future, the overall outlook for semiconductor test demand continues to be a growth scenario in the medium to long term. What we did not see coming was the impact of COVID-19 on the global economy. This will be discussed later.

Performance Relative to Our Mid-Term Management Plan & Notable Steps Towards Achievement of Advantest's "Grand Design"

As the market for high-end testers with high performance and high unit prices expands, Advantest's steadily expanding market share enabled us to end FY2019 on a high note by reaching all our targets under our medium-term management plan (base scenario).



One objective of our “Grand Design” medium- to long-term management policy which we have already made strides towards achieving is the expansion of our business domains to adjacent markets. As a part of the vision of “adding customer value in an evolving semiconductor value chain” set forth in our Grand Design, we aim to build greater resistance to cyclicality into our profit structure. In line with one of the four strategies we outlined to achieve this vision—“Reinforce Core Businesses, Invest Strategically”—we have substantially reinforced our system level test (SLT)* business. In February 2019, we acquired the SLT business of Astronics, an American company, and in January 2020, Essai Inc. joined the Advantest Group. SLT is utilized for testing products and system-level processes that are located downstream in the semiconductor value chain from the chip test process which has been Advantest’s core business so far. Adding a richer range of SLT solutions to our existing ATE product portfolio has expanded the range of solutions we can provide to customers. At the same time, the addition of Essai’s high-precision IC sockets and thermal control units enables us to differentiate our solutions from the competition. We expect that our SLT business, a relatively high proportion of which is recurring business, will expand in the next fiscal year and beyond, contributing to the stabilization of our earnings.

Operating income declined in FY2019 due to R&D investments and an increase in SG&A expenses due to increased employment of engineers and other personnel. We will continue to secure our investment quotas for human resources and M&A.

*SLT is a test process that incorporates semiconductors into modules and products such as smartphones, servers, and automotive electronic devices that require high functionality and reliability due to the increasing functionality and complexity of semiconductors, and further increases the reliability of semiconductors.

Medium-Term Megatrends: Risks & Opportunities

Semiconductors, which are now a key element of social infrastructure, will be used in even more diverse roles in the future. Because of the need to ensure their reliability, semiconductor test demand will grow overall, despite cyclical ups and downs. Thus, the market outlook and growth strategy set forth in our Grand Design remain unchanged. On the other hand, recent events have given us a strong sense of crisis. We will respond more flexibly to environmental changes that are different from anything we have seen the last two years, such as the impact on the global economy of the COVID-19 pandemic, and the supply chain instability and operation issues that have diffused through the industry as a result of intensifying conflict between the United States and China.

Headwinds: COVID-19 & US-China Conflict

In terms of demand, the spread of COVID-19 is driving demand for WFH (Work From Home)-related data centers, while at the same time reducing demand for end products such as automotive equipment, industrial machinery, and consumer semiconductors. The Advantest Group’s operations may also be affected, if restrictions on movement around the world or urban lockdowns are prolonged, by procurement and product supply difficulties, as well as a reduced ability to provide in-person customer support by engineers. Also, the intensifying conflict between the United States and China is likely to have no small impact on highly specialized semiconductor supply chains. For example, the tightening of US regulations on Chinese companies will affect the investment stances of the OSAT (Outsourced Semiconductor Assembly and Test) customers who use Advantest’s testers for smartphone SoCs. If the decoupling of the US and China economies progresses, some semiconductor-related manufacturers may choose to duplicate parts of their supply chains as a form of risk hedging, but the future is uncertain.

*For more on the impact of COVID-19 and Advantest’s risk management. See p.25-26

Tailwinds: Demand Growth in High-End Semiconductor Test

On the other hand, the progress of the digital transformation represented by 5G commercialization will promote further semiconductor performance and reliability improvements. This trend is expected to strengthen even if demand slows temporarily. In response to this trend, wafer-level and package-level test are beginning to be reinforced by system/module-level test to enhance the reliability of high-end semiconductors and automotive semiconductors.

4 Strategies: Specific Measures

Thus, we enter fiscal 2020, the final year of our mid-term management plan, amidst instability. In this fiscal year, we will continue to develop our strategies for each of our businesses, work to expand and enhance our solutions across the semiconductor value chain, maintain and expand our market share, and aim to achieve the goals of our Grand Design. To this end, we will continue to grow our core business, expand our solutions by M&A and other means, and make necessary investments in R&D.



Reinforce Core Businesses, Invest Strategically: Focus on High-Growth Sectors

We are steadily implementing measures to reinforce the foundations of our business in sectors within our core business identified as having a particularly high growth potential: 5G millimeter-wave devices, high-frequency (RF) devices, high-end memory, and others. We will continue to work to maintain and expand our market share by boosting engagement with our customers so as to hone our ability to develop and provide the solutions customers need, when they need them. We have also globally reinforced our human resources over the last two years by hiring development and support engineers for our high-end SoC tester business. With a global support network that encompasses 17 countries and regions, now further reinforced at the local level, we are able to minimize the impact of COVID-19 on impact on customers, even if the pandemic should be prolonged.

Pioneer New Business Fields: Expansion into Cloud Data Analytics

We have begun developing new businesses to prepare the way for Advantest's next growth surge. As a foundation for this, in July 2020, we entered into a business alliance with PDF Solutions (PDFS) in the United States, including a capital investment in PDFS. This expands our business in the data analytics field, one of the target areas mentioned in our Grand Design. By incorporating PDFS's database and data analysis technology into our hardware-based business structure, we can utilize the data generated from customer workflows to provide feedback on processes from semiconductor design to manufacturing, chip test, and system level test. We aim to build a cloud platform with cross-departmental participation that grows new revenue streams over the medium to long term. Advantest relishes the challenge of building a new business by creating new customer value.

Seek Operational Excellence: A Slimmer Cost Structure for Investment Efficacy

As part of the efforts directed at achievement of our mid-term management plan's goals over the past two years, we have steadily improved profitability. Our goal of generating free cash flow of ¥85 billion to ¥100 billion during the cumulative period of the mid-term management plan was achieved ahead of schedule. Now that we are in a strong position, I have determined to free up management resources for medium- to long-term growth investments by reviewing budgets and recruitment plans and improving operational efficiency in order to implement a leaner management structure. In particular, the impact of COVID-19 has significantly reduced personnel transfers between overseas locations, and has changed our operational style, for instance through the partial shift of customer support to online and the implementation of telework for many employees. In response to these changes, the cost and workforce plans that we made six months ago have been re-examined.

