IAC-25-E1.9.12(x95673)

Implementing a Rural Revitalization Project to Turn My Hometown, Komono Town, into a "Space Town"

Hikaru Otsuka[a]*, Taichi Yamazaki[b]

[a] *CEO of Online School SKIP, 4229 Chikusa, Komono, Mie-gun, Mie, 510-1251, Japan, hikaru.choko68@gmail.com*
[b] *CEO and Astronaut, ASTRAX, Inc., 2-23-17 Komachi, Kamakura, Kanagawa, 248-0006, Japan, taichi.yamazaki@astrax.space*
* Corresponding Author

Abstract

In Japan, the concentration of population in urban areas, declining birthrates, and an aging population have resulted in the decline of rural areas. As the population of rural areas declines, the people who live there are also losing their vitality.

In order to solve these problems, I have planned a space project to revitalize the region by turning my hometown, Komono Town, into a "space town. I presented the details of this plan in my 2023 paper.

Based on that plan, last February 2024, we held a program to give children dreams by holding lectures by commercial astronauts at all elementary and junior high schools in my hometown.

In addition, in August 2024, we invited Indian space researchers to our hometown in order to expose children and their parents in our hometown to cutting-edge space development, and held an event where they could learn about space and interact with each other.

This year, 2025, we also plan to collaborate with space professionals from India, Finland, China, and South America to host an event where people from these countries can learn about and interact with space online. This will help to generate interest in our home town, a tourist destination in Hot Springs, and attract visitors from abroad.

In addition, nearly half of the population in rural areas is elderly. We will use vacant houses, which are increasing due to population decline, to provide private space education not only for children but also for the elderly. At the same time, we will cooperate with local media to disseminate space education programs targeting the elderly.

The elderly can find a purpose in life by having a goal of space travel. In addition, vacant houses can be effectively utilized, which will lead to the revitalization of local communities.

In this paper, I will report the results of the verification of the project's practice, effectiveness, and issues to revitalize the local community by turning my hometown, Komono Town, into a "space town.

Keywords: Komono-cho, Revitalization of a local area, SKIP

Nomenclature
Komono-cho: A local town in Mie Prefecture in Japan

Acronyms/Abbreviations
SKIP: Star Kids International Program

1. Introduction

In recent years, Japan has been facing the problem of population decline and rural depopulation due to young people moving to urban areas. My hometown, Komono Town, is no exception, with a declining population and an increasing number of vacant houses and vacant lots.

At SKIP (Star Kids International Program), the online learning school I run, we implement a private space education program as part of our lessons.

In a 2023 paper, I presented a "local revitalization project to transform my hometown of Komono Town into a 'space town.'

Through this private space education program, I have been planning to revitalize my hometown of Komono Town as a "space town" and have been implementing various space education events over the past two years.

Specifically, I have conducted lectures by commercial astronaut at all elementary and junior high schools in Komono Town (Refer to Chapter2), invited Indian space development researcher to Komono Town to conduct space education event(Refer to Chapter3), conducted a space story session at "Child-friendly dining program"(Refer to Chapter4) , collaborated with a popular local YouTuber to broadcast space-related programs for the elderly(Refer to Chapter5),and conducted a space lecture for parents and children featuring a commercial astronaut(Refer to Chapter6).

Going forward, we plan to collaborate with space education professionals from Finland, India, China, and South America to conduct online space education events(Refer to Chapter7).

2. Lectures by commercial astronaut

2.1 Outline of Lecture

To inspire dreams about space among children and students residing in Komono Town, space lectures by a commercial astronaut(Taichi Yamazaki) were held in February 2023 (Refer to Figures 1 and 2).

The lectures were held at all elementary and junior high schools within the municipality (5 elementary schools and 2 junior high schools). The total number of enrolled students is approximately 4,000.

To coordinate with the school curriculum, the lectures targeted 5th and 6th graders in elementary school and 1st and 2nd graders in junior high school.

By conducting the lectures at the schools, we were able to inspire dreams and hopes for commercial space travel in many children.

Fig. 1 Space lecture at a junior high school in Komono Town

Fig. 2 Space Lecture at a junior high school in Komono Town

2.2 Effect and Problem

The results of the questionnaire survey conducted after the lecture revealed that students showed strong curiosity about private space travel and demonstrated heightened motivation to learn about space. Approximately 1,500 questionnaires were completed.

In particular, many responses indicated a desire to "visit space in the future" or "pursue a career in space development," clearly indicating a significant educational impact.

However, many students tend to be instructed by their parents upon returning home to focus on homework and tests rather than space. Consequently, the curiosity sparked by the lecture often fails to persist within the home environment and is observed to fade within a short period.

