"Spacewalk" - A New Featured Visual Program at the VR Theater! 3D Visuals derived from the latest Astronomy data -

The National Museum of Emerging Science and Innovation (Miraikan) (Director: Mamoru Mohri, Address: Aomi Koto-ku Tokyo) will release "spacewalk," a program of visuals at the VR Theater on the 5F, starting this July 16 (Sat.), 2005 as a new permanent exhibit. The new visuals that will be released this time are part of an original program based on the "hierarchical structure of the universe," "simulation of the formation of the moon" and the "simulation of the formation of a spiral galaxy" that were specially selected from contents of the 4D2U project of the National Astronomical Observatory of Japan.

> In "spacewalk," a new program of visuals at the VR Theater, you can experience the "face" of the universe unlocked by the latest astronomy research and presented with amazing 3D visuals. The staff of Miraikan will explain the most reliable interpretation of images of the universe based on data obtained by the latest research in an understandable fashion. In addition, the visitors can also experience moving freely in space by independently manipulating a controller.

> The National Astronomical Observatory of Japan based the 4D2U project upon the latest astronomical data obtained from a supercomputer linked to observation satellites, and telescopes located all over the world. The collected data is visualized using 3D data. This will be the first full-scale release outside of the National Astronomical Observatory of Japan in terms of being able to view 3D visuals with live explanations.

At Miraikan, we have greatly upgraded the VR Theater at the permanent exhibition site by adopting a new stereoscopic system with spectroscopic capabilities in order to produce high quality 3D visuals. This technology, which makes 3D visualization possible by using special glasses and filters on a normal screen, will be an adoption of new technological advances that have not yet been distributed in Japan.
At the National Museum of Emerging Science and Innovation, we will work for the further promotion and understanding of cutting-edge science and technology as we develop new plans and exhibits based on the latest science and technology which are designed to meet the changing needs of society.

---

**Outline of the new program "spacewalk"**

**4-Dimensional Digital Universe (4D2U) Project**

The National Astronomical Observatory of Japan's 4-Dimensional Digital Universe (4D2U) Project is conducted by: Research and Development for Applying Advanced Computational Science and Technology of the Japan Science and Technology Agency (ACT-JST) for "Data Construction of 4-Dimensional Digital Universe and its Application" (Research representative: Dr. Norio Kaifu) (2001 - 2004).


This "4-dimensional digital universe theater," --- a 4-dimensional visualization experiment system, --- was developed and available at the Mitaka Campus of the National Astronomical Observatory of Japan approximately once every 2 months. It was developed mainly by researchers and was based on the latest observations and simulations and presents a realistic vision of the universe as depicted with computer graphics. The National Museum of Emerging Science and Innovation will be the first release outside of the National Astronomical Observatory of Japan in terms of being able to view the original contents in 3D.
"Spacewalk" that will be released in Miraikan

(1) Concept
The National Museum of Emerging Science and Innovation is dedicated to sharing the latest results in the field of research with the general public in an understandable fashion, in order to report on cutting-edge science and technology. In recent years, with the rapid evolution in Astronomy, our concept towards the universe has been rewritten. By introducing the contents of the National Astronomical Observatory of Japan's 4-Dimensional Digital Universe (4D2U) Project to Miraikan, we bring the latest results of astronomy obtained by observation and simulation to the people. In order to make use of the characteristics of the 4D2U data, we have upgraded our existing theater so that it could project 3D visuals, and powerful CG visuals can be enjoyed. In addition, the interpreters of Miraikan will introduce the face of the universe unlocked by the latest astronomy in a wholly understandable fashion. Also, in order for visitors to get an actual sense of the vast universe, visitors can freely enjoy space travel by independently manipulating the controller.

(2) Story
Traveling the Solar System:
The observations, using a high-powered telescope and space probes, have shown us a new face of our solar system. For example, the Kuiper-belt object represented by the new astronomical object, "Sedna," was discovered outside of Pluto. Also, the existence of a large astronomical object in addition to the familiar 9 planets in the solar system was found. Furthermore, the Oort cloud is thought to exist in a state which it surrounds the Kuiper-belt. We now understand that if we include the Oort cloud (thought to be one of the homes of comets) the diameter of our solar system could be measured in a year by utilizing light years as a measurement system. Freely travel this vast solar system, which is far bigger than we ever imagined, as we depart the earth. Also, we will show the closest moon, which actually might have been a part of the earth, with simulation images.

Beyond the solar system:
Furthermore, when we continue with our trip outside of the solar system, you will see the world of stars that is visible in the night sky. When we continue moving using an accurate map of the stars created by the observations of
satellites, we will find that the Milky Way is actually a collection of countless stars.

Plus, you will also find that our sun is just one of the countless stars in the galaxy. We will show you, by employing simulation images, how a swirling galaxy like ours was created.

**To the End of Universe:**

When you travel further beyond the galactic system, you will notice that there are a lot of galaxies, each of which are a massive collection of stars. Today, based on the observed position of the galactic systems, the creation of a map of the universe is in progress. From our past observations, we have found that in the universe, there are boundaries where galaxies are closely spaced. From the map of the universe based on the latest observations, let's take a look at how the universe is structured.

Finally, we will return quickly from the end of the universe to our solar system where our earth is located. The more we learn about the universe, the more we notice that our earth is not the only special place in its rich vastness. Our interest toward the universe will definitely be enhanced.

---

Hierarchical structure of the universe (Image provided by: 4D2U project of the National Astronomical Observatoty of Japan)
(Left) Simulation of the formation of the moon (Right) Simulation of the formation of a spiral galaxy (Image provided by: 4D2U project of the National Astronomical Observatory of Japan)

<Inquiries from general visitors>

The National Museum of Emerging Science and Innovation (Miraikan)
2-41, Aomi, Koto-ku, Tokyo, 135-0064 Japan
TEL: +81-3-3570-9151 / FAX: +81-3-3570-9150
URL: http://www.miraikan.jst.go.jp

<For further information, contact the following>

National Museum of Emerging Science and Innovation (Miraikan)
Mr. Mutsuhiko Masuda (press@miraikan.jst.go.jp), Public Relations Group
Ms. Junko Suzuki (press@miraikan.jst.go.jp), Public Relations Group
2-41, Aomi, Koto-ku, Tokyo 135-0064
TEL: +81-3-3570-9192 / FAX: +81-3-3570-9160
URL: http://www.miraikan.jst.go.jp