At the same time, we will invest strategically in the realization of our Grand Design, and continue to review our business and product portfolios with a view to improving capital efficiency. As a part of the background to the partnership with PDFS announced in July, we also decided to sell our probe card business. These decisions exemplify Advantest's stance of responsiveness to change without fear.

For more on Advantest's capital policy, see Financial Strategy & Capital Policy on See pages.27-30

Becoming a "100-Year Company" With a Crucial Place in Society

Since I became president of Advantest in 2017, I have often said that I want us to become a "100-year company." Now that we have passed the two-thirds mark, the requirements for Advantest's sustainable growth going forward include not only good results in the short term, but also strengthening and promoting ESG management. The very existence of Advantest is premised on a healthy global environment. To preserve the environment and create a sustainable society into 2054 and beyond, it is essential to consider the entire supply chain. In this era when the future often seems uncertain, the Advantest Way—including our management philosophy, vision, core values and ethical guidelines—plays the role of runway lights for the Advantest Group, guiding us as we journey towards our centennial.

Management Philosophy: Enabling Leading-Edge Technologies

Our management philosophy of "enabling leading-edge technologies" leads us to aspire to make things that do not yet exist and take on challenges that no one else has attempted. Around 1954, when the company was founded, the transistor age was only just dawning, and in the late 1980s when we began to be a global company, the IoT and AI were still science fiction. There is no doubt that new



concepts and technologies will emerge in the next 33 years, and I believe that our support for these leading-edge technologies will continue to be the cornerstone of Advantest's business.

Human Resources Are Management Resources That Grow

Our management philosophy encourages each and every person who works at Advantest to fully demonstrate their diverse capabilities, to stimulate each other's creativity, and at times to take up the challenge of responding to new needs that have never previously existed. Rather than making excuses for why "I can't do it," an Advantest employee seeks to unlock his or her full potential, accept different opinions and ideas, and work with a diverse group of colleagues. This mindset, shared across our entire global team, is summarized by "INTEGRITY," an acronym standing for the nine core values we aspire to embody. Unlike devices, people are educated, gain experience, and learn teamwork, and they grow throughout their careers. To help them flourish, we in management are responsible for creating and maintaining a corporate culture in which employees can work and fully develop their abilities through an optimal personnel system, training opportunities, and workstyle reforms. We further believe that in order for our employees to continue to grow, we must constantly assess them, using our corporate culture, employee engagement metrics, and various other indicators.

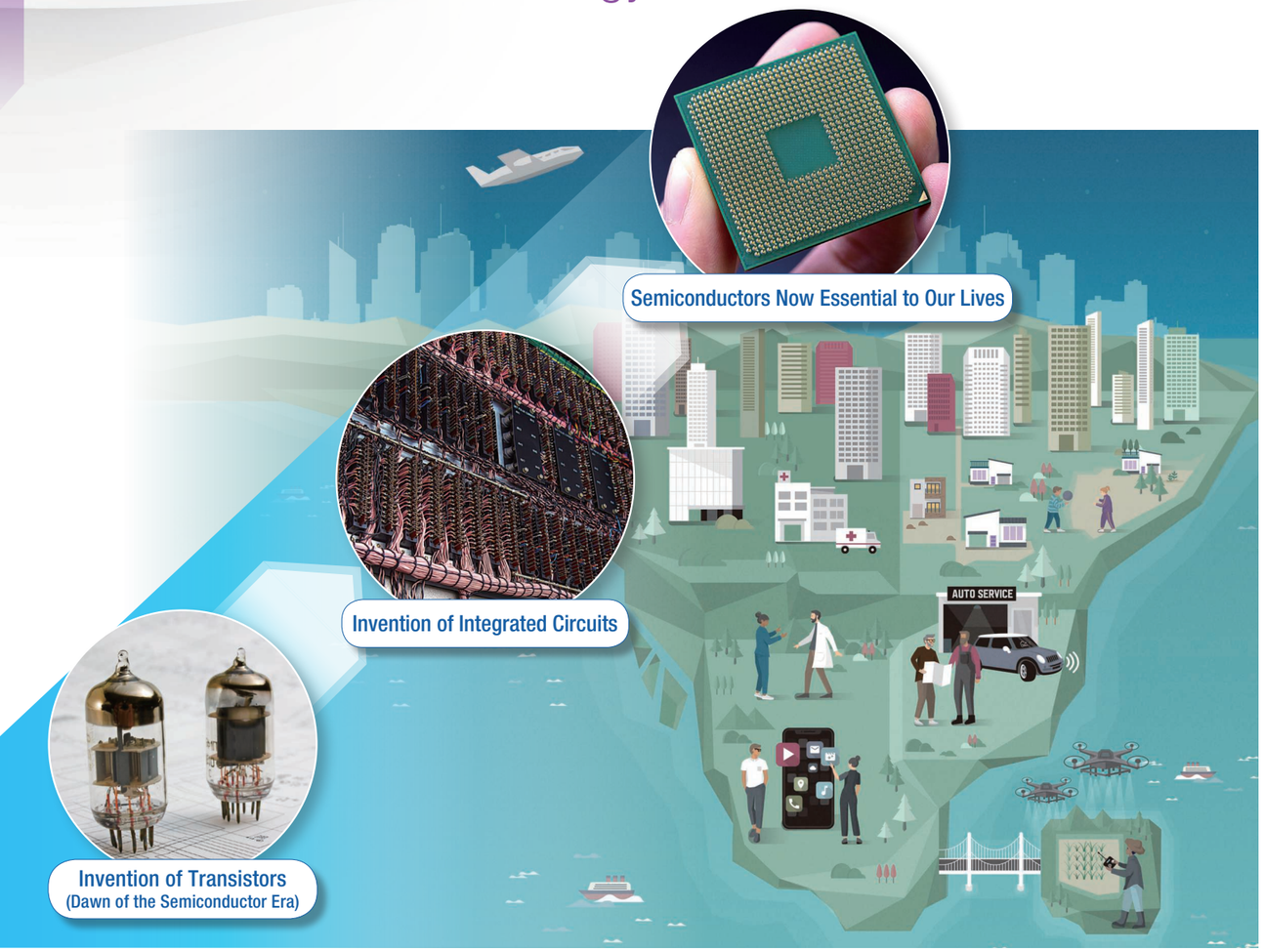
ESG Management Promotion for Sustainable Development

I believe that as we continue our journey towards our 100th anniversary, we need to practice ESG management that enables us to share the value of the Advantest Group with all stakeholders, including customers, business partners, local communities, and employees. What value can Advantest offer by providing the solutions that society needs? From this perspective, ensuring the reliability of semiconductors enables us to contribute to society by making people's lives safer, more secure, and more comfortable. Going forward, we will redouble our efforts to secure human rights and improve workstyles, contribute to local communities and the global environment, and help our customers to reduce their environmental impact throughout the value chain. In addition, the Advantest Way includes a code of conduct that sets out 17 ethical guidelines which must be observed by all employees of the Advantest Group. Legally or ethically questionable behavior overshadows even the greatest achievements. Advantest is dedicated to maintaining impeccable ethical standards, and I am resolved to continuously improve the compliance awareness of the Group as we journey onwards.