In other words, it became clear that an approach limited solely to the educational setting has limitations in sustaining students' curiosity about space over the long term.

2.3 Solution

To solve this problem, it is necessary to hold space events not only for students but also for parents and children together, encompassing the entire family.

At these parent-child events, I aim to help parents understand not only the future of the commercial space industry but also the educational benefits of space education.

Specifically, I conducted space lecture and airship designed for kids controlling experience sessions for parents and children (Refer to Chapter 3 below).

3. Space Lecture and Airship designed for kids controlling Experience Session for Parents and Children

3.1 Outline of the course

The lectures by a commercial astronaut at schools conducted in February 2024 were targeted solely at students, leading to the issue of sustaining curiosity within the home environment, as described in Section 2.2 above.

Therefore, in August 2024, I held a community-wide space event targeting parents and children.

For this event, I invited Professor Shreya Santra, an Indian researcher specializing in space exploration robots from the Graduate School of Engineering, Department of Aerospace Engineering at Tohoku University, to Komono Town. She delivered a lecture on cutting-edge space development research. This allowed participants to learn about the current state and future prospects of space exploration from an international and academic perspective (Refer to Figure 3).

Additionally, in partnership with airship researchers, I conducted an airship designed for kids controlling experience session for parents and children. This hands-on experience allowed participants to deepen their interest in the aerospace field through practical controlling, complementing the theoretical learning (Refer to Figure 4).

Furthermore, I invited an expert from the Japan Mars Society to report on the latest research trends regarding future Mars colonization.

Fig. 3 Lecture by Professor of Aerospace Engineering, Tohoku University

Fig. 4 Controlling Airship designed for kids

3.2 Effect and Problem

This event was a large-scale initiative inviting experts involved in space development from distant locations. Local media covered the event, which was reported in newspapers and on television news, making it a major summer event. Held during the Obon holiday period, it also drew participants from other prefectures. After the event, attendees visited local tourist spots, contributing to a certain degree of revitalization for the regional economy.
Furthermore, as it was an experiential event for parents and children, scenes of families excitedly discussing the airship controlling experience afterward were observed, indicating it achieved a certain level of success.

However, the biggest problem was the difficulty in promoting this event.

The lectures by the commercial astronaut (Refer to Figure1) were held at local elementary and junior high schools. Therefore, the issue of promoting event did not arise.
On the other side, this event required people to come to a facility outside of school during summer vacation, creating a new problem in attracting attendees.
For most people in Japan, space remains a distant concept. Due to the lack of interest in space, attracting attendees was extremely difficult.
Additionally, limited advertising media and awareness-raising methods were also contributing factors.

*3.3 Solution*I

I invited event participants to join our social media community to encourage registration. This provides a space for them to maintain their interest in space even after the event concludes. It also enables us to share ongoing information about future space events.
Additionally, I partnered with a local YouTube influencer to plan announcements for future events within their YouTube program. This approach is expected to reach audiences not accessible through traditional advertising methods.

4. Conducting a space story-telling session at "Child-friendly dining program"

4.1 *Outline of the course*

"Child-friendly dining program"is a community space that provides warm meals to local children while also serving as place for them to gather and fostering social interaction.
I held a Space Story-telling Session. Specifically, before the meal, I conducted a lecture on space (Refer to Figure5) terwards, while eating, participants discussed future private space travel and their dreams related to space with each other (Refer to Figure6).
This initiative aims to bring the often perceived as specialized and complex theme of space into the local community setting. By doing so, it seeks to help children feel space is accessible and part of their everyday lives.

Fig.5 Space story session at Child-friendly dining program

Fig.6 Child-friendly dining program

4.2 Effect and Problem

Child-friendly dining program brings together volunteer adult staff and local children to enjoy meals and socialize together.

By introducing the often perceived as specialized and complex theme of space into the local community setting, children were able to experience space as something familiar, an extension of their everyday lives.

However, Child-friendly dining program is primarily space focused on providing meals and fostering interaction; It is not equipped with facility designed for hosting lectures or workshops.

Consequently, It often lacks internet connectivity (Wi-Fi). It can pose difficulties when attempting to utilize online materials or videos.

Furthermore, audio equipment like microphones and speakers, as well as devices such as screens and projectors, may be insufficient. Consequently, in larger venues, it may be difficult for all participants to fully understand the lecture content.

4.3 Solution

By bringing portable Wi-Fi devices, the organizers enabled the use of online materials and videos.

They also made efforts to utilize portable speakers and tablet devices where possible, allowing participants to share videos and audio.

5. Collaborating with a popular local YouTuber to launch space education programs for seniors

5.1 Outline of Space Education Programs

In Komono Town, seniors account for nearly half the population. Given this regional characteristic, space education activities targeting only children and families are insufficient; programs for the senior demographic must also be developed.

