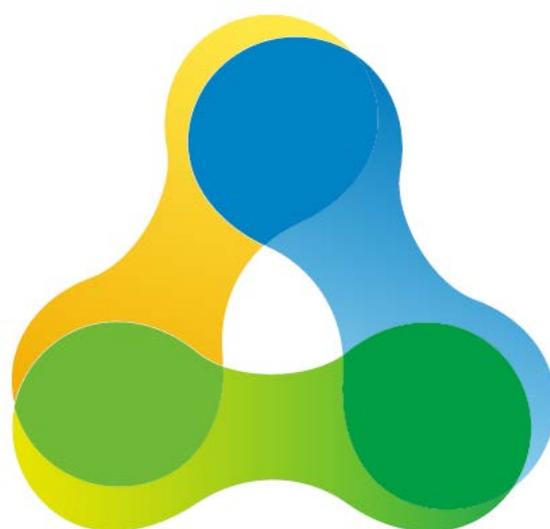


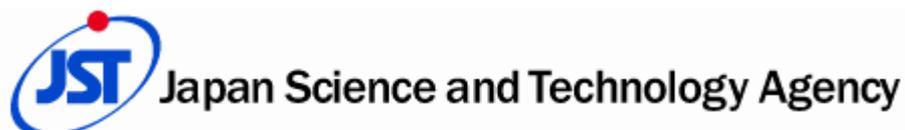
Report on Science Agora 2014

How can we come together for building
relations between future society and science?



Science Agora

March 2015



Report on Science Agora 2014

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1. Message from JST President:

The theme for Science Agora 2014 was "Building relations between future society and science", as it was designed as an opportunity for scientists, and the scientific community to interact with the general public, policy makers, the media, and a multitude of other stakeholders so that we could build common ground on understanding and discussing issues our society is facing today.

It was also a chance for the Japan Science and Technology Agency to unveil top scientific projects it has produced, and by sharing it with the public and other scientists, we can pave the way to new collaborations and new developments in science and technology in society.



Dr. Michiharu Nakamura
President, Japan Science and Technology Agency

2. What is Science Agora?

Science Agora is an annual event aimed at linking science and society through science communication. In 2014, the theme of Science Agora was "Building relations between future society and science". The word "Agora" is Greek for "gathering place", and so we invite the public, researchers, media, industries, policymakers, and any other stakeholders to "gather in one place to have a conversation about science as it is currently, and what we hope for in the future".

-It is an event consisting of a variety of programs for discussing policies from various angles to improve society by utilizing S&T.

-Since its establishment in 2006, it has been growing year by year, and in 2014 we had about 200 programs and more than 10,000 attendees.

3. Overall Outline

(1) Schedule: 10:00 - 17:00 November 7th (Fri), 8th (Sat), 9th (Sun), 2014

(2) Venue: Odaiba area, Tokyo

(National Museum of Emerging Science and Innovation (Miraikan),

National Institute of Advanced Industrial Science and Technology Waterfront, Tokyo Metropolitan Industrial Technology Research Institute, International Exchange Center, Symbol Promenade Park, Fuji TV Wangan Studio)

- (3) Organizer: Japan Science and Technology Agency
- (4) Joint Organizers: National Institute of Advanced Industrial Science and Technology, Tokyo Metropolitan Industrial Technology Research Institute, Japanese Student Services Organization, Tokyo Academic Park, Tokyo Waterfront Group
- (5) Cooperation: Fuji Television Network, Inc.

4. Theme of Science Agora 2014

The theme of Science Agora 2014 was as follows:

How can we come together for building relations between future society and science?

5. Constitution of Programs

Science Agora consists of two exhibition types. The number of projects for 2013 and 2014 was as follows:

	2014		2013	
Booth exhibitions	131	69.7%	165	71.1%
Sessions	57	30.3%	67	28.9%

Fig. 1 Classification of exhibition project by type (number of projects)

* Numbers by Science Agora Secretariat based on proposals of exhibitions at the time of application, exhibition outline, etc.