Final Thoughts

Fiscal 2019 was a memorable year for us in another way: we achieved first place in the annual semiconductor manufacturing equipment customer satisfaction survey conducted by VLSIresearch, not only in testers, but in the entire semiconductor manufacturing equipment sector. I would like to express my sincere gratitude to each and every employee of the Advantest Group, all of our business partners, and our customers, for contributing to this achievement. I would also like to thank the communities where we do business every day, and the investors who make it possible. Advantest aims to reach its 100th anniversary as a company with a crucial place in society. With that vision in mind, each and every one of us, starting with myself, is sincerely motivated every day by the desire never to take for granted the trust that has been placed in us.

Our Market and Strategy



Semiconductors, the Agents of Electronics Evolution

A “semiconductor” is technically a substance with an electrical conductivity value that is intermediate between a “conductor” with good electrical conductivity, such as germanium or silicon, and an “insulator” with high resistivity. In 1947, at Bell Labs in the United States, transistors, which could not only switch electrical currents but also amplify them, were invented using semiconductors. This marked the beginning of the semiconductor industry.

The invention of integrated circuits in 1959 set the industry on a course of growth. IC technology achieves miniaturization and high performance of circuits by integrating semiconductor elements, such as transistors, onto a single semiconductor substrate. Since the invention of ICs, integration and mass production metrics have consistently advanced thanks to the evolution of the optical technology called photolithography, enabling IC applications and production volumes to expand while design and manufacturing technology have improved. At the same time, the term “semiconductor”, which was originally used to refer to materials, has become common parlance for electronic circuits using semiconductors, such as ICs.

Now, more than half a century after the invention of ICs, vast numbers of diverse semiconductors are used in a wide range of applications such as computers, smartphones, domestic appliances, automobiles and industrial equipment, and communication infrastructure. They have become indispensable to our lives.

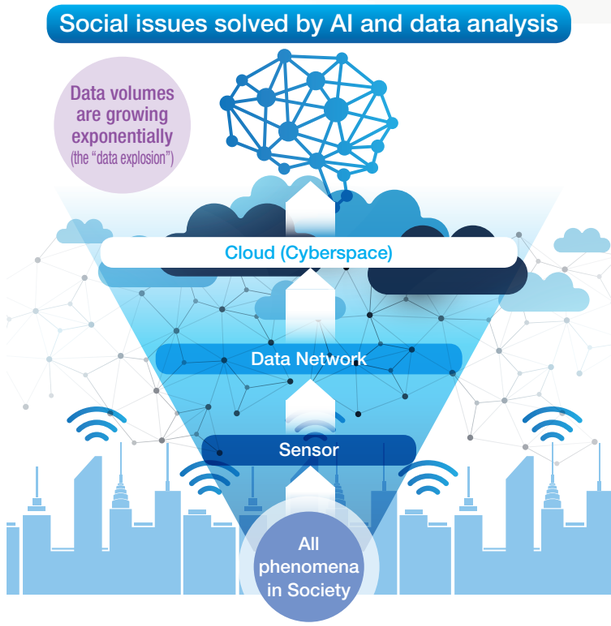
Semiconductor Industry Growth supports to Synergistic with Solutions for Social Issues

Today, whilst population growth and urbanization are advancing, we face energy, water, and food shortages, as well as environmental problems. In addition, while society is becoming “smarter” and more globalized, security concerns are coming to the forefront. The digital revolution promises to solve these various issues with technology.

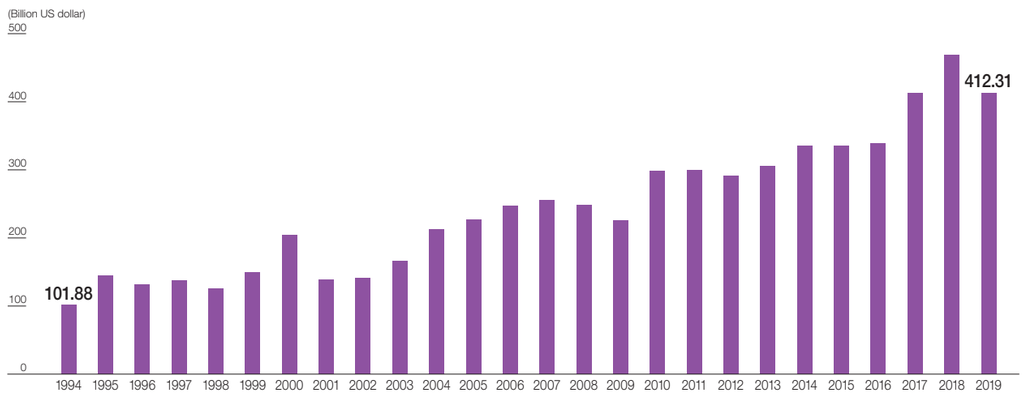
Big data is the cornerstone of the digital revolution. Everything around us is being digitized, and the data network that connects more and more human activities, ranging from daily life to industry, is becoming wider and deeper every day. As a result, the amount of data generated daily in the world continues to grow exponentially. This “data explosion” is launching the semiconductor market into a new growth phase.

Digital processing of data such as sensor inputs, calculations and communications, and storage are all performed by semiconductors. Therefore, as a necessary precondition for the progress of the digital revolution, the use of semiconductors and sensors will increase across all applications in the future, and the performance of core semiconductors such as SoC (System on Chip) devices, which communicate and process data, and memory devices, which store data, is expected to continue to improve.

