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# What is Miraikan?

Miraikan - The National Museum of Emerging Science and Innovation is a place where we can understand the things happening in our world today from a scientific point of view, and have discussions while considering the future that awaits us.

In addition to permanent displays and exhibitions that provide people with a chance to enjoy hands-on contact with science and technology, Miraikan's colorful line-up of offerings includes experienced based classes, and talks. While exchanging opinions and ideas with Science Communicators, visitors can experience the technological progress of today, from simple day-to-day questions, to the latest technologies, the global environment, and space exploration.

Name	Miraikan - The National Museum of Emerging Science and Innovation
Chief Executive Director	Asakawa Chieko, Ph. D.
Operated by	Japan Science and Technology Agency (JST)
Location	2-3-6, Aomi, Koto-ku, Tokyo 135-0064, Japan
Opened on	July, 2001
URL	<a href="http://www.miraikan.jst.go.jp/en/">http://www.miraikan.jst.go.jp/en/</a>

## ■ Founding Principle

We believe that science and technology are part of our culture. We provide an open forum for all to ponder and discuss the future roles of science and technology.

## ■ Symbol mark



Design: Hiromura Masaaki

The symbol mark is made of a circle inscribed with arcs. This suggests an image of satellites orbiting the globe, cell division, various terrestrial networks (people and people, information) and the motion of electrons.

## ■ Miraikan Vision 2030

At Miraikan, together with you, we “Open the Future”

“The world in flux, and the future uncertain”

What is the role of a science museum?

We share the latest science, technology, and knowledge,  
then transcend that to create, with you, a better future.

Each voice, each action changes the world, and builds our future,  
for example, to the Moon, to Mars, a 100-year life span,  
smarter people, robots, and cities, and a beautiful Earth forever.  
Such a dreamlike future only exists with your involvement.

Miraikan will develop to be where all humans,  
from different places, with different perspectives  
connect, become excited, and pioneer the future.

In the next 10 years, Miraikan will exceed the museum concept.

The time is now. Let's get started, together!

# History

Miraikan is a national science museum which was opened in July 2001 within the Tokyo Academic Park based on the “The Basic Plan for Science and Technology.” It was born as a center for deepening an understanding of science and technology, and to fulfill Japan’s aim of becoming a scientifically and technologically creative nation.

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<b>November 1995</b>	<b>The Basic Law on Science and Technology was enacted.</b> The Basic Law on Science and Technology was enacted with the purpose to become a scientifically and technologically creative nation by promoting the advancement of science and technology.
<b>July 1996</b>	<b>The Basic Plan for Science and Technology was formulated.</b> Based on this, the Basic Plan for Science and Technology was formulated to develop comprehensive and strategic plans.
<b>December 1998</b>	<b>Decided on the construction of the “Tokyo Academic Park.”</b> Three ministries and agencies, the Ministry of Education, the Ministry of International Trade and Industry, and the Science and Technology Agency <sup>1</sup> jointly decided on the construction of the “Tokyo Academic Park” at the center of the Metropolitan Waterfront Subcenter. The Japan Science and Technology Corporation affiliated with the Science and Technology Agency <sup>2</sup> then decided to create a facility for providing scientific and technological information through exhibitions of the latest science and technology, development of exhibition techniques, exchanges among researchers and the like. <sup>*1</sup> In January 2001, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and the Ministry of Economy, Trade and Industry (METI) were established through the Central Government Reform. <sup>*2</sup> In April 2015, became the Japan Science and Technology Agency (JST).
<b>December 1999</b>	<b>Construction begins.</b>
<b>March 2000</b>	<b>General Supervising Committee was established.</b> The committee was established by the JST in order to deliberate on the direction of the National Museum of Emerging Science and Innovation. Many discussions concerning details of exhibition plans, direction of activities, etc., were exchanged before December 2000 and, based on the concepts determined, the construction of the museum proceeded.
<b>September 2000</b>	<b>“National Museum of Emerging Science and Innovation (Miraikan)” was selected as the official name since it succinctly captures the motivating concept.</b>
<b>October 2000</b>	<b>Mohri Mamoru appointed as the first Chief Executive Director of Miraikan (Currently the Chief Executive Director Emeritus)</b>
<b>March 2001</b>	<b>Completion of the building.</b>
<b>July 9th, 2001</b>	<b>Miraikan opened.</b>
<b>July 2004</b>	<b>Establishment of Honorary Membership of Miraikan</b>
<b>October 2010</b>	<b>Change in Miraikan’s management system</b> By taking the result of the Government Revitalization Unit’s budget screening which was held in November 2009 into consideration, the museum went under the direct management of JST while further cost reduction strategies were implemented.  <b>“Miraikan Forum 2010” was held by the International Advisory Board, and “Miraikan Message” was transmitted.</b>
<b>April 2016</b>	<b>Major renewal of the permanent exhibitions</b>
<b>November 2017</b>	<b>“Science Centre World Summit 2017” was held in Miraikan</b>
<b>April 2021</b>	<b>Asakawa Chieko was appointed as the position of the Chief Executive Director.</b>

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# The Engagement of Miraikan

Miraikan engages in the following three activities linking people to the cutting-edge science and technology.

## 1. Science Communication — Creating a place where society and cutting-edge science and technology connect

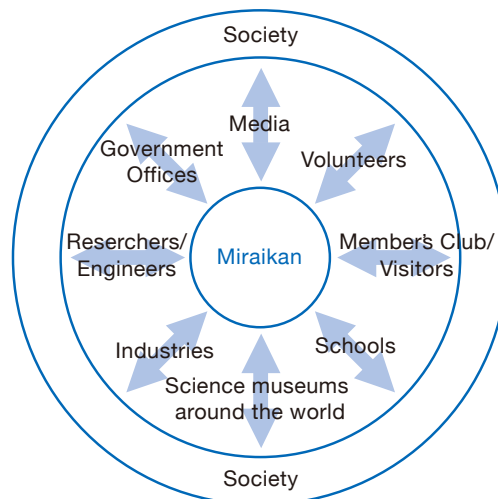
While increasing interest in science and technology through various methods, such as exhibits, videos, panel sessions, experiment classes and online media, we will create dialogue with various people on what science and technology can bring to future society.

## 2. Fostering personnel — Development of science communicators

Miraikan engages in the fostering of "science communicators" who act as a bridge between the general public and science/engineers.

## 3. Building connections — Continuing activities by developing networks

We see the countless stakeholders in society as partners to work with, including researchers, technicians, media, volunteers, supporters, visitors, legislators, government, other science museums, and industries, and we strive to build networks that include them.



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# Organization Outline

## Executive Board

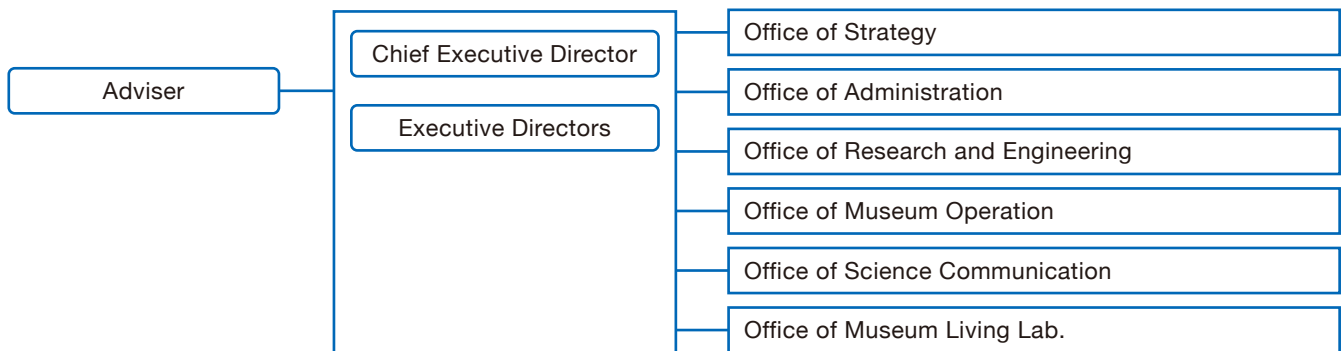
Chief Executive Director: Asakawa Chieko, Ph.D.