6. Contents of Main Programs

(1) Ones organized by JST

① Opening Session

Agora: How can we come together for building relations between future society and science?

<http://www.jst.go.jp/csc/scienceagora/reports/opening.html>

【Outline】

If you thought about who science affects in society today, you would come up with

a very long list of stakeholders. Academia, businesses, governments, and the public are all affected by science, but the real question is by how much? Also, how are these groups going to affect the future development of science? In this plenary session we invite leaders from different fields to share their views, and discuss how Science Agora should evolve in today's changing world.

Date : 10:30-12:30 November 7th (Fri), 2014

Venue : National Museum of Emerging Science and Innovation (Miraikan)

Organizer : Center for Science Communication

Format : Greeting from JST President Dr. Nakamura, greetings from guests and a panel discussion

Presenters and moderator :

Dr. Michiharu Nakamura, President, Japan Science and Technology Agency

Sir Peter Gluckman, Chief Science Advisor, New Zealand

Dr. Chen Jian, China Association for Science and Technology (CAST)

Prof. Anne Glover, Chief Scientific Adviser to the President of the European Commission (video message)

Sir Mark Walport, The UK Government Chief Scientific Adviser (video message)

and others

【Result】

The goal Science Agora aims for, which is to consider playing a role of bridging between science technologies and societies in the future by gathering important members from each quarter across various fields, sectors, ages, genders, and nationalities was realized. Over 175 persons attended this session.



Fig. 2 Opening session



Fig. 3 Sir Peter Gluckman, Chief Science Advisor, New Zealand



Fig.4 Panel discussion

From left, Prof. Naoya Kaneko (moderator), Prof. Mitsunobu Kano, Mr. Tatsuo Tomita, Ms. Mariko Takahashi, Prof. Yuko Harayama, Sir Peter Gluckman.

②Agora Keynote Session 1

Integration for Science and Technology Innovation

<http://www.jst.go.jp/csc/scienceagora/reports/akn1.html>

【Outline】

Today, it is expected that science and technology will provide innovative solutions to our lifestyle and society. In order to encourage science and technology innovation, natural science and social science integration, as well as integration of ideas, technologies, components or processes are considered to be essential. In this session, we will discuss how we can promote integration toward science and technology innovation.

Date : 13:00-17:00 November 7th (Fri), 2014

Venue : Tokyo International Exchange Center(TIEC) Organizer : Center for Research and Development Strategy, JST (Supported by CAO, MEXT, COCN)

Presenters :

Prof. Hiroyuki Yoshikawa, Director-General, Center for Research and Development Strategy Japan Science and Technology Agency
Mr. Nobuaki Kawakami, Director-General, Science and Technology Policy Bureau, Ministry of Education, Culture, Sports, Science and Technology
Dr. Michiharu Nakamura, President, Japan Science and Technology Agency
and others

【Result】

Current problems such as the declining birth rate and aging population, and the energy problem, are very intricate, and thus cannot be solved by a single academic department. It is said that the integration of various academic departments is required to solve these problems. In Agora Keynote Session 1, integration for realizing science and technology innovation was discussed from various viewpoints including scientific academies, technological development, and project management, with “integration” as the keyword.



Fig. 5 President Nakamura speaks on the goal for integration in the keynote speech



Fig. 6. Panel discussion

③Agora Keynote Session 2

Science in Transition - Bridging Science, Society and Policy -
<http://www.jst.go.jp/csc/scienceagora/reports/akn2.html>

【Outline】

Climate change, economic crisis, natural disasters, terrorism, food safety, disease outbreaks - these are a handful of the complex challenges humanity is facing right now as a result of rapid globalization which began following the end of the Cold War and the start of the information technology revolution.

In order to resolve these issues, we need to adapt the way scientific knowledge is created and applied. This means revolutionizing the way science, society, and policy interact with one another. The 2011 Japan earthquake was a wake up for the Japanese that bridges between science, society, and policy need to evolve.