Against this background, the total value of the semiconductor market, which has been in the USD 400 billion range (about JPY 40 trillion at an exchange rate of 1 USD = JPY 100) for the past three years, will reach the USD 500 billion level in a few years, and is predicted to continue to grow.



World Semiconductor Market (1994 - 2019)



(Source: WSTS)

The Tester Market is Correlated to the Direction of Semiconductor Market Evolution

In this environment, business opportunities for our core semiconductor tester business will mainly be linked to the following four trends in the semiconductor market.

- **Semiconductor performance improvements and transition to next-generation standards (technology buys)**
- **Expansion of semiconductor production (capacity buys)**
- **Further reinforcement of semiconductor reliability to meet social infrastructure requirements (quality buys)**
- **Expansion of the semiconductor demand base due to the digital revolution (new automotive and IoT applications)**

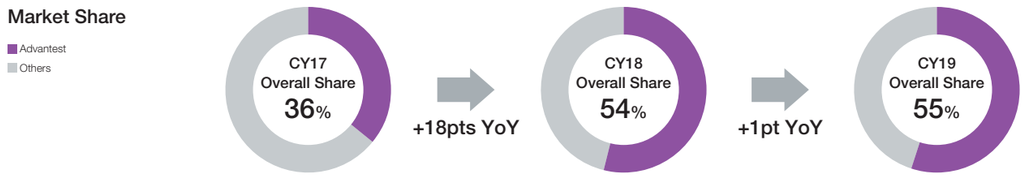
More than 60 years have passed since the invention of transistors, yet semiconductor design and manufacturing technology innovation continues at a blistering pace. For example, in order to support the evolution of smartphones, innovations that increase the number of integrated transistors at an annual growth rate of about 20% to 40% are steadily improving the performance of the semiconductor devices called application processors, which are key components of smartphones. Technological innovations that enable cheaper mass production of semiconductors are also being promoted. These advances have further stimulated demand for semiconductors, and as a result, semiconductor production and performance have continued to grow and improve.

In the semiconductor tester market, similarly to the semiconductor market, the driving forces behind market growth to date have been "technology buys", impelled by lengthening test times due to the improvement of semiconductor performance and the growing complexity of devices, and "capacity buys" necessitated by the growth of semiconductor production volumes.

Amidst the promotion of the digital revolution, the improvement of data centers and AI capabilities via further miniaturization of semiconductors, the development of semiconductors for 5G communication using millimeter waves, and the quest for lower power consumption with an awareness of reducing environmental burdens, etc., constantly promote semiconductor technological innovation. As a result, not only higher-performance semiconductor devices, but also the unprecedented rise of test demand for complex system semiconductors that feature highly integrated heterogeneous chips (i.e. both logic and memory) is expected in future. In response to these trends in the semiconductor market, Advantest expects that "technology buys" of semiconductor testers will continue to be robust in the future. The increase in the pace of "capacity buys" due to the expansion of semiconductor applications, and the increase in "quality buy" demand due to increasing demand for reinforced semiconductor reliability, are also expected to drive future market expansion.

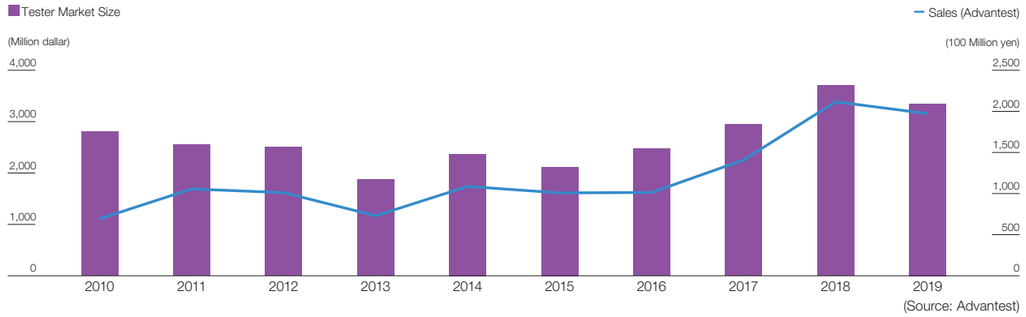
Putting these factors together, we expect the semiconductor tester market to grow in the medium to long term, despite fluctuations in the short term.

Market Share



(Source: Advantest)

Tester Market and Sales (2010 - 2019)



(Source: Advantest)

The Quest to Provide Greater Customer Value

The only way to determine whether a semiconductor with a resistance value intermediate between "conductor" and "insulator" is good or bad is by conducting an electrical test. Basically, all semiconductors must be electrically tested using a semiconductor tester. And in order to measure the performance of semiconductors more precisely, it is indispensable to provide testers with measurement technology sufficiently accurate to anticipate the future evolution of semiconductor performance. Advantest currently holds a high market share in the test processes for mass production of high-speed devices such as DRAM, computing devices, and communication processors, where the technical capabilities of test vendors are held to the most stringent criteria.

This is due to our customer base, the broadest in the industry. For each type of semiconductor, we regularly hold technical discussions with leading customers in the field, collect knowledge about test trends several years in advance, and use this knowledge in our product development. Constant refinement of our solutions through the cycle of applying our technology to customer needs has brought us where we are today.

We also believe that the value we provide to our customers in the semiconductor tester business is not limited to sales of superior semiconductor test equipment. As semiconductor designs and structures become more complex year by year with the introduction of new technologies, finding the right test method for the newest semiconductors is always a process of exploring new frontiers. We consult with our customers on the optimum test method and environment, including not only the test itself but also peripheral devices, to find out what methods should be used to accurately diagnose the performance of newly developed semiconductors, with the ultimate goal of achieving the test quality and test cost level required by our customers. Success at this mission embodies our management philosophy of "enabling leading-edge technology."

Appropriate consulting with customers requires a business structure that can grasp and meet not only customers' actual needs, but also their potential needs. Building close partnerships is crucial. Thus, we not only have the widest customer base in the industry, but we are also making efforts to raise the level of support for each customer through active investment in human resources every year. We have already obtained a higher customer satisfaction rating* than almost any other provider of semiconductor manufacturing equipment, but even so, we are forging deeper partnerships with customers and developing of leading-edge technologies. This strengthens our ability to seize future growth opportunities and live out our management philosophy, as one of our vital growth strategy for the future. See page 78

Reinforcement of Advantest's Growth Foundation and Mitigation of Demand Fluctuation Risks

As mentioned above, we expect the semiconductor tester market to grow over the medium to long term. However, since semiconductor testers are basically capital goods installed on semiconductor mass production lines, annual demand fluctuations tend to be greater than for semiconductors, which are consumer goods. Specifically, the structure of the tester market is such that changes in business trends and technological investments by major semiconductor manufacturers who lead the industry in terms of technology and business scale have a strong influence on market value and market share each year. Furthermore, we deliver semiconductor testers within an average of three months after receiving an order. This is a relatively short lead time for semiconductor-related equipment, putting Advantest in a position to be more agile than other equipment providers in response to changes in demand for end-products.

