

Basic Concept
for the National Astronomical Observatory
of Japan Museum (Tentative Name)

March 2015

Public Relations Center
National Astronomical Observatory of Japan

1 Background of the National Astronomical Observatory of Japan (NAOJ)

1) Present situation regarding the facilities of NAOJ open to the public

- One of the basic philosophies of NAOJ is that it is our responsibility as a fundamental science research institute to “open the observatory facilities to the public.” NAOJ Nobeyama campus has opened its facilities to the public on a regular basis and received visitor groups since the opening of the Nobeyama Radio Observatory (NRO) in 1982. NAOJ Mizusawa campus has opened its facilities to the general public on a regular basis starting from 2008, mainly at the Oshu Space and Astronomy Museum, which was created in the former main building located on the premises. This museum provides Four-Dimensional Digital Universe (4D2U) screenings and holds stargazing parties. In addition, the Mitaka Headquarters began night time stargazing parties twice a month in 1996, and day time opening of the facilities on a regular basis in 2000. About 30,000 people visit Mitaka campus each year.

2) Road to the basic concept of the NAOJ Museum (Tentative Name)

- The Public Relations Center was established in 1998 with the aim of widely disseminating information related to astronomy to the general public in addition to researchers. It has since initiated communication with a broad range of citizens including children. Within the framework of the Public Relations Center, various actions to disseminate information about NAOJ and astronomy have been reviewed and implemented, including the Public Relations Building plan, the Astronomy Park plan, the Astronomy Museum plan, and the concept of the NAOJ Museum.
- In 2008, the Archive Office was established to collect and preserve various documents and astronomy-related items dating from the Meiji era through to the present day, including astronomical observation equipment, buildings, and photographic plates.
- In 2010, when discussions about “the concept of the NAOJ Museum” were initiated, it was concluded that dissemination of the latest facts and discoveries related to astronomy is an essential task, denoted by the keywords: past, present, and future.

<Background to the Basic Concept>

Year	Month	Issued, Reviewed, and Implemented
1998		Public Relations Building plan
1999		Completion of “Public Information Building” (current South Building)
		Astronomy Park scheme
2000	Jul	NAOJ Mitaka Headquarters, opened Visitors’ Area to the public on a regular basis.
2004		Astronomy Museum scheme
2007	Apr	Opening of the 4D2U Dome Theater
2009	Jul	Opening of “Mitaka Picture Book House in the Astronomical Observatory Forest.”
2010		NAOJ Museum Concept
2012		Committee for the NAOJ Museum Basic Concept
	Nov	Symposium on the Museum
2013	Oct	NAOJ Museum Planning Meeting (at the Mitaka campus)
	Dec	NAOJ Museum Planning Meeting (at NAOJ Nobeyama)
2014	Mar	NAOJ Museum Planning Meeting (at NAOJ Mizusawa)
		Basic Concept of the NAOJ Museum

- In 2013, the Museum Project Office was established, and is now planning the concept of the “NAOJ Museum,” which would disseminate the latest astronomical knowledge in addition to the history of NAOJ and its observational equipment and technologies.
- Currently, NAOJ is working on enriching its observation facilities and opening them to the public. These facilities include Atacama Large Millimeter/submillimeter Array (ALMA) in Chile and the Subaru Telescope in the U.S. A. Moreover, construction of the Thirty Meter Telescope (TMT) is expected to be complete in 2020’ s. Therefore, there is a need for a museum as a place where citizens can become familiar with the research and discoveries of NAOJ—including its overseas research and development. Hence, as the first step of this process are planning the basic concepts, in line with the guidelines and goals for the NAOJ Museum Concept.

2 Hierarchy of Principles Guiding the Activities

The Charter of the National Institutes of Natural Sciences (NINS)

1. The Institutes are a federation of inter-university research institutions in various fields of the natural sciences.
2. The Institutes shall elucidate a broad range of natural phenomena.
3. The Institutes shall be essentially based on the free exchange of ideas and autonomy of researchers, and shall endeavor to develop new academic disciplines.
4. The basic activities of the Institutes shall be creative academic research at the constituent institutes.
5. Member institutes of the NINS shall respect each other's research and participate in the administration of the Institutes on an equal footing.
6. The Institutes shall contribute to the communities of researchers in individual fields as inter-university research institutions.
7. The Institutes shall actively participate in graduate school education and cultivate excellent human resources for the next generation.
8. The Institutes shall endeavor to collaborate with research organizations that are not a part of the Institutes, and act to strengthen academic research in Japan.
9. The Institutes shall act as an international research institute open to the public, in coordination with society.