Executive Director: Ito Yoichi

Executive Director: Takagi Hironobu, Ph.D.

Adviser: Sakaki Hiroyuki, Ph.D.

## Organization Outline



Last Update: March 2023

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# Management Operation of Miraikan

To ensure appropriate management operations of Miraikan, the "Advisory Committee of Miraikan" has been established, consisting of external experts as listed below. The Advisory Committee evaluates and advises on Miraikan's activities, achievements, and operational policies.

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## Advisory Committee of Miraikan

### Chairman

Murai Jun (Distinguished Professor, Keio University)

### Committee members

Inami Masahiko (Professor, Research Center for Advanced Science and Technology, The University of Tokyo)

Emori Seita (Senior Principal Researcher, Earth System Division, National Institute for Environmental Studies)

Kataoka Mami (Director, Mori Art Museum)

Kanade Takeo (U.A. and Helen Whitaker University Professor, Carnegie Mellon University)

Shinoda Kenichi (President / Director General of National Museum of Nature and Science)

Shibasaki Atsuko (Executive Managing Director, Dinos Corporation)

Somekawa Kasumi (Director, Hands-On Planning)

Hayakawa Shigeru (Vice Chairman of the Board of Directors, Toyota Motor Corporation)

Matsunaga Michitaka (Senior Producer, News Production Center, News Department, Japan Broadcasting Corporation)

Mori Miki (Advisor to the Science Council of Japan (SCJ))

Last Update: March 31, 2023

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# Honorary Members of Miraikan

This Honorary Membership was established in July 2004 as it commemorated the museum's 3rd anniversary. It was established to show respect and reward researchers who were awarded with internationally recognized awards such as the Nobel Prize and the Fields Medal through great contributions towards the development of science and technology, while supporting our activities with understanding.

## ■ Honorary Members (random order, title abbr.)

Noyori Ryoji (The Nobel Prize in Chemistry 2001)  
Tim Hunt (The Nobel Prize in Physiology or Medicine 2001)  
Tanaka Koichi (The Nobel Prize in Chemistry 2002)  
Esaki Leo (The Nobel Prize for Physics 1973)  
Rudolph A. Marcus (The Nobel Prize in Chemistry 1992)  
Kobayashi Makoto (The Nobel Prize in Physics 2008)  
Suzuki Akira (The Nobel Prize in Chemistry 2010)  
Yamanaka Shinya (The Nobel Prize in Physiology or Medicine 2012)  
Barack Obama (The Nobel Peace Prize 2009)  
Brian Schmidt (The Nobel Prize in Physics 2011)  
Dan Shechtman (The Nobel Prize in Chemistry 2011)  
Shirakawa Hideki (The Nobel Prize in Chemistry 2000)  
Sir John B. Gurdon (The Nobel Prize in Physiology or Medicine 2012)  
Kajita Takaaki (The Nobel Prize in Physics 2015)  
Omura Satoshi (The Nobel Prize in Physiology or Medicine 2015)  
Muhammad Yunus (The Nobel Peace Prize 2006)  
Yoshino Akira (The Nobel Prize in Chemistry 2019)  
Honjo Tasuku (The Nobel Prize in Physiology or Medicine 2018)  
Amano Hiroshi (The Nobel Prize in Physics 2014)  
Ohsumi Yoshinori (The Nobel Prize in Physiology or Medicine 2016)

As of March 2023

# Permanent Exhibition Supervisors 1

## ■ List of the supervisors (random order, title abbr.)

### ● Explore the frontiers

#### ■ Understanding the Universe through

Neutrinos

Kajita Takaaki

#### ■ Study of Elementary Particles and the Universe with a Particle Accelerator

Yamauchi Masanori

#### ■ Promoting Medicine Together

Kohsaka Shinichi

Sasazuki Takehiko

#### ■ This is ISS, go ahead

Mohri Mamoru

#### ■ Earth Environment and Me

Funaoka Masamitsu

Iida Tetsunari

Kudoh Akihiko

Taguchi Seiichi

Tajika Eiichi

Taniguchi Masatsugu

Tsunematsu Toshihide

Fujino Jun'ichi

Matsumoto Ken'ichiro

Motojima Osamu

Yasui Itaru

#### ■ Stories of One, Everyone, and You

Matsuzawa Tetsuro

Hironaka Naoyuki

#### ■ CELLS in Progress

Asashima Makoto

Yamanaka Shinya

CiRA

Okano Hideyuki

Saitou Mitinori

Sakurai Hidetoshi

Nakauchi Hiromitsu

Nakagawa Masato

Yamada Shigehito

#### ■ Mission Survival: 10 Billion

Mohri Mamoru

Oshitani Hitoshi

Kishimoto Atsuo

Tajika Eiichi

### ● Create your future

#### ■ A Hands-On Model of the Internet

Murai Jun

Sato Masaaki

#### ■ Robots in Your Life

Shibata Takanori

#### ■ Songs of ANAGURA

Shibasaki Ryosuke

Kobayashi Isao

Nakashima Naoki

Horiguchi Ryota

Maenaka Kazusuke

#### ■ Android: What is Human?

Ishiguro Hiroshi

#### ■ Backward from the Future

Ohgaki Shinichiro

Katsukawa Toshio

Kibe Nobuko

Hanaki Keisuke

Hiroi Yoshinori

Matsuhashi Ryuji

Miyasako Masaaki

Yamamoto Yuji

#### ■ Visionary Lab

Microbes actually are all around

Ito Kohei

#### ■ Digitally Natural - Naturally Digital

Ochiai Yoichi

Ito Asa

Kato Shinpei

Goto Masataka

Sugiyama Masashi

Nobori Daiyuu

#### ■ The tearoom going from zero to one

The Sound of AKIRA

Ito Junji

As of March 2023

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# Permanent Exhibition Supervisors 2

## ■ List of the supervisors (random order, title abbr.)

- Curiosity Field

- Shiose Takayuki
  - Nishida Yoshifumi
  - Kurata Arata

- Dome Theater

- INHERIT - Dream and Challenge in HAYABUSA2 -

- Yoshikawa Makoto

- The Man from the 9 Dimensions

- Ooguri Hiroshi

- BIRTHDAY - What Links the Universe and Me -

- Taniguchi Yoshiaki

As of March 2023



# List of Facilities

Exhibition Facilities			Floor Space
Symbol Zone	1F	Six story open zone where the Geo-Cosmos floats.	600 m <sup>2</sup>
Permanent Exhibition	3, 5F	Permanent Exhibition space for two themes: "Create your future" on 3F, and "Explore the frontiers" on 5F.	3F: 2874 m <sup>2</sup> 5F: 2213 m <sup>2</sup>
Dome Theater	6-7F	Hemisphere dome theater where All Sky images and planetariums can be enjoyed.	234 m <sup>2</sup>
Special Exhibition Zone a, b	1F	It is a space where large-scale events and Special Exhibitions can be held. It is possible to hold two events simultaneously by dividing the space in half.	1,510 m <sup>2</sup> [a: 720 m <sup>2</sup> , b: 790 m <sup>2</sup> ]
Curiosity Field	3F	"Curiosity Field" is made of five activity areas for children to enjoy experiments and creating, as well as a space for parents.	600 m <sup>2</sup>
Communication Lobby	1F	This is a multi-purpose space where we show a variety of videos. Events are also held here on some days. It is a perfect meeting spot.	300 m <sup>2</sup>