Countries around the world have been working in different ways to resolve this issue, and today we invite leaders from Europe, the USA, Asia, and Africa to share their views on scientific responsibilities in the 21st century.

Date: 15:30-18:00 November 7th (Fri), 2014

Venue: National Museum of Emerging Science and Innovation (Miraikan)

Organizer: Center for Science Communication

Presenters:

Dr. Alan I. Leshner, CEO, The American Association for the Advancement of Science (AAAS)

Mr. Peter Tindemans, Secretary General, Euroscience

Mr. Satoru Ohtake, Senior Executive Director, Japan Science and Technology Agency (JST)

Sir Peter Gluckman, Chief Science Advisor, New Zealand

Dr. Romain Murenzi, Executive Director, The World Academy of Science (TWAS)

Ms. Eudy Mabuza, Minister-Counsellor, Science and Technology, South African Embassy in Tokyo

Prof. Tateo Arimoto, Professor, National Graduate Institute for Policy Studies (GRIPS)

【Result】

Professor Tateo Arimoto of GRIPS took the platform as the moderator, and shared the view of scientific revolution that is currently taking place in this world. Dr. Alan I. Leshner, CEO of AAAS, Mr. Peter Tindemans, Secretary General of Euroscience, and Mr. Satoru Ohtake, Senior Executive Director of JST introduced activities that they have been working on in each organization. Sir Peter Gluckman, Chief Science Advisor of New Zealand, Dr. Romain Murenzi, Executive Director of

TWAS, and Ms. Eudy Mabuza, Minister-Counsellor of the South African Embassy in Tokyo discussed the potentiality and limit of science, and how to communicate with stakeholders.



Fig. 7 Pannel discussion

From left, Prof. Tateo Arimoto (moderator), Dr. Alan I. Leshner, Mr. Peter Tindemans, Mr. Satoru Ohtake, Sir Peter Gluckman, Dr. Romain Murenzi, and Ms. Eudy Mabuza.

④Agora Keynote Session 3

What we can learn from international research collaborations: Global environmental issues and Japan's role in science and technology
<http://www.jst.go.jp/csc/scienceagora/reports/akn3.html>

【Outline】

We introduce various approaches and achievements of international research in global warming, sea-level rise, acid precipitation, and deforestation. A dialogue session will follow to discuss what we could learn, what we could do, and how Japan should act hereafter. We invite you to enjoy this session facilitated by an experienced science communicator and professional commentator.

Date : 10:30-12:30 November 8th (Sat), 2014

Venue : National Museum of Emerging Science and Innovation (Miraikan)

Organizer : Department of International Affairs, JST

Presenters :

Prof. Hajime Kayanne, The University of Tokyo

Prof. Atsuko Sugimoto, Faculty of Environmental Earth Science, Hokkaido

University

Dr. Romain Murenzi, Executive Director, The World Academy of Science

Ms. Eudy Mabuza, Minister-Counsellor: Science and Technology, South African Embassy in Tokyo

and others

【Result】

In order to solve cross-border global environmental issues such as the rise in sea level, glacier melting, and climatic change because of global warming, various kinds of approaches are required. In Agora Keynote Session 3, researchers who are working on international joint research provided the result of projects and the lesson learned from them, while attendants discussed together what kind of role Japan should play in the international society.



Fig. 8 Public discourse provided by Prof. Atsuko Sugimoto, Hokkaido Univ.



Fig. 9 Panel discussion

⑤Agora Keynote Session 4

Where does ambition come from? : Young innovator's on the front line

<http://www.jst.go.jp/csc/scienceagora/reports/akn4.html>

【Outline】

Top young innovators active in academia or business will give presentations about what sparked their ambitions, and the lessons they have learned. In the following panel discussion, we invite undergraduate students who have devoted their time to science since secondary education. Panelists will exchange ideas with the audience about their experiences, how they have made scientific connections with society, and the activities they have carried out to provide students with an insight into how to become the scientists they aspire to be. We invite you to join us in giving young minds a chance to flourish.