The Philosophy of the NAOJ

Our Vision:

- To be innovators striving to solve the mysteries of the Universe

Our Mission:

- To develop and construct large-scale cutting-edge astronomical research facilities and promote their open access aiming to expand our intellectual horizons.
- To contribute to the development of astronomy as a world leading research institute by making the best use of a wide variety of large-scale facilities.
- To bring benefits to society through astronomy public outreach.

Our Products/Deliverables:

- To explore the unknown Universe and provide new insight into astronomy.
- To make our research outcomes widely known to society and pass on our dreams to future generations.
- To mentor next-generation researchers for their role on the world-stage.

The Philosophy of the NAOJ Public Relations Center

To deliver cutting-edge dynamic research on astronomy by the NAOJ, which is a world-class research institute of astronomy in Japan.

●Public Relations Office

- To send information of the most recent astronomical discoveries and achievements to the public as well as the processes behind the discoveries and achievements, in order to share the wonder and fascination of the Universe with everyone.

●Outreach Office

- To promote science communication activities related to astronomy with staff members of NAOJ and their collaborators in order to make astronomy more popular and to form a culture of science.

●Museum Project Office

- To present instruments and facilities to the public systematically from the past to the latest astronomy.

3 Basic Principles of the NAOJ Museum

Traits and Advantages of Astronomy

Astronomy is one of the world's oldest forms of science communication.
 Astronomy is one of the world's oldest scientific disciplines and is also a cutting-edge discipline.
 Astronomy is a discipline which has a broad interfaces with science, literature, art, philosophy, and so on.

Vision Guiding Our Activities

To be a “Gateway” that links the past, present, and future of astronomy in Japan

Goals of the NAOJ Museum

Objectives

Everyone can be familiar with the Universe.

*Everyone means all people, regardless of age, gender, nationality, or level of disability.

Mission

- ▶ Present the latest NAOJ-driven astronomy at on-site exhibits.
- ▶ Be a pioneer of science communication in astronomy.
- ▶ Catalog and conserve the historically-important instruments and documents owned by NAOJ.
- ▶ Increase the international presence and visibility of NAOJ by sharing resources and activities.

Expected achievements

Everybody can depict a general image of the Universe by following the path of astronomical research from the past, through the present, and moving forward to the future.

How to engage people in astronomy through the framework of the NAOJ Museum

1) Meeting researchers and technical staff members at the NAOJ Museum

- Develop a system of daily scientific communication between NAOJ staff members and the general public.
- Build a system whereby researchers can feel pleasure in sharing his/her research results with the general public.

2) Encountering the history of astronomy in Japan, observation results from various locations of the world, and the latest astronomy advances

- Present of the history of Japanese astronomy from the past to the current international projects and the cutting-edge research products as well as an introduction of NAOJ as a national center of astronomy.

3) Being fascinated by the NAOJ Museum, wanting to come again to make more discoveries

- Fascinating contents for astronomy lovers, science fans, and museum fans which will make them “NAOJ fans.”
- Projects such as special exhibitions and updating permanent exhibitions which will make people into repeat visitors of the NAOJ Museum.

4 The Main Facilities of the NAOJ Museum



Mitaka, Tokyo

- 1 Mitaka Headquarters**
- 20-cm Telescope Dome
 - Solar System Walk
 - Observatory History Museum
 - Solar Tower Telescope
 - Exhibition Room
 - Old Library
 - Transit Instrument Building
 - Gautier Meridian Circle
 - Astronomical Instrument Museum
 - Solar Flare Telescope ★
 - 50-cm Telescope for Public Outreach ★
 - 4D2U Dome Theater ★
 - ※Mitaka Picture Book House in the Astronomical Observatory Forest (by Mitaka City)

Nobeyama, Nagano

- 2 Nobeyama Radio Observatory**
- 45-m Radio Telescope ★
 - Nobeyama Millimeter Array
 - Exhibition Room
 - Nobeyama Radioheliograph ★
 - Nobeyama Radio Polarimeters
 - ※Minamimaki Village Rural Exchange Center "Vegetaball With" (by Minamimaki Village)

