Creative Informatics for the Earth

Chair
Hitoshi Matsuoka
Principal Investigator, Miraikan

November 15th, 2017
Speakers

Hitoshi Matsuoka
Principal Investigator, Miraikan

Daisuke Matsuoka
Scientist
Japan Agency for Marine-Earth Science and Technology (JAMSTEC)

Synichi Yamamoto
Artist/Creative Director, Omnibus Japan

Gopal Shah
Product Manager, Google Earth, Google
Hitoshi Matsuoka is in charge of collecting scientific data, developing visualization methods for effective communication and creating strong partnerships with research institutions in Japan and abroad. He will present an overview on how are scientific data used for communicating science in Miraikan.
Geo-Cosmos

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

Number of pixels
Over 10m. pixels
Question

What should we communicate to visitors?

Feel a sense of crisis and ponder one’s role in facing global challenges
What should we communicate? (1)

The facts presented and proven scientifically

Ex. The sheer amount of endangered and extinct species
Humans & The Extinction Crisis

Ocean Vegetation
Abundant phytoplankton in the polar regions
Migratory Routes of “Arctic Tern”

35,000km migration from Arctic to Antarctica

- Solar Energy
- Organic plant matter
- Blooming phytoplankton
- Small fish preying on phytoplankton
What should we communicate? (2)

The effects of human activities

Ex. Exponential population shift from rural to urban areas
Urbanization

Total estimated to reach 10 billion by 2050
70% of the population will reside in urban areas by 2050

“IBUKI” Observation

Monitoring the density of greenhouse gases

More specifically, the worldwide allocation of greenhouse gases
What should we communicate? (3)

How climate change will affect the future

Ex. Predictions from the Intergovernmental Panel on Climate Change (IPCC)
Future Projection – Air Temperature

Temperature difference of the average from 1971 to 2000
We posed the question...

How do we communicate with visitors?

We hope to answer that question with our exhibit

“Discover your Earth”

Geo-Cosmos, Geo-Scope, Geo-Prism
How do we communicate? (1)

Question
How to gain new perspectives of the Earth?

Geo-Scope
An interactive board making it easy to find and observe global-scale data
Geo-Scope

Interactive board 13 tabletops with touch-panel displays
How do we communicate? (2)

How can we gain new perspectives of the Earth?

Through Geo-Prism

A System using AR technology to display data and simulations overlaid on Geo-Cosmos
Geo-Prism

Touchscreen terminals using AR technology around Geo-Cosmos
Conclusion

We hope through Miraikan you will be able to…

Understand facts presented by science

Think about the converse effects on the environment due to human activity

Realize how much climate change will affect our future
Thank you for your attention!

Hitoshi Matsuoka
h-matsuoka@miraikan.jst.go.jp