Date : 14:00-17:00 November 8th (Sat), 2014

Venue : National Museum of Emerging Science and Innovation (Miraikan)

Organizer : Department for Promotion of Science Education, JST

Presenters:

Dr. Takemasa Miyoshi, Team Leader, Data Assimilation Research Team,
RIKEN Advanced Institute for Computational Science

Mr. Junichi Sugahara, Executive officer, Spiber Inc.

Students from the Univ. of Tokyo, Osaka Univ., Waseda Univ. and Keio Univ.

【Result】

How have researchers, who are engaged in studies that change the world, made their way until now? In Agora Keynote Session 4, two persons provided their belief on performing innovative researches; Dr. Takemasa Miyoshi, Team Leader of the Data Assimilation Research Team at RIKEN Advanced Institute for Computational Science, who challenges to predict storm rainfall, and Mr. Junichi Sugahara, Executive officer of Spiber Inc., who works on artificially synthesizing spider silk. Furthermore, undergraduate and graduate students, who have attended Super Science High Schools (SSH), the Future Scientist Program, and world-class scientific contests, provided enthusiastic messages pertaining to scientific research experienced thus far, the relationship between research and society, as well as their prospect in the future to junior high school and high school students.

Many junior high school and high school students participated in this session. Because the two top innovators and undergraduate and graduate students who appeared on the stage were still very young, junior participants were able to come into contact with researchers closer to them.



Fig. 9 Public discourse by Dr. Takemasa Miyoshi, Team Leader, Data Assimilation Research Team, RIKEN Advanced Institute for Computational Science



Fig. 10 Public discourse by Mr. Junichi Sugahara, Executive officer, Spiber Inc.



Fig.11 Panel discussion

⑥Agora Keynote Session 5

Connecting individuals with their community - Designing a sustainable future -
<http://www.jst.go.jp/csc/scienceagora/reports/akn5.html>

【Outline】

Aging populations and climate change are issues humanity can no longer ignore. If we want future generations to have a good chance of facing these challenges, it is our responsibility to build a sustainable environment for them. This means rethinking the way we live, what we make, and the way our cities are built. In this session we will brainstorm ideas about how to build a sustainable future.

Date : 10:30-12:00 November 9th (Sun), 2014

Venue : National Museum of Emerging Science and Innovation (Miraikan)

Organizer : Research Institute of Science and Technology for Society (RISTEX)

Presenters :

Prof. Emile H. Ishida, Representative Partner, Earth Village Research Lab. LLC

Prof. Takashi Maeno, Keio University

Ms. Mariko Saigo, President, Machizukuri Company Sheep Network

【Result】

In this session, the following persons took the rostrum: Professor Takashi Maeno, laboratory chief of the Graduate School of System Design and Management, Keio University; Ms. Mariko Saigo, President, Machizukuri Company Sheep Network, also a city planner and a city constructor; Professor Emile H. Ishida, Representative Partner, Earth Village Research Lab. LLC (moderator).

Participants exchanged their opinions as to how people live their lives in towns, how to deepen technology and grow economy, and how to maintain balance between life and development of towns.



Fig.12 Session. From left, Ms. Mariko Saigo, Prof. Takashi Maeno, Prof. Emile H. Ishida (moderator).

⑦Agora Keynote Session 6

Socialization of Challenge: Why should we aspire for ground-breaking research projects that have high risk and aim at high reward?

<http://www.jst.go.jp/csc/scienceagora/reports/akn6.html>

【Outline】

In this session, we look back on a history of high risk research to get a bird's-eye view of what environmental and cultural aspects have made high risk research development possible. Then, we will discuss why we should have high risk research projects in science, how Japanese society has made them possible up to now, and what the issues are in order to socialize the spirit of challenge. A fresh example from the ImPACT program led by CSTI / CAO will be provided.