Mizusawa, Iwate

- 3 Mizusawa VLBI Observatory / RISE**
- Kimura Hisashi Memorial Museum
 - Visual Zenith Telescope Building
 - Supercomputer " ATERUI" ★
 - 20-m Radio Telescope for the VERA Project ★
 - 10-m Radio Telescope ★
 - ※Oshu Space and Astronomy Museum (by Oshu City) w/4D2U ★

Okayama

- 4 Okayama Astrophysical Observatory**
- The 188-cm Reflector ★ Telescope
 - ※Okayama Astronomical Museum (by Asakuchi City) w/4D2U ★

Ishigakijima Astronomical Observatory

- 5 Ishigakijima Astronomical Observatory**
- MURIKABUSHI Telescope ★
 - 4D2U ★
 - 20-m Radio Telescope for the VERA Project ★

Hawai'i, USA

- 6 Subaru Telescope**
- The Subaru Telescope ★
 - ※Iimiloa Astronomy Center of Hawai'i (by University of Hawai'i at Hilo) w/4D2U ★
 - TMT (from 2020' s)

Space

- 8 Hinode**
- Hinode (Solar-B) ★

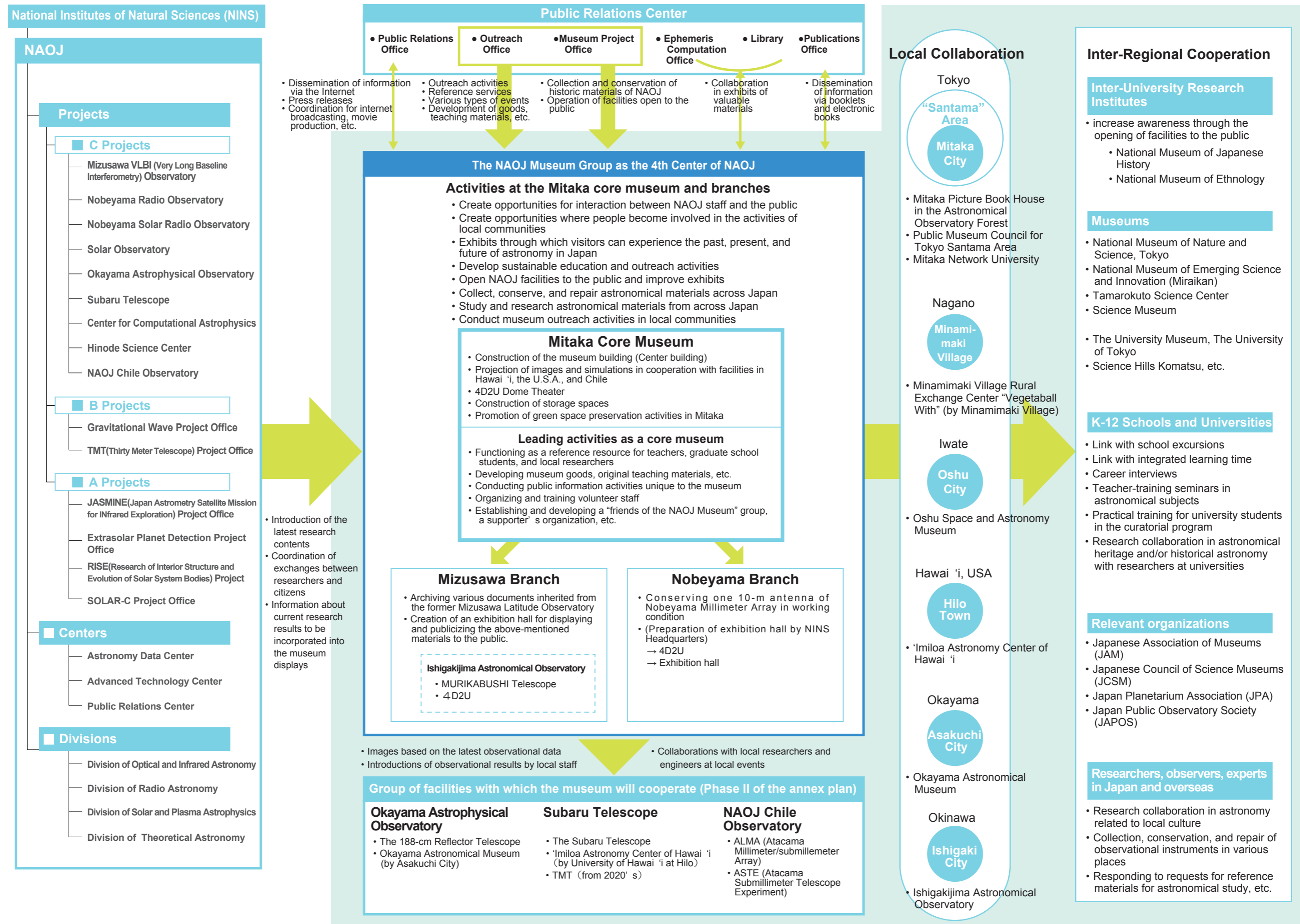
Chile

- 7 NAOJ Chile Observatory**
- ALMA (Atacama Millimeter/submillimeter Array) ★
 - ASTE (Atacama Submillimeter Telescope Experiment) ★

The NAOJ Museum will visualize scientific outputs and astronomical images in collaboration with each observatory of NAOJ.

★ Telescopes and facilities currently in operation
 ※ collaborative facilities

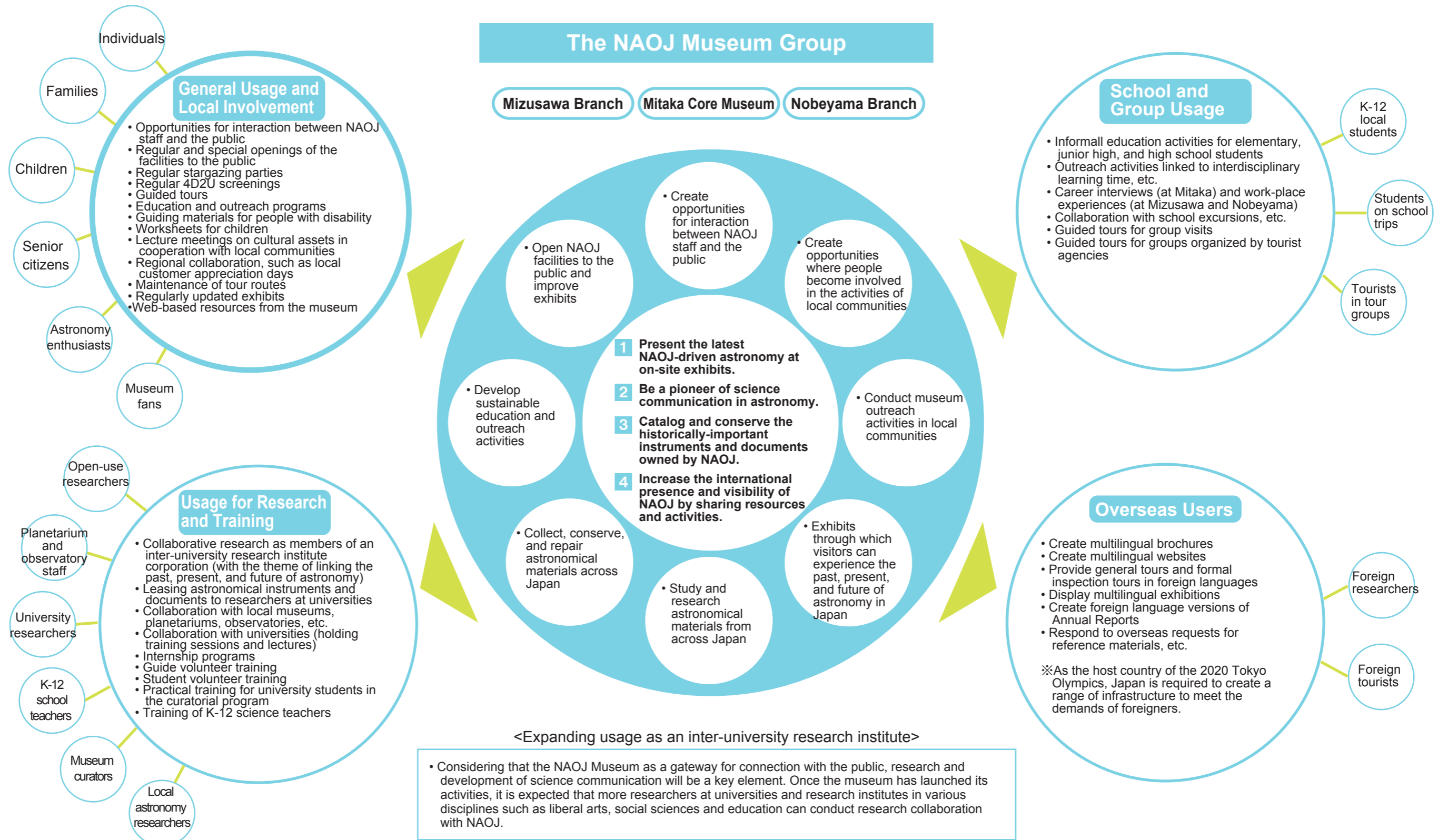
5 To meet NAOJ staff members at the Mitaka Core Museum and branches