Facility Rentals			
Miraikan Hall	7F	It is a space that can hold 292 people and it is suitable for symposiums, etc.	400m <sup>2</sup>
Conference Rooms	7F	Our meeting rooms include rooms that can be flexibly shifted between a classroom format and a theater format, as well as the Jupiter Room and Neptune Room, which boast floor-to-ceiling windows with panoramic views of the Odaiba area.	Jupiter: 180m <sup>2</sup> Uranus: 110m <sup>2</sup> Saturn: 160m <sup>2</sup> Mercury: 55m <sup>2</sup> Mars: 60m <sup>2</sup> Venus: 80m <sup>2</sup> Neptune: 105m <sup>2</sup>
Innovation Hall	7F	It is a space that can hold up to 103 people with retractable seats and 240-inch screen.	195m <sup>2</sup>
Waiting Rooms	7F	It can be used as a waiting space when using the facility rentals.	Moon: 19m <sup>2</sup> Phobos: 21m <sup>2</sup> Deimos: 22m <sup>2</sup> Io: 22m <sup>2</sup> Europa: 12m <sup>2</sup> Ganymede: 22m <sup>2</sup> Titan: 14m <sup>2</sup> Triton: 14m <sup>2</sup>

Other Facilities			
Multipurpose Room a-b	1F	The space can be divided and used for multiple purposes.	[a:64m <sup>2</sup> , b:64m <sup>2</sup> ]
Viewing Lounge (Restaurant)	7F	Resting space where you can enjoy the view of Odaiba and the Tokyo Tower.	480m <sup>2</sup>
Museum Shop	1F	Sells scientific goods and Miraikan original goods.	

# Permanent Exhibition “Explore the frontiers” 5F

Why are we here now? This zone explores, on a variety of scales, the construction of the world around us, the Earth’s environment and all the life nurtured within, as well as our solar system, and the universe. Looking back on the universe’s history that spans 13.8 billion years, how did humans begin, and how are we living and interacting with the world around us? By taking a scientific viewpoint, we can think from a broad perspective on which path we should follow to the future.



This is ISS, go ahead



Understanding the Universe through Neutrinos



Mission Survival: 10 Billion



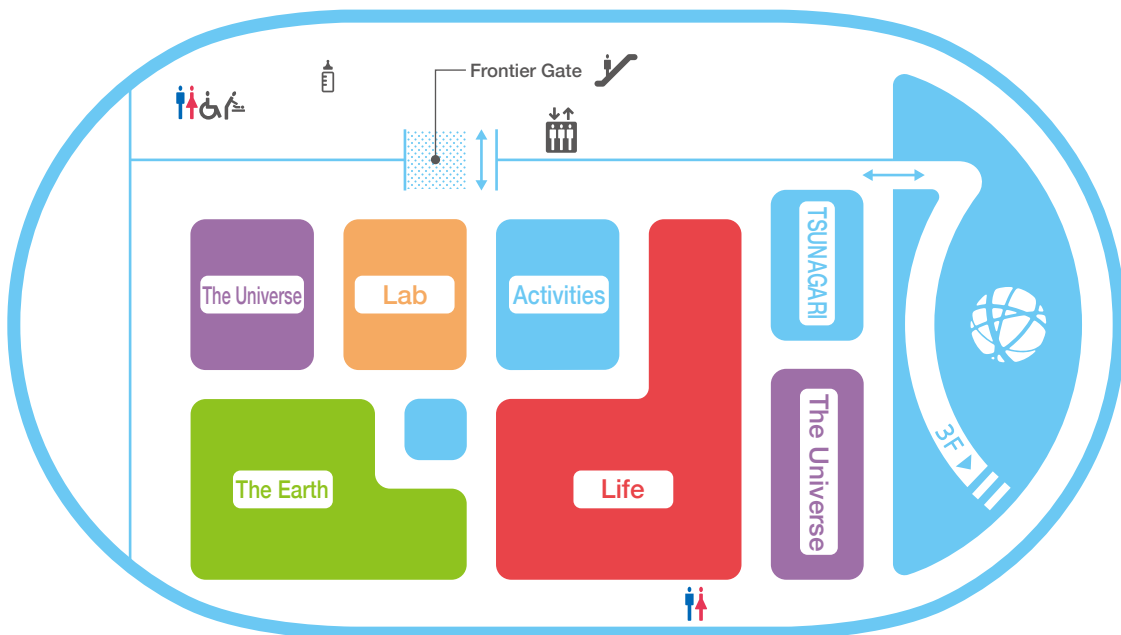
Many Small Insights = Major Discoveries



Stories of One, Everyone, and You



CELLS in Progress



Research Facilities

5F Exhibition Zone: Total floor space: 2,213.34 m<sup>2</sup>

# Permanent Exhibition “Create your future” 3F

How should humans apply and evolve sustainable prosperity? This zone illustrates desirable societies and lifestyles, and considers ideas we can use to achieve them. What science and technology is needed, and how should we use it to develop a society that can sustain a world population in excess of seven billion? This space provides a projection of a future society as we search for knowledge that will enable us to continue our prosperous lives.



Nobel Q  
— Questions from Nobel Laureates



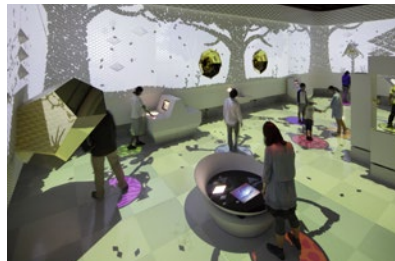
Backward from the Future



Android: What is Human?