By implementing the growth strategy set forth in our "Grand Design" mid- to long-term management policy, we aim to expand our profits in the growing semiconductor tester market while mitigating the effects of performance fluctuation factors caused by the market structure described above.

Grand Design

Overview

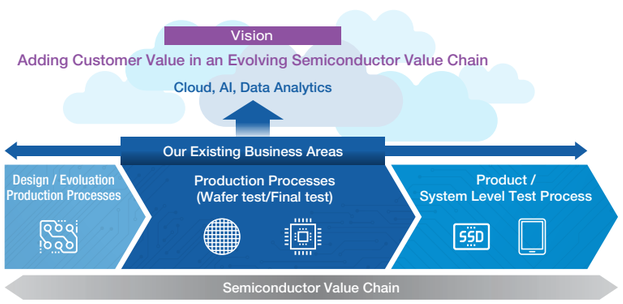
The Grand Design that Advantest announced in April 2018 lays out the next decade of Advantest's growth strategies and commitments, based on megatrends in our market and our daily lives.

Top line			Operations
Growing Importance of Test in Cyclical Growth Market	×	Expand Market Share, Solutions Portfolio	×	Enhance Governance, Management efficiency
"Data Explosion" "Semiconductors as Infrastructure" "Greater Semiconductor Functionality, Complexity"		"Focus on Growth Areas" "Expand Solutions across Semiconductor Value Chain"		"Enhance Governance" "ROIC –Based Business Management" "Human Resource Investment"

With the speeding up of networks and the development of sensors and other devices, a "data explosion" is transposing more and more of daily reality into the realm of data. Semiconductors are performing key tasks in this realm, including data sensing, communication, calculation, and storage, which means that they require further sophistication and integration of functions, larger capacities, and higher quality and reliability. Against this background, semiconductor test processes are becoming more sophisticated and test times are lengthening.

Test demand will continue to grow, albeit cyclically, in terms of both quality and quantity. To grasp this opportunity and increase Advantest's corporate value, we will seek to grow our share of the market for semiconductor mass production test, which is our core business, and also expand our business in adjacent markets such as design / evaluation and system level test processes. In addition, we will strive for greater management efficiency by strengthening our corporate governance, implementing management based on ROIC (return on invested capital), investing in human resources, and carrying out workstyle reforms.

Vision



Grand Design: Six Commitments

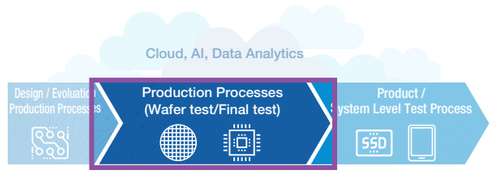
1. Be the No.1 provider of test & measurement solutions
2. Be a Partner with leading-edge customers
3. Develop leading-edge technologies
4. Attract and retain the best talent in the industry
5. Be a Learning organization
6. Improve financial KPI and increase corporate value

So far, Advantest's business development has centered on semiconductor volume production test. The increasing sophistication and complexity of semiconductors also creates new opportunities to apply our measurement technologies and know-how to the design / evaluation processes upstream of volume production, and the system level test processes downstream from it. We will also seek to develop businesses that create new customer value through analysis of the vast amounts of data that exist within the semiconductor value chain, including related markets.

Strategies

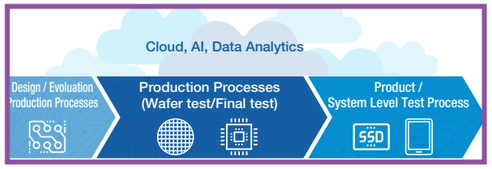
Reinforce Core Businesses, Invest Strategically

- Strengthen engagement with leading-edge customers
- Create new value propositions for our test cells, such as factory automation



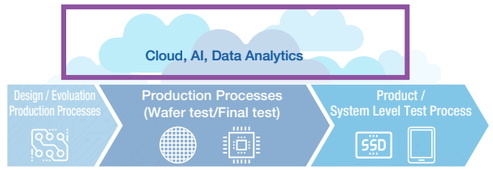
Seek Operational Excellence

- Optimize production system to respond to fluctuations in demand
- Develop employee skills and promote of teamwork across departments and regions
- Monitor business using ROIC (return on invested capital)



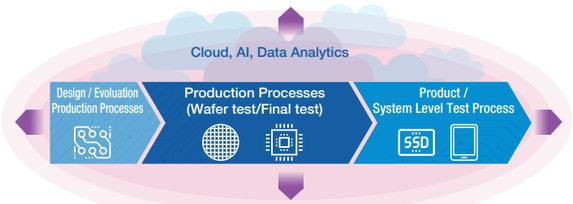
Explore Value to Reach a Higher Level

- Develop solutions throughout the semiconductor value chain
- Utilize AI and data analysis, expand service business



Pioneer New Business Fields

- Business research team will explore next-generation technology and business
- Promote M&A and business alliances to expand business domains and acquire technology
- Develop new-concept products that transcend the semiconductor arena



Sales Scenarios and Cost Structure

Advantest will increase our share of the tester market, and implement measures to develop new businesses - including via M&A and alliances - in areas adjacent to our core business.