6 Target Audience

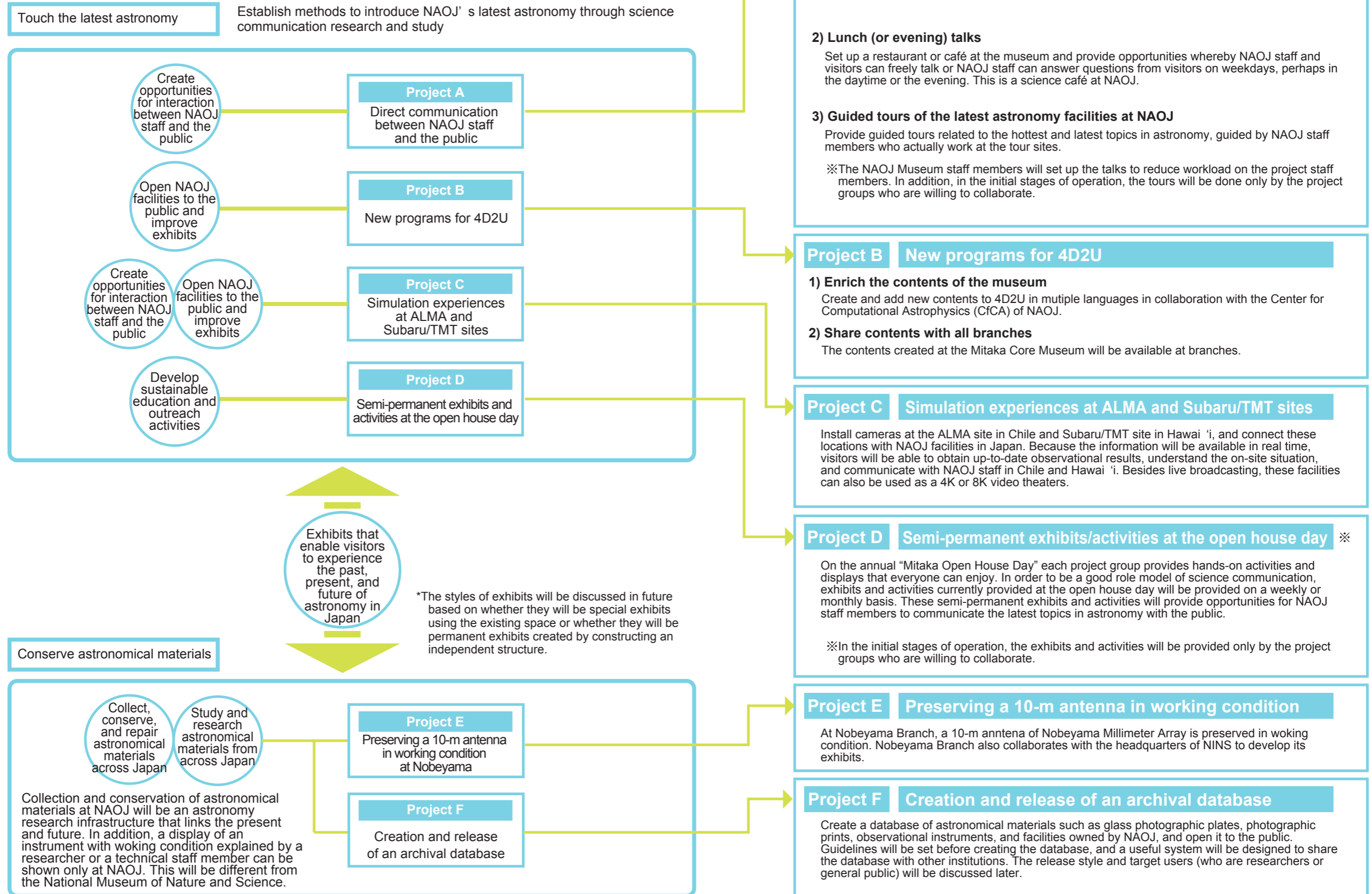
Identifying the Users of the National Museum