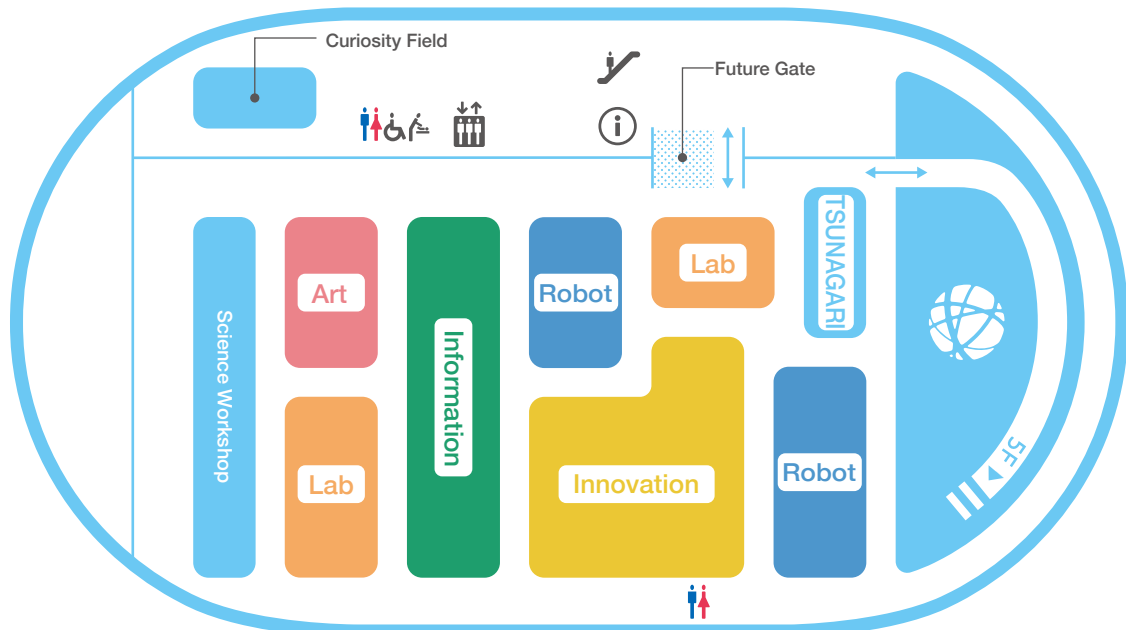
A Hands-on Models of the Internet



Songs of ANAGURA



Visionaries Lab



Research Facilities

3F Exhibition Zone: Total floor space: 2,874.80 m<sup>2</sup>

# Permanent Exhibition “Discover your Earth” (1, 3, 5F)

How much do we know about the Earth? This exhibition offers experience, understanding and sharing the links between life and the Earth environment, through cutting edge technology. Geo-Cosmos which is the symbol exhibit of Miraikan, as well as Geo-Scope, Geo-Prism, and Geo-Palette, offer visitors the opportunity to view a diverse range of scientific information related to the Earth. By examining the “tsunagari” (connections) among the various lifeforms in the Earth’s ecosystem, as well as the “tsunagari” that has developed between human beings and the Earth through the Earth’s 4.6 billion years of history, attempt to position the existence of human beings, and of ourselves, within the framework of the Earth’s large-scale “tsunagari.” This concept encompasses all the permanent exhibitions of Miraikan.

## ■ Symbol Exhibit Geo-Cosmos

The Geo-Cosmos is the symbol exhibit of Miraikan that realistically projects the figure of the Earth shining in space, with a pixel resolution that exceeds 10 million. Upgraded with the latest LED panels, the Geo-Cosmos creates a fresh, even more realistic vision of our Earth. The HDR (High Dynamic Range) panels and wider color gamut deliver richer, deeper color and light expression.

### —Main Specifications

Size: Diameter 6 meters(Approx. 1/2 millionth the size of the Earth)

Weight: Approx. 13 tons

Inner structure: Geodesic octahedral model

Number of pixels:10 million pixels and over

Luminescence device: LED (10,362 panels (96 mm x 96 mm))

### —Example of Contents

90-day Earth



## ■ Geo-Scope

This interactive board allows you to access various Earth observation data collected from domestic and international scientists and research institutes. Thirteen boards in different sizes will be aligned on the exhibition floor.



## ■ Geo-Prism

This system uses AR (augmented reality) technology to display data and simulations overlaid on the Geo-Cosmos. Touchscreen terminals in the 1F Symbol Zone and on the Oval Bridge offer a 360° view of visualized data displayed on Earth via dynamically interwoven CG and video images from multiple cameras.



## ■ Geo-Palette

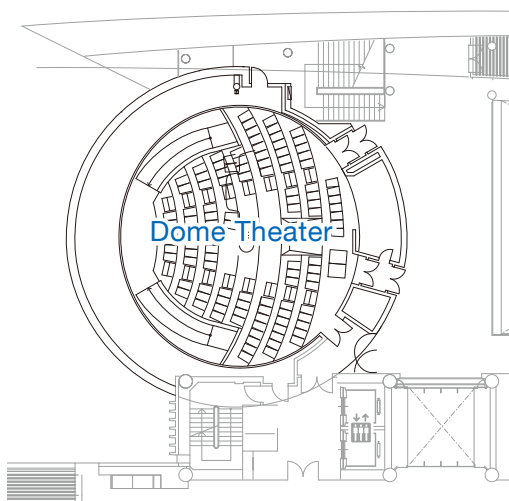
This digital content allows you to draw your own world map based on a host of information related to the countries and regions of the world. You can uncover many aspects of the Earth’s environment and human activities.



# Dome Theater

The Dome Theater on the 6F is a hemispherical theater for image projection.

The theater presents various programs, including large scale images, by utilizing the immense screen made up of the entire hemisphere, and planetarium presentations using Japan's first All Sky super high precision 3D image system.



Dome diameter: 15.24 m

Inclined angle of the dome: 23.5 degrees

Number of seats: 121 (all reclining seats)

Sound: 7.1 channel surround system



Exterior



Interior

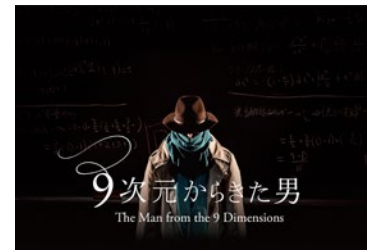
## Major programs [As of March 2023]

"INHERIT - Dream and Challenge in HAYABUSA2 -"



©Miraikan

"The Man from the 9 Dimensions"



©Miraikan

"BIRTHDAY - What Links the Universe and Me -"



©4D2U Project, NAOJ

## Image system

### • Image system 1: All Sky super high precision 3D image system

A visual experience that allows you to feel the presence of the vibrant atmosphere is made possible by projecting bright and super high definition images with 2 high intensity, 4K RGB laser projectors onto a dome-shaped screen. Enjoy natural and breathtaking imagery in full-dome 3D, with this active shutter 3D system.

### • Image system 2: Planetarium Projector "MEGASTAR-II cosmos"

It is a projector that projects 10 million fixed stars. Feel a sense of the scale of space through this realistic starry sky.

## How to view

Ticket fees

Adult: 310 yen

18 years old or under: 100 yen

# Archive of Special Exhibitions 1

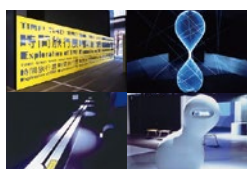
We hold Special Exhibitions which utilize diverse methods for expression and communication in collaboration with a number of external organizations. We do so while focusing on changes and new perspectives of the world which are brought about by cutting-edge science and technology.



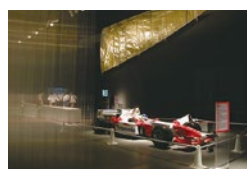
"Robot Meme"  
2001/12/1~2002/2/11



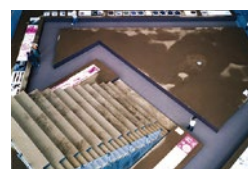
"Sound Bum Project"  
2002/10/2~10/21



"Exploration of Time"  
2003/3/19~6/30



"Beyond Fibers"  
2004/6/30~8/31



"F.C.R.B. Stadium Project"  
2005/4/23~8/15



"LOVE STORIES"  
2005/4/23~8/15



"SCIENCE TUNNEL"  
2005/9/16~11/17



"science + fiction"  
2005/12/10~2006/2/27



"Brain!"  
2006/3/18~5/31



"Warnings from Mammoth"  
2006/7/1~9/3



"6.5 billions' Survival"  
2006/10/29~2007/2/5



"Science News! from Asia"  
2007/6/2~9/2



"UNDERGROUND"  
2007/9/22~2008/1/28



"The Science of Aliens"  
2008/3/20~6/16



"Pterosaurs"  
2008/6/28~8/31



Science in "Haunted House"  
2009/4/22~6/22



"It's a Tasty World"  
2009/11/21~2010/3/22



"Your Future, Your Future Self"  
2010/3/20~5/10



Science in "Haunted House" 2  
2010/3/10~5/31



"DORAEMON'S Scientific Future"  
2010/6/12~9/27



"Theo Jansen"  
2010/12/9~2011/2/14



"Making of Tokyo Sky Tree®"  
2011/6/11~2011/10/2



"UMESAO Tadao"  
2011/12/21~2012/2/20



"The End of the World"  
2012/3/10~2012/6/11



"The World of Manga Experienced Through Science"  
2012/7/7~2012/10/15

As of March 2023

## Archive of Special Exhibitions 2

We hold Special Exhibitions which utilize diverse methods for expression and communication in collaboration with a number of external organizations. We do so while focusing on changes and new perspectives of the world which are brought about by cutting-edge science and technology.