Date : 13:00-14:30 November 9th (Sun), 2014

Venue : National Museum of Emerging Science and Innovation (Miraikan)

Organizer :

Office for the Impulsing Paradigm Change through Disruptive Technologies Program, JST

Presenters:

Dr. Kazuo Kyuma, Executive Member, Council for Science, Technology and Innovation, Cabinet Office of Japan

Dr. Yasushi Sato, Fellow, Center for Research and Development Strategy, Japan Science and Technology Agency

Dr. Yoshinori Yamakawa, Program Manager, Japan Science and Technology Agency ImPACT Program

Ms. Masami Terada, Research fellow, Future Sessions Inc. Science Communicator

【Result】

High risk research is research that can bring substantial changes to the world when successful, even if the success rate is low. This has been implemented more than half a century earlier in the United States, and a program implementing high risk research has finally started in Japan as well. An executive member of the Council for Science, Technology and Innovation, Cabinet Office of Japan, a program manager who will work on high risk research from now on, and some journalists who are "eyes of society", were invited to discuss the background of how society began to seek high risk research and about its prospect in the future.



Fig. 13 Panel discussion

⑧Wrap-Up Session -Review of Agora-

【Outline】

- This workshop includes summarizing issues for designing Science Agora 2015 by reviewing the approach for this Science Agora with participants inside and outside JST.
- Potentiality for development of Science Agora should be investigated by receiving evaluation from the viewpoint of persons not confined to the Center for Science Communication, including exhibitors/participants outside JST, and persons who are responsible for various exhibitions/ sessions inside JST.
- Each department inside JST should provide an evaluator so that interest in Science Agora can be aroused within those departments, and thus making it easier to obtain cooperation from FY 2015 onward.

Date : 15:30-17:30 November 9th (Sun), 2014

Venue : National Museum of Emerging Science and Innovation (Miraikan)

Format: Workshop

- Comments from evaluators assigned beforehand
- Review of whether or not the goals of "enhancing the planning by participation of research communities" and "participation of stakeholders involved in science technology" have been accomplished, and discussion of tasks for the next year.
- General overview by the executive director, the owner of this workshop

Participants:

Prof. Tateo Arimoto, National Graduate Institute for Policy Studies
Mr Satoru Ohtake, Senior Executive Director, Japan Science and Technology Agency
Dr. Mamoru Mohri, Director-General, Center for Science Communication
Dr. Miyoko Watanabe, Senior Director, Japan Science and Technology Agency
and others



Fig. 14 Pictures from the workshop

【Result】

After re-confirming the goal set by Science Agora 2014, all participants listened to comments provided by those who were responsible for the evaluation (directors of JST and the Science Agora committee members). Afterward, people were divided into 5 groups with several persons each, and discussed what should be worked on in the next fiscal year.

Since JST provided a strong commitment to Science Agora as a member of the research community in 2014, the Science Agora will be able to take on further development in its 10th anniversary next year. However, many issues still remain. We would like to design Science Agora for the next fiscal year and onward based mainly on the issues raised this year.

(2) Exhibition project from outside JST

① **The wings of science for children all over the world - the case in Malawi, Africa**

【Outline】

We were involved in science education in Malawi, Africa, as a governmental organization, JICA's volunteers. We will introduce our science educational performance to share the fun of science with Malawian children. It includes simple

experiments with local materials, and a windmill our student designed will be displayed. Enjoy these experiments that African children have conducted and find out how they enjoy science.

Date : 10:00-17:00 November 8th (Sat)-9th (Sun), 2014

Venue : National Museum of Emerging Science and Innovation (Miraikan)

Organizer : PICO factory Japan

【Result】

We have engaged in science education in the Republic of Malawi, Africa. This time we associated with visitors by mainly providing exhibition of windmills for electricity-generation made by high school students whom we instructed in the country. We also provided some actual experiments that we had enjoyed with children in the country. We could see some visitors who looked into the material of the real windmills, and some children who were fascinated with the experiment using the material that can be easily obtained even in Africa. We are sure that visitors were able to experience Africa through science with the windmills and episodes that relate to the experiments. It was a great opportunity because visitors were able to enjoy "science" and consider "how to convey messages" regardless of difference in countries and ages. 【This won the Science Agora Award】

②We created the "5th Science and Technology Basic Plan" on our own!