Because NAOJ is a national facility and also plays a roll of inter-university research institute, its museum should target a broad range of people. In this sense, the NAOJ Museum needs to make exhibits and disseminate information to meet a wide range of ages and interests, from people who are not so interested in astronomy to enthusiastic astronomy fans. In addition, as Japan's national center for astronomy, the museum must also appeal to foreign people. Here, the target users of the museum are classified based mainly on their backgrounds and purposes of use.



7 Examples of New Projects at the NAOJ Museum

• Through developing the new projects described below, NAOJ is expected to enhance its presence and visibility in Japan and overseas.



8 Organization

Role	Outline	Major tasks
Director	Director of the NAOJ Museum. He/she will make decisions on the annual/mid-term/long-term policies of the museum. The Director may need to play a role in public relations, such as engaging in collaboration with other museums.	<ul style="list-style-type: none"> • Supervising and managing the entire organization • Leadership in science communication • Promoting overseas releases and strengthening connections and communication with other countries, in order to improve international visibility
Deputy Director	As the person responsible for the Mitaka Core Museum, the Deputy Director will supervise research, education/outreach programs, and exhibitions. He/she will also produce general projects and plans which include the Mizusawa and Nobeyama branches.	<ul style="list-style-type: none"> • Managing the Archive Department, the Facility Opening Department, the Administrative Department
Archive Department	The main task of the Archive Department will be to collect, conserve, and repair astronomical materials, such as observational instruments and documents owned by NAOJ. The staff members of this department should be knowledgeable about conservation and repair techniques. The department will study and research the materials in collaboration with research institutes and universities.	<ul style="list-style-type: none"> • Storing and managing the collections • Creating and publishing an online database/catalog • Research collaboration based on astronomical materials with other institutions • Organizing special exhibits • Creating a database/catalog in English
Facility Opening Department	The Facility Opening Department will mainly be responsible for opening NAOJ facilities to the public, and for creating opportunities for interaction between NAOJ staff and the public. This department will hold 4D2U screenings, developing exhibits and video clips. It will also plan and implement event programs. The staff members will study, research, and practice the latest science communication, and promote education and outreach programs. They should be knowledgeable about planning and developing exhibits.	<ul style="list-style-type: none"> • Creating opportunities for interaction between NAOJ staff and the public • Opening NAOJ facilities to the public • Hosting stargazing parties on a regular basis • Holding regular 4D2U screenings • Providing guided tours • Developing exhibits and video clips • Planning and implementing event programs • Releasing research products • Organizing special exhibits • Managing the exhibits • Training guide volunteers • Practical training for curatorial students • Providing virtual guided tours on the website • Updating the exhibits • Publishing mail magazines
Administrative Department	The Administrative Department will be in charge of administration of the NAOJ Museum. This department operation of the facilities and coordination of the venues for lectures and programs. The staff members will also be in charge of general affairs, financial affairs, and procurement.	<ul style="list-style-type: none"> • General administrative tasks relating to the museum: accounting work, facility administration, and handling requests from other departments within the museum.
Mizusawa Branch and Nobeyama Branch	These branches will play the role of contact point with other local organizations. they will also plan and manage exhibits and activities in collaboration with Mitaka Core Museum.	<ul style="list-style-type: none"> • Conducting research and study of astronomical materials • Creating and publishing an online database/catalog with Mitaka Core Museum. • Releasing research products • Organizing Special exhibits • Disseminating the latest information

* Either the Director or the Deputy Director must be knowledgeable about old astronomical materials.

* Staff members with highly-professional skills (such as curators) will need to be assigned to the Archive Department and the Facility Opening Department.