"It's All about Money!"  
2013/3/9~6/24



"Thunderbirds Expo"  
2013/7/10~9/23



"The SEKAI-ICHI"  
2013/12/7~2013/5/6



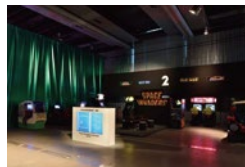
"Toilet!? —Human Waste  
& Earth's Future"  
2014/7/2~10/5



"Dance! Art Exhibition! and Learn  
and Play! teamLab Future Park"  
2014/11/29~2015/5/10



"Pokémon Lab"  
2015/7/8~2015/10/12



"GAME ON"  
2016/3/2~2016/5/30



"The NINJA  
- who were they?"  
2016/6/2~2016/10/10



"The Art of Disney -  
The Magic of Animation"  
2017/4/8~2017/9/24



"MOVE! into the wildlife"  
2017/11/29~2018/4/8



"Detective Conan:  
Scientific Investigation"  
2018/4/18~2018/7/8



"Design Ah! Exhibition in  
TOKYO"  
2018/7/19~2018/10/18



"The 'Under Construction'  
- Is It Safe to Enter!? Heavy  
Machinery in Use!"  
2019/2/8~2019/5/19



"The Mammoth"  
2019/6/7~2019/11/4



"Disaster and Future  
- 10 Years after the Great  
East Japan Earthquake -"  
2021/3/6~2021/3/28



SuperHuman  
"This is my body"  
2021/7/17~2021/9/5



"You and Robots  
- What is it to be Human?"  
2022/3/18~2022/8/31

As of March 2023

# Distribution of large-scale images

## ■ Distribution/production of large scale images

With the cooperation of external organizations such as research institutes and image production companies, Miraikan has originally created many large-scale images which are being shown in domestic and international science museums.

● **“FURUSATO**  
- World Heritage Sites Viewed From  
Space-” (2010)

Distribution: TBS SPARKLE, Inc.



@Miraikan/TBS-VISION, Inc.

● **“The Man from the 9Dimensions”**  
(2016)

Distribution: GOTO INC  
Konica Minolta Planetarium Co., Ltd.



@Miraikan

● **“INHERIT**  
- Dream and Challenge in  
HAYABUSA2 -” (2022)

Distribution: RIGHT PLANE, Inc.  
Konica Minolta Planetarium Co., Ltd.



@Miraikan

For further details please visit our website.  
<https://www.miraikan.jst.go.jp/en/resources/movie/>



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## Official Partners

Official partners are organizations that endorse the philosophy and activities of Miraikan, and that promote and support, together with Miraikan, the revitalization of communication between society and science and technology through collaborative activities and sponsorship.

### ■ Official Partners

**AsahiKASEI**

Asahi Kasei Corporation

As of April 2024

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# Membership

## ■ Miraikan Account

Miraikan ID is a membership that allows you to use various Miraikan services.

## ● Benefits

·E-mail magazine "Miraikan News"

Announcements and latest event information will be delivered on the 2nd and 4th Friday of every month.

·Annual Passports

A free pass plan gives members unlimited free admission to the permanent exhibitions for one year from the date of joining.

Annual Fee: 1,250 yen (Renewal Fee: 1,050yen)

Aged 18 or under: 410 yen (Renewal Fee: 310yen)

·Event

Participation in general and members-only events.

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# Volunteers

Volunteers at Miraikan have various background who are active in various ways such as from the explanation of exhibits to the support in science workshops, etc.

## ■ Contents of Activities

As mentioned below, there are various sites of activities for volunteering. Activities are possible whether you have or do not have knowledge on science and technology.

1. Giving explanations on the exhibits
2. Experiment support at the Science Workshop
3. Holding of original planned events by volunteers
4. Support for Events, etc.
5. Playing an active role in other various activities

# User Guide 1

<p>■ <b>Opening Hours</b></p>	<p><b>10:00 - 17:00</b> (Admission ticket sales end 30 minutes before the closing time of the museum.)</p>
<p>■ <b>Closed</b></p>	<p><b>Every Tuesday (Open on national holidays), December 28 to January 1.</b> *Miraikan may be temporarily closed due to facility maintenance. *Miraikan may be open on Tuesdays during spring, summer and winter vacation seasons.</p>
<p>■ <b>Admission Fees</b></p>	<p>● <b>Permanent exhibitions</b> Adults 630 yen / Child (up to age 18) 210 yen / Preschool child Free Groups (8 or more people): Adults 500 yen/Child (up to age 18) 160 yen *Admission is free for children (up to the age of 18) on Saturdays. *Admission is free for holders of a disability certificate, and for their companion (one per certificate holder). The disability certificate app Mirairo ID is also accepted. *Separate admission is required for special exhibitions.</p> <p>● <b>Permanent Exhibitions + Dome Theater</b> Adults 940 yen / Child (up to age 18) 310 yen / Preschool child 100 yen *Those visiting the Dome Theater may also visit the permanent exhibitions. *Admission is 100 yen for children (up to the age of 18) on Saturdays. *If viewing more than one film at the Dome Theater per day, each additional session is 310 yen for adults and 100 yen for children (schoolchildren and those up to the age of 18). *Admission is free for holders of a disability certificate, and for their companion (one per certificate holder). The disability certificate app Mirairo ID is also accepted.</p>
<p>■ <b>Facilities</b></p>	<p>● <b>Parking area</b> Operating hours: 7:00 AM to 11:00 PM Fees: 440 JPY/hr, One-day max.: 1,650 JPY No. of spaces: 167 (incl. 4 disabled spaces) *20 spaces for large buses (3,150 JPY per visit, advance booking not required)</p> <p>● <b>Electric Vehicle (EV) Charging Service</b></p> <ul style="list-style-type: none"> <li>• <b>Normal charging stations</b> Usage hours: 7:00 AM to 11:00 PM (same as the underground parking area) Location: Underground parking area Fee: Free *Separate parking fees apply No. of stations: 18 Specifications: 6 kW/200 V</li> <li>• <b>Rapid charging stations</b> Usage time: Up to 30 min. per use Location: Underground parking area Fee: Fees apply No. of stations: 2 Specifications: 50 kW/200 V</li> </ul> <p>● <b>Restrooms for visitors</b> 1F: 2 areas / 3F: 2 areas / 5F: 2 areas / 6F: 1 area / 7F: 1 area * There are restrooms for the disabled on each floor and multipurpose restrooms available for ostomate on the 1, 3 and 5Fs. * There are diaper changing tables (adult size) in the restrooms on the 1 and 7Fs.</p> <p>● <b>Stroller, nursing room</b> We lend out strollers. There is a nursing room(for female visitors use only) at the back of the 5F Café.</p> <p>● <b>First-aid office</b> A registered nurse is permanently positioned in Miraikan.</p> <p>● <b>Lockers</b> 1F Coin lockers 128 lockers (100 yen: Money will be returned.)</p>