【Outline】

The Project called "We Created the 5th Science and Technology Basic Plan on Our Own!" has been conducted since March 2014. This project provides ideas to the "5th Science and Technology Basic Plan", which is currently being prepared by the Council for Science, Technology and Innovation, Cabinet Office for implementation from 2016.

At Science Agora, we will announce the final proposal that was organized in the symposium held in October, and will hold a workshop for various visitors to consider what they can do for realizing the proposal.

Date : 10:30-14:30 November 9th (Sun), 2014

Venue : National Museum of Emerging Science and Innovation (Miraikan)

Organizer : Science Talks Committee

【Result】

A total of 13 researchers from various careers held a talk session with two parts, entitled "Something strange in Japanese research! Foreign researchers working actively in Japan, unorthodox doctors and researchers who have been active in society come together". The themes "Is Japan a country where people want to come for research?" and "Who decides that laboratories are only the places where doctors/researchers can play active roles?" were discussed, which encouraged participants to consider how an individual should challenge working in a career where no one has ever been, and how science and technology policies in Japan should support such individual work.

7. Transition of number of participants (exhibitors/visitors) in Science Agora

The number of participants (exhibitors/visitors) is shown in Fig. 15. There are some increases and decreases seen in the figure. However the numbers have increased as a whole.

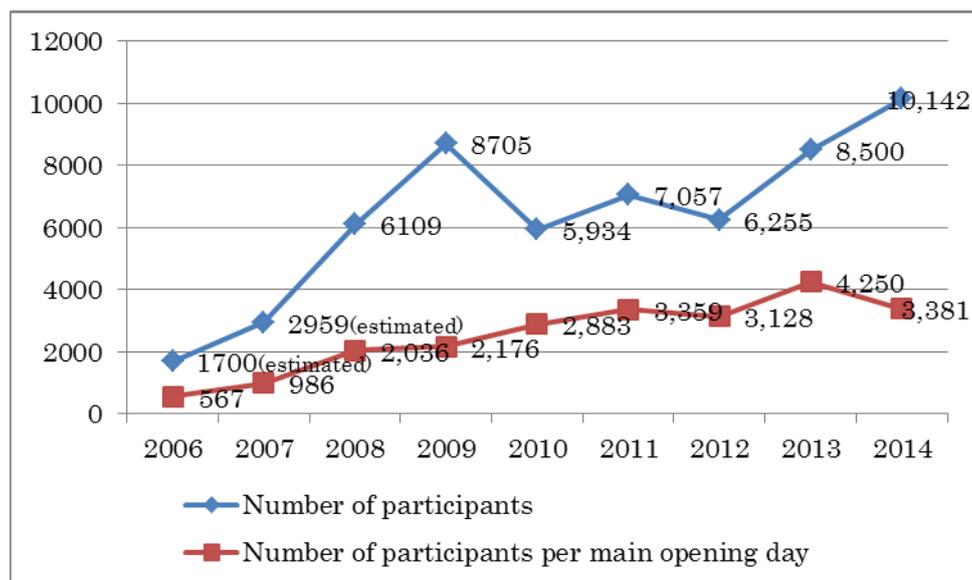


Fig. 15 Transition of number of participants

8. Attribute/number of participants in Science Agora 2014

The transition of the attribute and the number of participants are shown in Fig. 16 by dividing participants into exhibitors and visitors. Approximately a half of the number of projects and exhibitors are from universities and research institutes. However, exhibitions from sectors such as corporations and the industrial world, media, and politics and administration are further needed

As for the gender of visitors, 58% were males. As for the ages, those less than 10 years of age numbered the most, but a relatively balanced constitution of ages up to those 70 years old or higher were seen.

As for the attributes, the highest number was students with a ratio of 33%. Just as the exhibitors, the visitors from sectors such as corporations and the industrial world, media, and politics and administration are further needed.