Conservative Case

Tester market growth rate = 0%

FY2027 (Forecast)	Billion yen
Tester Market	380.0
Advantest Share	46%
Existing Business	240.0
New Business	60.0
Sales	300.0

Base Scenario

Tester market growth rate = 4%

- The same pace as the semiconductor market growth

FY2027 (Forecast)	Billion yen
Tester Market	580.0
Advantest Share	46%
Existing Business	340.0
New Business	60.0
Sales	400.0

	FY2017 (actual)	Cost Structure in Conservative Case
Net sales	207.2B yen	300.0B yen
Gross profit margin	49%	46%
SG&A ratio to sales	40%	32%
R&D as a % of total net sales	16%	13%
Operating Income Margin	11%	22%

"Tested by Advantest" Contributes to Our Sustainable Future

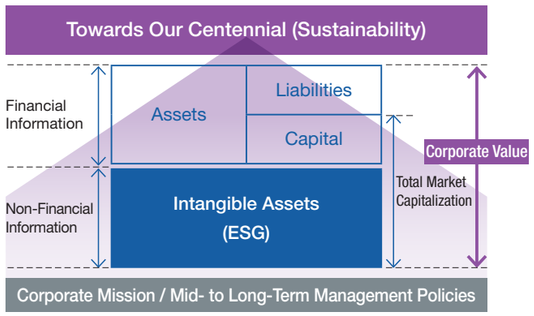
The role of semiconductors installed in various products we use daily, and the value of test as a guarantor of their quality and reliability, are becoming more and more important for the sustainable development of our planet. Through measurement technology, Advantest contributes to safety, security, and comfort worldwide, and to our shared, sustainable future.



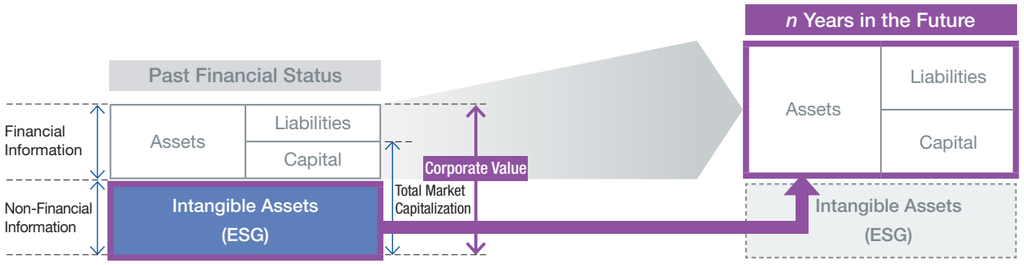
Materiality

Sustainability through ESG promotion is one of the management guidelines set forth in The Advantest Way, our management philosophy. The ESG (Environmental, Social and Governance) criteria defined by the Sustainable Development Goals of the UN align with Advantest's mission to deliver safety, security, and comfort through our core business of semiconductor test. Materiality is our compass for the promotion of ESG management based on these criteria, keeping our business sound and strong, and making a sustainable social and environmental contribution to the world where we operate.

ESG Management Positioning



Corporate value consists of two elements: tangible asset value, which can be expressed in terms of business performance as financial information, and intangible asset value, which cannot be expressed as financial information. The latter consists of corporate philosophy and code of conduct, medium-to-long-term strategies, investments related to environment (E), society (S), and governance (G), various other activities, and internal systems, which all serve to maximize the intangible asset value that can be expressed as non-financial information. We consider this to be the realm of ESG management. As shown in the figure below, we believe that ESG management should not be "hidden" behind financial information. Rather, it is a source of value that appears in business performance over the medium to long term.



Note: The above graphs were created by Advantest with reference to "Jishani atta ESG senryaku no susumekata kangaekata" by Takaharu Fukuoka (2019, Chuokeizai-sha, Inc.)

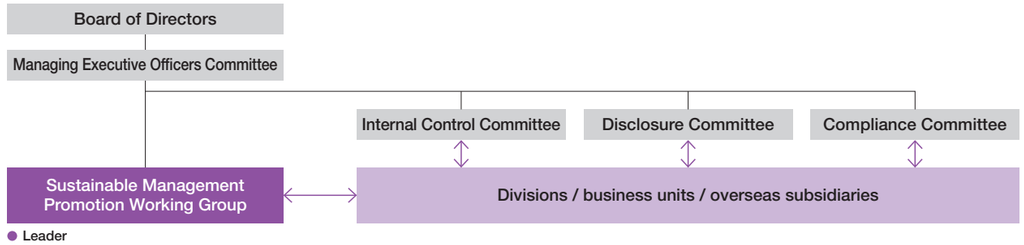
Our Approach to Materiality

From FY2019 through FY2020, we revised and renewed our approach to materiality. In addition to our existing CSR priority issues, we integrated management issues corresponding to the Six Commitments set forth in our Grand Design into 20 items. We also defined 23 Sustainability Objectives as practical guidance for each division and business unit to use in implementing these items.



Materiality Promotion Structure

In August 2020 we established the Sustainable Management Promotion Working Group. Whilst breaking down the policies and management plans decided on by the Executive Committe and other executive organs into key measures and strategies for each division and business unit, and supporting the incorporation of measures and objectives related to ESG and the SDGs, this Working Group is responsible for addressing the risks associated with these activities, disclosing related information, and implementing the PDCA cycle in cooperation with related committees.



- **Leader**
  Managing Executive Officer of Corporate Planning & Stakeholder Relations Group
- **Members**
  Executive officers in charge of each business division and functional unit
  (R&D, production, sales, quality assurance, administration, corporate planning)

Materiality

Based on the "Six Commitments" set forth in our "Grand Design" mid- to long-term management policy, we have set materiality as a priority strategy and theme. In addition, the relationship between materiality and the SDGs has been clarified in order to better define individual strategy executions based on materiality, and identify activities that lead to the resolution and/or mitigation of issues.

	Category	Commitment	Priority Strategies & Themes	Social Contribution (SDGs)
Materiality	Customer Value Creation	**Partner with leading-edge customers**	① Enhance engagement with leading-edge customers ② Deploy capabilities to customer workflow solutions	
	Product Competitiveness	**Develop leading-edge technologies** **Be the No. 1 provider of test and measurement solutions**	③ Focused investment in core businesses ④ Continue proactive R&D investment ⑤ ARTeam to explore next-generation technology and businesses ⑥ Promote M&A and Make/Buy/Partner operations to expand business domains and acquire technology ⑦ Pursue subscription business models ⑧ Quality management (quality optimization and improvement) ⑨ Optimize production system to respond better to demand fluctuations	
	Human Resources	**Attract and retain the best talent in the industry**	⑩ Reinforce local SAE, R&D, and marketing personnel ⑪ Maximize the abilities of employees	
		Learning organization	⑫ Provide and promote employee learning and skill development opportunities ⑬ Encourage and promote teamwork across departments and regions	
	Management Foundations	**Improve financial KPIs and increase corporate value**	⑭ Achieve mid- to long-term management plan targets ⑮ Maintain a sound financial base ⑯ Establish a business monitoring process using ROIC ⑰ Strengthen governance and compliance ⑱ Contribute to our sustainable future ⑲ Environmental management ⑳ Protection and respect for Human Rights	

Sustainability Objectives

We have set sustainability objectives to make it easier for individual headquarters and business divisions to prioritize their activities. The Sustainable Management Promotion Working Group supports their decision-making and helps them set KPIs based on these sustainability objectives.