## User Guide 2

<p>■ <b>Facilities</b></p>	<p>● <b>Eating spaces</b></p> <p>Eating is possible on the 7F Viewing Lounge.          7F Beverage section (Food is not allowed.)          There are drinking water coolers next to the "1F Multipurpose Room a" and the 7F Beverage section.          1F Multipurpose room can be used as a dining place for visitors in groups (advanced reservation necessary).</p>
<p>■ <b>Accessibility</b></p>	<p>● <b>For wheelchair users</b></p> <p>Wheelchair rental service / Multi-purpose restroom / Wheelchair accessible seating in Dome Theatre / Parking spaces for wheelchair users</p> <p>● <b>For visitors with hearing loss</b></p> <p>Writing instruction devices / Subtitles for videos of the permanent exhibition provided (Not yet available for some videos)</p> <p>● <b>For visitors with visual impairments</b></p> <p>English and sub-audio (Japanese) in Dome Theatre</p> <p>● <b>For visitors with an infant</b></p> <p>Nursing room behind the café on the 5th floor / Changing table / Stroller rental service</p> <p>● <b>Multi-language services</b></p> <p>Multi-language labels and subtitles for movies of the permanent exhibition: Japanese, English / Floor Guide: Japanese, English, Chinese, Korean / Audio guide of Dome theater: English / Audio guide of the permanent exhibition: Japanese, English, Chinese, Korean</p> <p>● <b>Toilets</b></p> <p>Toilets for ostomates / Changing table (Adult size)</p> <p>● <b>Others</b></p> <p>Visitors can enter the facility with their guide dogs, service dogs and hearing assistance dogs / First-aid office: permanently-stationed a nurse / AED (automated external defibrillator) / Prayer rooms</p>
<p>■ <b>Others</b></p>	<p>● <b>Camera Shooting</b></p> <p>Taking photographs and images only for individual purposes is allowed with the exception of certain exhibits.(* Prior permission is required for photography/filming for the purpose of commercial use/duplication/broadcasting.)</p> <p>● <b>Group reservation desk</b></p> <p>For information on group reservation, preliminary inspection, information materials, please contact the following.          Tel: 81-3-3570-9188 (reservation desk is open 10:00 - 17:00 during museum hours)</p>

# App/E-book

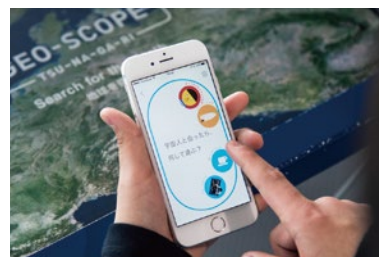
We provide applications that enhance your experiences of the exhibitions in the museum and help you take these experiences back into your everyday life, as well as free e-books that provide access to the scientific data provided by research institutes.

## Miraikan Notebook

Find “Why”, think about it, and do it. Smartphone App to enjoy Miraikan even more. App with 3 features to help you make the most of the exhibits in Miraikan. Visitors can tour the exhibitions through the “Quest,” which comprises eight routes that have been designed based on the concept of “inquiry.” They can also take commemorative photos using AR technology, and make use of the audio guide (in four languages) that introduces the highlights of all the exhibitions. There is also a notebook function that allows visitors to take down notes for different categories of questions and ideas that arise in their everyday lives.

\*Audio guide: Japanese, English, Chinese, Korean

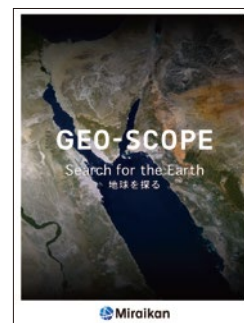
Date of launch: 19 April 2016, Price: Free of charge, Available on: App Store and Google Play, Compatible devices: iOS 8 or above, Android 4.4.0 or above, Creative direction: PARTY, Produced by: Miraikan



## GEO-SCOPE Search for the Earth

Access various data and simulations concerning the Earth’s environment. This is the e-book version of the Geo-Scope permanent exhibition in Miraikan. Enjoy the new user-friendly functions that allow you to explore the Earth through intuitive operations on an iPad. Contains 36 sets of contents, including seasonal changes in amount of solar radiation, movement of tern, and world map of honey bees.

Date of launch: 29 February 2016, Price: Free of charge, Available on: iBooks Store, Recommended devices: iPad Pro, iPad Air or above, iPad mini3 or above, Produced by: Miraikan



## Scientific Dialogues

Miraikan has launched its first e-book, produced based on the dialogues between scientists and designers. Based on the contents of the “Earth: Materials for Design – Design x Science Dialogue” project held at Miraikan in 2010, this book is a multi-faceted and comprehensive summary of data and visual information from the project, scientific commentaries, design proposals, and records of the dialogues. It introduces the three materials – metal, plastic, and wood, and at the same time offers proposals for global manufacturing within a “grand scale of time.” The BCKKS version that can be accessed online or as a hard-copy book.

Planning and Production: Miraikan, Department of Design, Tokyo University of the Arts, Produced by: Miraikan



# Research Facilities

Research Facilities have been established in Miraikan. Multiple research projects are permanently stationed at the far end of the hallway of the Permanent Exhibitions on floors three to five, and daily research and science communication activities take place. With the goal of widely exhibiting the fields of cutting-edge science and technology, the wall of each laboratory is made of glass, so that visitors can see the activities of the researchers from the exhibition floors.

The introduction of ongoing projects	Research Director
<p><b>Communicative Intelligent Project</b> This project is creating a new field of study composed of dialogue engagement and rapport research, communication understanding and generation research, behavioral decision model estimation research, and human-machine social norms research. It will become a new research topic that is needed to realize a society where humans, intelligent robots and information media coexist.</p>	<p><b>Ishiguro Hiroshi</b> Graduate School of Engineering Science, Osaka University</p>
<p><b>xDiversity Project</b> This project intends to overcome physical and mental disabilities through the combination of man and machine, using AI technology to integrate personal optimized technology and technologies relating to space, sight, sound, and tactile feedback.</p>	<p><b>Ochiai Yoichi</b> Faculty of Library, Information and Media Science, University of Tsukuba</p>
<p><b>Unveil &amp; Upgrade Human Movement Performance Project</b> We aim to elucidate the mechanism of human body movement, build science to develop potential physical abilities, and propose concrete methodologies.</p>	<p><b>Kawakami Yasuo</b> Faculty of Sport Sciences; Human Performance Laboratory, Comprehensive Research Organization, Waseda University</p>
<p><b>Exploring the Wonderful World of Children Project</b> We will discover the world of children through experiments to think about what kind of environment is best for babies and children to support the diverse development of each child who will adapt to the future society.</p>	<p><b>Yamaguchi K. Masami</b> Department of Psychology, Chuo University</p>
<p><b>Cyber Living Lab – Embodied Media Project</b> This project aims to create future media technologies that record, share, enhance, and even create the kind of experiences that we have through our bodies.</p>	<p><b>Minamizawa Kouta</b> Keio University Graduate School of Media Design</p>
<p><b>Sustainable Biotechnology Project</b> This project will conduct research for the development of bioprocesses to produce clean hydrogen energy from food wastes as a representative of sustainable biotechnology, and step up outreach activities to enhance social awareness of sustainable biotechnology.</p>	<p><b>Watanabe Kazuya</b> Laboratory of Bioenergy Science and Technology, School of Life Sciences, Tokyo University of Pharmacy and Life Sciences</p>
<p><b>Project toward Smart Soft-Manufacturing Revolution</b> This project is advancing "material and process innovation" research to realize the concept of a Convenience Factory where materials and processing are directly connected to digital manufacturing.</p>	<p><b>Furukawa Hidemitsu</b> Soft and Wet matter Engineering Laboratory (SWEL), Yamagata University</p>
<p><b>Human Organoid Project</b> This project is conducting the following three major research goal using miniature organs, aka "organoids," from human stem cells such as induced pluripotent stem cells (iPS cells).</p>	<p><b>Takebe Takanori</b> Institute of Research, Tokyo Medical and Dental University</p>
<p><b>Mitochondrial Biogenesis Project</b> This project aims to reveal the entire picture and regulation mechanisms of the structure and functional networks of dynamically working mitochondria, by making use of various techniques of structural biology.</p>	<p><b>Endo Toshiya</b> Faculty of Life Sciences, Kyoto Sangyo University</p>

As of April 2023

\*Please visit our website (<https://www.miraikan.jst.go.jp/en/research/facilities/>) for more details.