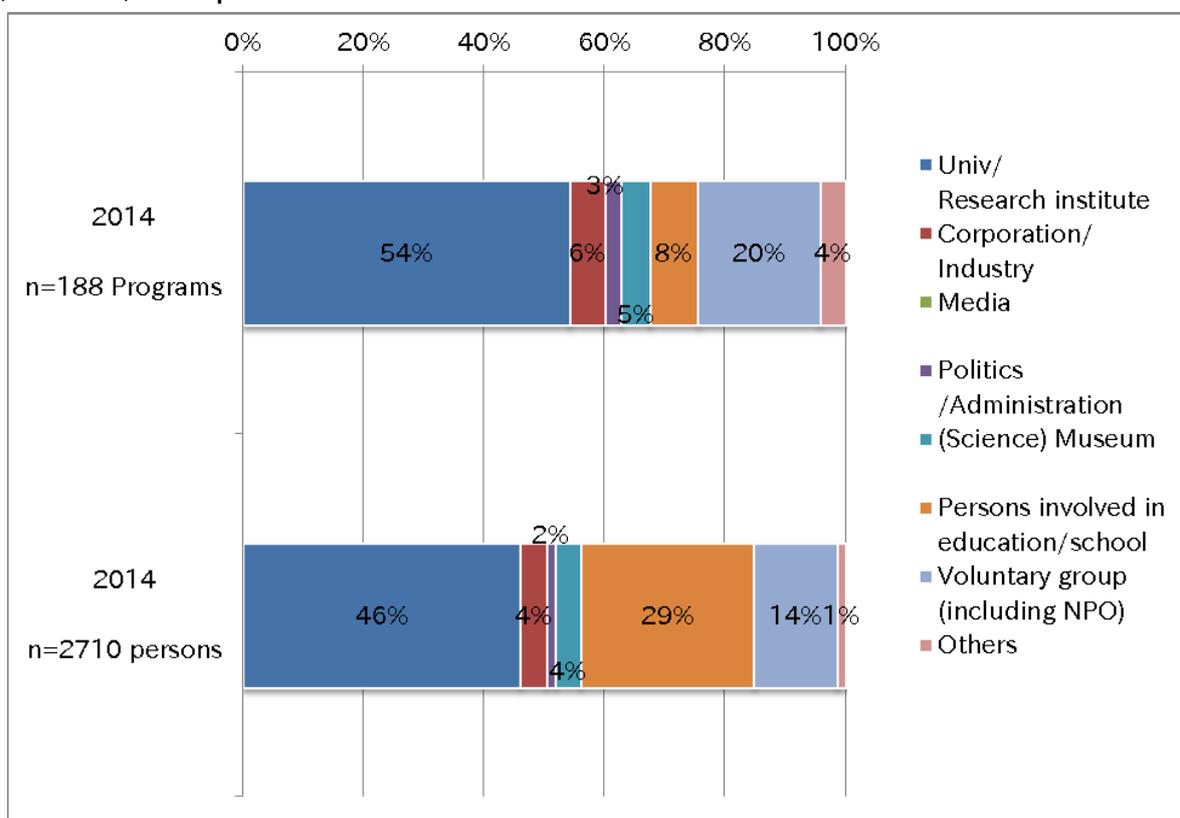


Fig. 16 Attribute of exhibitors

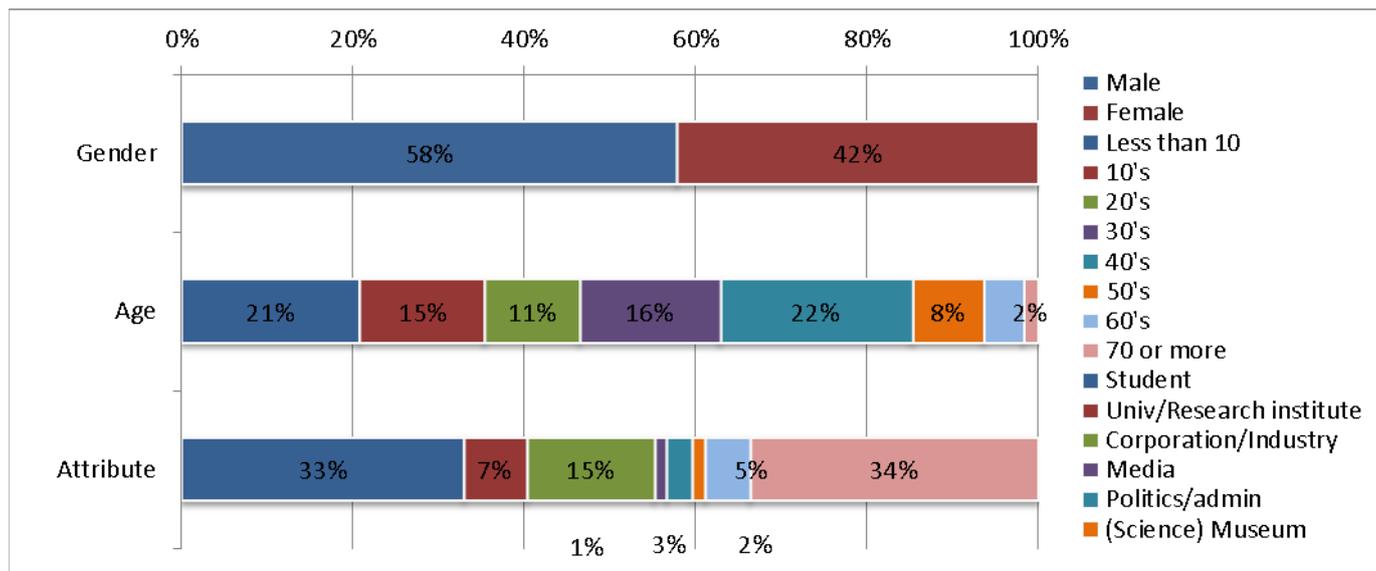


Fig. 17 Attribute of visitors (n=gender 7276, age 7282, attribute 7147)

9. Executing organization (Science Agora Committee)

Science Agora Committee, which consists of 15 members were established to conduct the tasks as below.

- (1) Review and inspect proposals of exhibitions
- (2) Select recipients of Science Agora Award
- (3) Provide advice for the overall implementation of Science Agora, and promote networking among exhibitors etc.

The followings are the members of the committee:

Prof. Kazuo Kitahara, Tokyo University of Science Graduate school of Mathematics and Science Education (Chairperson)

Dr. Hidehiko Agata, National Astronomical Observatory of Japan.

Mr. Tomoki Ikeda, Assistant Director and Manager Of Sales Plan, Fuji Television Network, Inc.

Mr. Koji Kitagawa, Project Team Leader, Panasonic Center Tokyo, Panasonic Corporation, and 11 other members

10. Budget

The total amount of the opening fee for Science Agora 2014 was 53,443,000 yen.

11. Schedule for 2015

The Schedule for Science Agora 2015, which will be its 10th anniversary, is as follows:

(1)Schedule: November 13th (Fri), 14th (Sat), 15th (Sun), 2015

(2)Venue: Odaiba area, Tokyo

(National Museum of Emerging Science and Innovation (Miraikan), National Institute of Advanced Industrial Science and Technology Waterfront, Tokyo Metropolitan Industrial Technology Research Institute, International Exchange Center, Symbol Promenade Park, Fuji TV Wangan Studio)

(3)Organizer: Japan Science and Technology Agency

(4)Joint Organizers (under negotiation): Science Council of Japan, National Institute of Advanced Industrial Science and Technology, Tokyo Metropolitan Industrial Technology Research Institute, Japanese Student Services Organization, Tokyo Academic Park, Tokyo Waterfront Subcenter Group

*More information will be provided later.

12. Contact

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<http://www.jst.go.jp/csc/scienceagora/>