■ Director / Senior Executive Officer ■ Director / Managing Executive Officer ■ Managing Executive Officer

Category	Priority Strategies & Themes	Sustainability Objectives	Officer Responsible	KPI	2019 Results	2020 Objectives	Additions / Changes	Social Contribution (SDGs)
Customer Value Creation	● Enhance engagement with leading-edge customers ● Deploy capabilities to customer workflow solutions	Customer health & safety	■ Sasaki	Number of violations of voluntary safety standards	0	0	—	
		Customer privacy	■ Fujita	Number of information security-related complaints	0	0	—	
Product Competitiveness	● Focused investment in core businesses ● Continue proactive R&D investment ● ARTeam to explore next-generation technology and businesses ● Promote M&A and Make/Buy/Partner operations to expand business domains and acquire technology ● Pursue subscription business models ● Quality management (quality optimization and improvement) ● Optimize production system to respond better to demand fluctuations	Product Environmental Contributions	■ Tsukui	GHG emission reduction (Scope 3) through product use	—	(TBD)	New addition	
		Product & service environmental friendliness		Percentage of products that meet voluntary standards for green products	100%	100%	Expanded to whole world	
		Hazardous substance elimination	■ Tsukakoshi	Ratio of suppliers surveyed for use of hazardous substances	100%	100%	Expanded to whole world	
		Product quality	■ Sasaki	Reduction of waste through quality improvement	Reduced by more than 3/4ths compared to FY2018	-50% compared to FY2008	New addition	
		Compliance (products & services)	■ Tsukui	Number of compliance violations related to products & services	0	0	—	
		Intellectual property protection		Percentage of employees participating in intellectual property e-Learning sessions	100%	100%	—	
Human Resources	● Work-life balance ● Health & safety ● Reinforce local SAE, R&D, and marketing personnel ● Increase and leverage diversity	Family-friendly employment		Percentage of employees returning to work after maternity / paternity leave	100%	100%	—	
		Occupational safety and health		Number of workplace accidents (frequency rate)	0.2	0	—	
		Training & education opportunities		Average annual training time per employee	11.5 hours	15 hours	Numerical target set	
		Diversity and equality of opportunity	■ Fujita	Ratio of female managers	—	20%	New addition	
Management Foundations	● Achieve mid-term management plan targets ● Maintain a sound financial base	Financial performance		Sales, operating income, ROE, EPS	Sales: ¥275.9B Operating profit margin: 21.3% ROE: 24.9% EPS: ¥270	Three years average (2018~2020), Base Scenario Sales: ¥250.0B Operating profit margin: 17% ROE: 18% EPS: ¥170	—	
	● Reinforce governance & compliance	Anti-corruption		Number of confirmed fraudulent activities	0	0	—	
		Compliance with antitrust laws		Related legal actions Number of cases	0	0	—	
		Environmental compliance	■ Mihashi	Environmental compliance Number of violations	0	0	—	
		Compliance (Society)	■ Fujita	With regard to society Compliance Violations	3	0	—	
	● Protection and respect for human rights ● Contribution to our sustainable future	Supply chain management (Impact on environment, human rights, labor practices and society)	■ Tsukakoshi	New supplier evaluations	100%	100% Review evaluation items related to environment/human rights/labor practices/social impacts and apply them in new supplier evaluations. When choosing new suppliers, ensure understanding and confirmation of our procurement policy.	Action plan formulated	
		Conflict minerals elimination		In order to eliminate conflict minerals, we ask our business partners to ensure the transparency of their suppliers of materials, parts, etc., and we work with our business partners to investigate conflict mineral information (smelter information), in collaboration with industry groups. We are continuing our efforts to use less risky materials.	· Survey of targeted suppliers: implementation and response collection · Continued participation in JEITA's responsible mineral procurement study group	· Survey of targeted suppliers: implementation and response collection · Continued participation in JEITA's responsible mineral procurement study group	Action plan formulated	
		Nondiscrimination	■ Fujita	Number of cases resolved via our helpline	4	All cases resolved	—	
	● Environmental management ● Contribution to our sustainable future	Climate change mitigation		Sustainably sourced energy ratio	28%	2050:100% (Scope 2)	New addition	
		Atmospheric emissions reduction	■ Mihashi	GHG emissions (Scope 1+2)	33,385t-CO_2 (-10.7%)	2030:30% reduction (in comparison with FY2018)	—	
		Reduction of water use and reduction of waste		Waste recycling rate	87%	Recycling rate >90%	—	

Risk Management

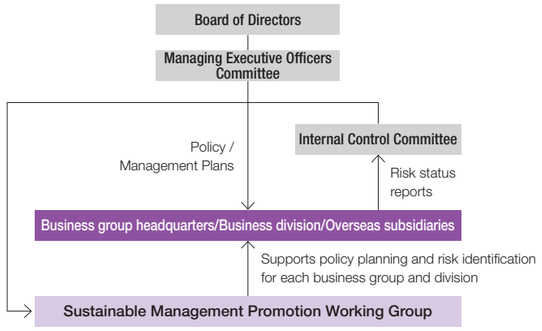
Advantest promotes strategic and continuous risk management vis-à-vis the diversifying global risks that touch our business. We have also reviewed and reorganized our risk management system to clarify the relationship between important management issues (materialities) and risks, and to clarify responsibilities related to risk management.

Our Basic Risk Management Philosophy

Regarding the 20 important management topics and priority issues defined as materialities (see p. 22), we have formulated measures to address them at the level of individual divisions, business units, and overseas regional headquarters. We consider that factors hindering the implementation of these measures are risks. To avoid or mitigate those risks, we have adopted a risk management structure to manage the establishment of systems and the implementation of appropriate measures.

Risk Management Structure

The Sustainable Management Promotion Working Group, a company-wide committee, incorporates the policies and management plans determined and approved by the Executive Committee (and the Board of Directors) into priority measures for each division and business unit, and, in cooperation with six of our overseas locations, also identifies risks, formulates countermeasures, and reports to the Internal Control Committee. In principle, the Internal Control Committee meets twice a year to analyze the status of identified risks and factors contributing to any incidents that have occurred, and to take future countermeasures including prevention of recurrence.