# Shop/Viewing Lounge

At Miraikan, there is the Museum Shop on the 1F and the Viewing Lounge on the 7F.

## ■ Museum Shop (1F)

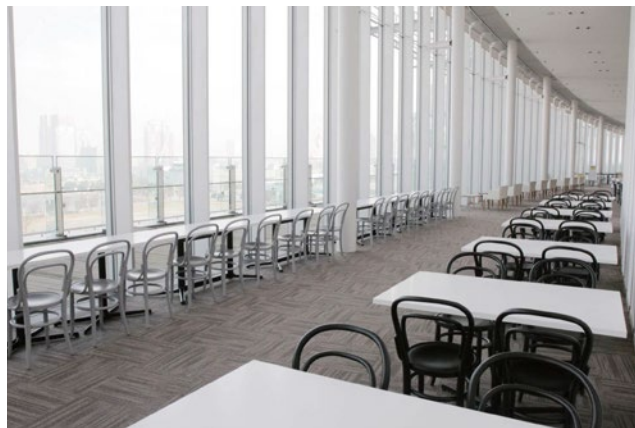


In addition to Miraikan's original goods, experiment kits, there are numerous goods related to science that can be enjoyed by all ages.

Opening hours: 10:00-17:00

Closed: Every Tuesday \*Same as Miraikan's closed days

## ■ Viewing Lounge / Restaurant (7F)



This is a resting space, where you can see all the way from Odaiba's surroundings to Tokyo Tower. It also includes a self-service cafeteria.

Opening hours: 10:00-17:00

Closed: Every Tuesday \*Same as Miraikan's closed days

\*Business hours are subject to change depending on the season.



# Design and Characteristics

Miraikan is designed based on the concept of creating a place for exchanges between people, and also between people and science and technology. To enhance this exchange, various measures were implemented in terms of technique and design.



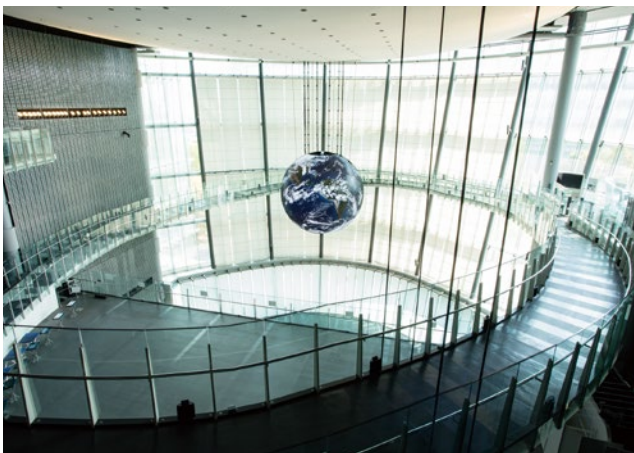
## Sleek glass that symbolizes a facility opened to everyone

A transparent exterior is created as transparent reinforced glass is used for the east to north side which is less influenced by direct sunlight. Heat resistant semi-transparent glass is used for the west side which faces the sunset. (Photo depicts the front.)



## Dynamic space

The entrance and Symbol Zone bathed in natural light is a vaulted open zone. Escalators and successive flights of stairs naturally join the floors from the entrance to the 6th floor.



## Flexible exhibition space

The exhibition space is wide while columns are situated at 30 m intervals. The front on the east side is an atrium from the 1st to the 6th floor while the areas from the 3F to the 5F are connected by a gently sloping ramp.



## Through-holes

Ten towers have been inserted as if they were vertically piercing the building. There are "Light Towers" that receive light from rooftop sunlight autoguider and "Wind Towers" that supply fresh air and provide ventilation.

# Architecture/equipment Specification

## ■ Architectural Specification

Facility Name:	Miraikan
Address:	2-3-6, Aomi, Koto-ku, Tokyo 135-0064
Designer's supervision:	Nikken Sekkei/Kume Sekkei design joint-venture group
Design cooperation:	Landscape: George Hargreaves (only basic plan), Sign: Hiomura design office, Lighting: LPA
Term of construction:	December 1999 - March 2001
District:	Fireproof district, light-industrial district
Building-to-land ratio:	46.51% (Standard 60%)
Floor-area ratio:	177.71% (Standard 200%)
Road width:	West 40m, North 20 m
Area:	Site area: 19,636.65 m <sup>2</sup> Building area: 9,133.59 m <sup>2</sup> Floor space: approx. 40,744.03 m <sup>2</sup> (including parking area)
Parking Area:	Area: 5,737.84 m <sup>2</sup> / Number of cars that can be parked: 175 cars (2 car spaces for the disabled)
Height:	Eave Height: 42 m, Height at highest point: 45 m, Standard floor height: 4.5 m, Ceiling height: 8.0 m (standard exhibition room), 3.0 m (Research room), Entrance vaulted space: 25 m (partial 39 m), Exhibition space standard ceiling height: 8 m (subcallosal area 6 m)
Measurement:	Major span 30 m x 6 m
Number of floors:	2 underground, 8 above ground, 1 penthouse
Structure:	Steel construction partially steel concrete
Pile/foundation:	Rotation steel-pipe pile/non-land removal press-in method

## ■ Facility/equipment Specification

Air conditioning:	Air-conditioning system: single duct system, single duct + FCU system, air cooled package method Heat source: District heating and cooling
Sanitary installation:	Water supply: pressure water service system (Clean water/gray water) Hot-water supply: Central method (District heating and cooling), individual method combined Water discharge: General sewage water/gray water, experiment-related water discharge
Electric installation:	Power receiving system: 22 kV 50 Hz 3 lines SNW method Installed capacity: 2,000 kVA x 3 Contract electric power: 1,700 kW Standby power supply: Gas turbine generator 6.6 kV 50 Hz 1,250 kVA
Fire-prevention equipment:	Direct-current power-supply system, alarm system for fire/smoke/gas leak, emergency broadcasting system, lightning protection system, space lighting system for emergency/rescue use, fire extinguishing sprinkler system (closed type/discharge type/pre-action type), foam extinguishing system, nitrogen gas extinguishing system/smoke exhaust: natural smoke exhaust, mechanical smoke exhaust
Others:	Waste treatment system, district heating and cooling receiving system
Elevators:	Passenger elevator (exhibition zone): can hold 24 people 105 m/min x 2 Passenger elevator (backyard/emergency use) can hold 17 people 105 m/min x 2 Passenger/loading elevator (backyard/emergency use) can hold 17 people 105 m/min x 2 Loading elevator (backyard): Load capacity 6,000 kg 30 m/min x 1 Passenger elevator (parking area): Can hold 11 people 45 m/min x 1 Escalator (introduction zone): Width 1,200 mm 9,000 people/hour 30 m/min 10 escalators
Disposal of goods:	Equipment hatch valid open space: W 5,250 mm x H 4,000 mm or W 3,750 mm x H 4,000 mm
Room temperature/humidity:	Temperature: Constantly 17°C - 28°C, Humidity: Constantly 40% - 70%
Security precaution:	TV monitor: Situated everywhere (including the parking area, etc.) Monitoring place: 1F Disaster control center Security guards: Stationed 24 hours

# Location & Directions

## ■ From the Airport

• From the Tokyo International Airport (Haneda Airport)

By train | about 50min.

By car | about 20min.

• From Narita Airport

By train | about 100min.

By car | about 60min.

## ■ Train

• Tokyo Waterfront New Transit YURIKAMOME:

5 minute walk from "Tokyo International Cruise Terminal station" / 4 minute walk from "Telecom Center station"

• Tokyo Waterfront Area Rapid Transit RINKAI LINE:

15 minute walk from "Tokyo Teleport station"

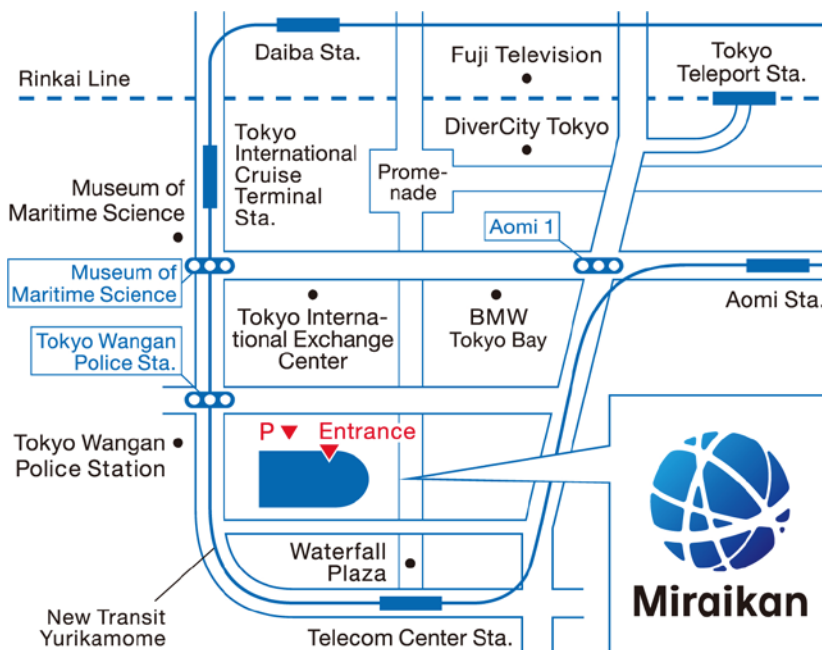
## ■ Car

By Metropolitan Expressway

• 5 minutes to Miraikan from the Daiba Ramp exit on the Route No. 11 of the Metropolitan Expressway

• 4 minutes to Miraikan from the Rinkai-fukutoshin Ramp exit on the Bay Shore Route of the Metropolitan Expressway

• 7 minutes to Miraikan from the Ariake Ramp exit on the Bay Shore Route of the Metropolitan Expressway

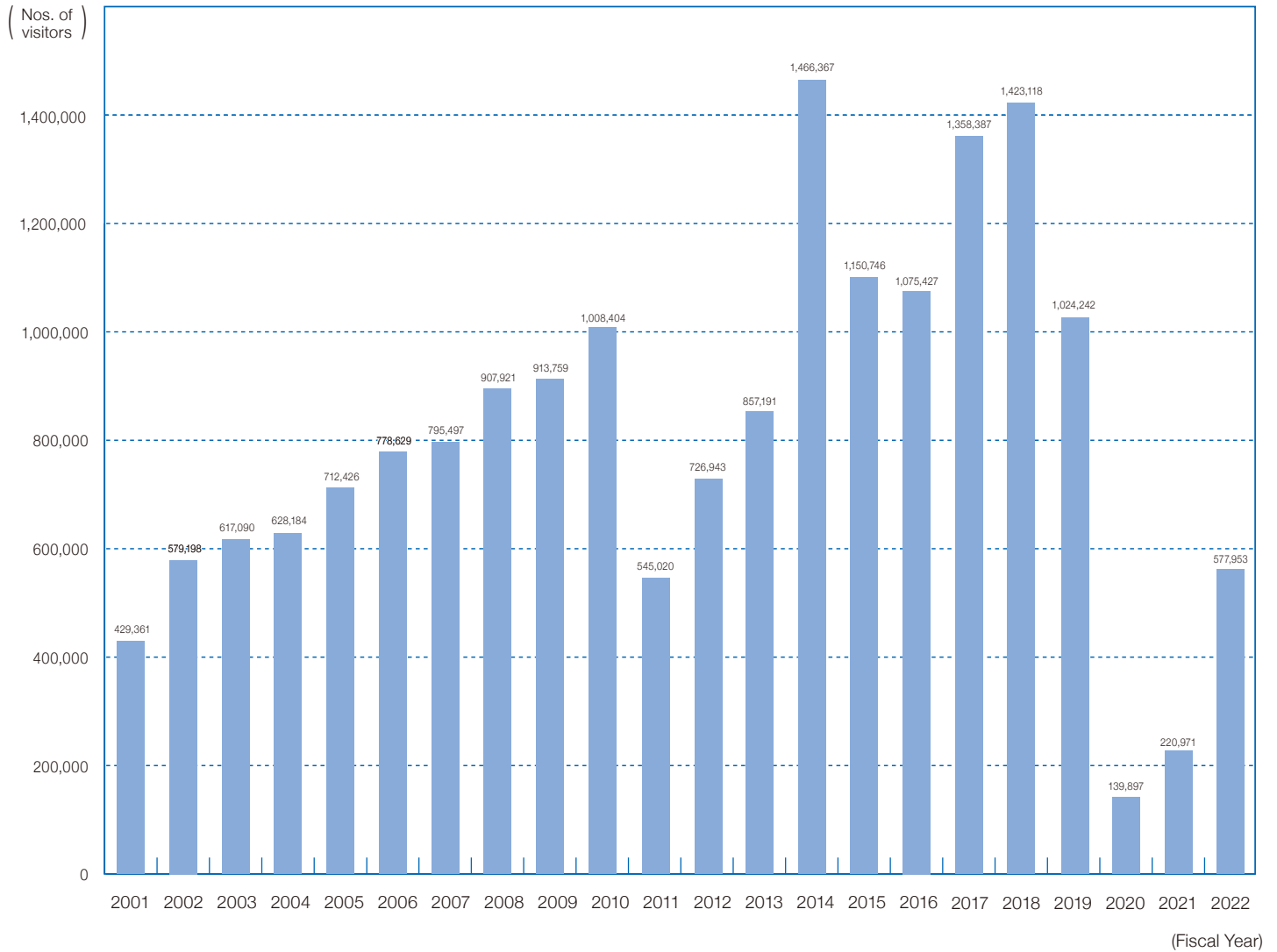


Miraikan - The National Museum of Emerging Science and Innovation

2-3-6 Aomi, Koto-ku, Tokyo, Japan / Tel: +81-3-3570-9151

# Data of Visitors

## Transition in the numbers of visitors



## Breakdown by age (FY2022)