Key Risks and Counter-measures

In fiscal 2019, over 400 risks were identified by divisions, business units, and overseas locations. The 25 major ones are listed below.

■ Representative Director ■ Director / Senior Executive Officer ■ Director / Managing Executive Officer ■ Managing Executive Officer

	Key Risks	Priority Measures	Person in Charge / Materiality Addressed
1	**Significant demand fluctuations in the semiconductor industry**	We will strive to expand our business into markets adjacent to semiconductor mass manufacturing, outsource production, and reinforce our recurring business and new businesses.	■ Mihashi 6 7 9
2	**Impact of global economic and political trends on global business development**	We will punctually collect risk information from our overseas locations, strengthen our relationships with customers and suppliers, and make our procurement routes and production bases more flexible.	■ Tsukakoshi 1 6 13
3	**Expansion of the COVID-19 pandemic**	Under the direct control of the president, the Risk Management Group will: (1) ensure the safety and health of employees, (2) provide online support for customers, (3) track production, sales, inventory, and distribution status at the global level, (4) support BCP in the event of an employee becoming infected, (5) share resources among group companies, and (6) manage funds.	■ Fujita 18 20
4	**Market share losses due to failure to deliver new products in a timely manner**	By strengthening relationships with leading customers, we will accurately anticipate new technological innovations and the creation of new products and new markets, thus identifying business opportunities in advance.	■ Tsukui 1 4 5
5	**Absence of a succession plan for the CEO and other top executives may threaten management stability and sustainability.**	The Nomination and Remuneration Committee will carry out: (1) identification of job requirements, (2) selection of candidates, (3) training of candidates, (4) evaluation of candidates, and (5) final decisions on candidates.	■ Yoshida 17
6	**Loss of opportunities due to dependence on a small number of suppliers**	We are standardizing parts and designs to build a system that does not rely excessively on any one particular supplier.	■ Tsukakoshi 8 9
7	**Intense competition may impact market share**	We will strive to maintain product competitiveness by providing unique functionality and high-value-added solutions.	■ Tsukui 1 3 4 10
8	**Potential failure to execute our strategy and achieve our mid- to long-term management goals**	The Board of Directors, the Executive Committee and the Internal Control Committee conduct risk analysis to continuously identify scenarios for various changes and their impacts, and strive to achieve our targets.	■ Mihashi 14 16 17
9	**Heavy dependence on sales to top customers**	We aim to win a wide range of customers by developing new markets and new customers, including by entering new business fields.	■ Sakamoto 5 6 9
10	**Price pressure on Advantest products**	We will reduce the risk of price pressure by providing original technology and high value-added solutions, and will seek to improve profit margins by reducing production costs.	■ Sakamoto 3 4 5 9
11	**Exchange rate fluctuations may impact profitability**	We are working to reduce the impact of exchange rate fluctuations by adjusting the balance of currencies we hold, using foreign exchange contracts, and managing our balance sheet to offset foreign currency-denominated assets and liabilities.	■ Fujita 14 15
12	**Recoverability of new product development costs**	We will improve the recoverability of costs by formulating product roadmaps that meet customer needs through technology exchange meetings, improving development efficiency through the promotion of product platformization, and pre-evaluating investment effects by utilizing the ROIC metric.	■ Tsukui 4 5 16
13	**Consolidation of product markets may limit sales opportunities**	By developing products that support a variety of applications, we will strengthen our partnerships with customers and secure sales opportunities. At the same time, we will launch new businesses and expand our business domains through M&A.	■ Sakamoto 1 2 5 6
14	**Large impairment losses on goodwill and intangible assets**	In addition to making investment decisions with due attention to capital costs and investment recoverability, we also aim to realize synergies as soon as possible after M&A by executing a PMI (Post Merger Integration) plan.	■ Fujita 15 16
15	**Major damage to our own and suppliers' facilities may impact our business**	We have formulated a BCP plan, and are working to prevent any disruption to business operations by diversifying our production bases and external suppliers, and by using cloud data storage.	■ Fujita 9 15
16	**Recoverability of capital investment**	In addition to fully considering recoverability based on the cost of capital when making investment decisions, we will monitor business growth rates after investment and make effective use of assets.	■ Fujita 15 16
17	**Damage to Advantest's credibility or brand power may impact financial condition and/or business performance**	In order to provide highly reliable products, we strive to implement design reviews at the design stage and cross-checks by the quality control division. In addition, the Compliance Committee implements initiatives to educate employees on legal compliance.	■ Sasaki 12 17
18	**Stricter chemical substance regulations may incur countermeasure costs**	We monitor trends in environmental regulations related to chemical substances, and are studying alternative technologies that do not use such substances.	■ Yamashita 8 17 18 19
19	**Potential inability to raise funds when needed**	We have established a solid financial position that can withstand sudden demand fluctuations, and we also maintain friendly relationships with multiple financial institutions so that we can immediately borrow money and set up commitment lines if needed.	■ Fujita 15
20	**Infringements on the intellectual property rights of a third party may incur substantial costs**	We seek to confirm that no intellectual property rights of other companies are infringed during product development and before product shipment.	■ Fujita 17
21	**Infringement of Advantest's intellectual property rights by a third party may affect market share and performance**	We take appropriate legal measures to protect our rights and will continue to monitor and exercise our intellectual property rights.	■ Fujita 17
22	**Potential lack of highly specialized human resources**	We are working to stabilize our human resources by formulating a mid- to long-term hiring plan, implementing global personnel rotation, improving our working environment, and making efforts to improve employee engagement.	■ Fujita 10 11 12
23	**Digital transformation of IT core systems and processes may negatively impact business performance**	We are confirming the continuity of our IT systems, and considering their replacement with new technology, and are also promoting organizational innovation by globally deploying the concept of "Digital Workplace."	■ Fujita 15
24	**Damage to IT systems may affect business and social credibility and incur costs**	In addition to strengthening detection of cyber-attacks through constant system monitoring, we have renewed processes to build an immediate incident response structure, and also implement regular information security education for employees.	■ Fujita 12 17
25	**Potential damage to credibility and brand power due to product defects**	The quality control division implements checks to ensure reliability.	■ Sasaki 8

* See page.22 for description of each Materiality Number