Therefore, we have partnered with a popular local YouTuber (3,000 subscribers) who creates content for seniors to begin producing and distributing space education programs enjoyable for older adults (Refer to Figure 7).

Fig.7 YouTube Space Education Program

5.2 Effect and Problem

After distributing the space education program, we received comments from viewers stating, “I learned about the new field of space travel,” indicating a certain effectiveness in stimulating the intellectual curiosity of older adults.

However, many subscribers to this YouTube channel primarily follow it to obtain information about local restaurants and daily life.

Consequently, the proportion of viewers interested in space is low, presenting the challenge of low viewership for space-related programs.

Specifically, while the channel has approximately 3,000 subscribers, the space program has only garnered around 100 views. This view count is significantly lower compared to other popular programs, which have exceeded 90,000 views.

5.3 Solution

We will design programs to capture the interest of older adults. Within our space programming, we will incorporate elements like “private space travel with grandchildren” to enable older adults to enjoy videos together with their grandchildren.

Furthermore, since awareness of our space programming is currently limited, we will leverage other space-related events—such as space lectures and space workshops at community cafeterias—to promote it. This will raise awareness of our space programming among event participants and increase viewership.

6. Implementation of Parent-Child Space Lectures

6.1 Outline of Space lecture

In February 2024, I held a space lecture by commercial astronaut Mr. Taichi at elementary and junior high schools in Komono Town, but the issues mentioned in Section 2-2 remained unresolved.

Therefore, this time, I held a space lecture by a commercial astronaut in September 2025, targeting not only children but also parents and children together.

Furthermore, to address the issue mentioned in Section 3-2, we collaborated with a popular local YouTube influencer to promote the event (Refer to Figure 8).

Fig.8 Announcement for Parent-Child Space Lecture

6.2 Effect and Problem

I promoted the event through influencers' social media, which generated a certain level of anticipated attendance. Additionally, I received registrations not only from parents and children but also from seniors, allowing us to reach a wide range of age groups.

However, I was unable to attract a sufficient number of attendees. The venue could accommodate approximately 500 people, and our goal was to draw 300 attendees, but attendance only reached around 100.

6.3 Solution

I need to continuously raise awareness by conducting educational activities such as lectures by space professionals, hands-on workshops, and space education programs.

7. Collaborate with international space education partners to hold online space events

7.1 Outline of International Online Space Education Events

We will hold an online space education event utilizing our international network. In collaboration with space education stakeholders from Finland, India, China, and South America, we will host an online event for parents and children.

The purpose of this event is to introduce parents and children who are more interested in overseas experiences than space to the new theme of space through international exchange experiences.

This aims to expand participation to new demographics. Furthermore, it enables deepening international understanding through the medium of space (Refer to Figure 9).

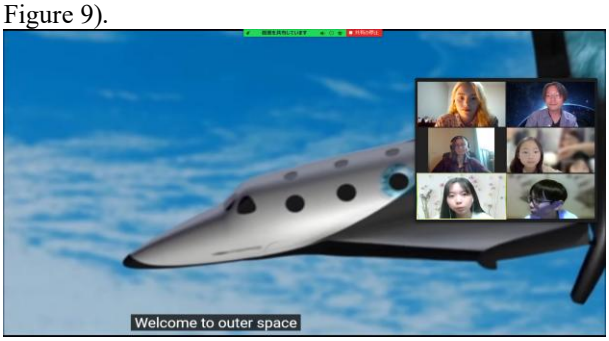

Fig. 9 International Online Space Education Event (Photo from a past event)

7.2 Problem

Many Japanese participants feel uneasy about communicating in English, which may hinder interaction and mutual understanding among international participants.

Additionally, participants' knowledge of space ranges widely, from beginners to those with specialized interests. Implementing the program without considering this disparity in knowledge levels risks creating differences in program comprehension and satisfaction.

7.3 Solution

I will address language barriers by deploying volunteer interpreters and utilizing Zoom's automatic captioning feature.

Additionally, to manage differences in participant skill levels, we will utilize Zoom's breakout rooms feature when participant numbers exceed a certain threshold. This will allow us to divide participants into teams based on skill level or theme. This approach aims to deliver a program that satisfies all participants.

8. Conclusion

This paper examined educational and social initiatives to position Komono Town, my hometown, as a “Space Town” and link this to regional revitalization. Achieving this requires the understanding of administrative bodies and local residents, as well as continuous support from numerous collaborators.

However, it has become clear that, at present, these foundations are not yet sufficiently established.

A key reason for this is the insufficient dissemination of information about private space travel and the space industry within the local community, leading to biased perceptions and information gaps. Therefore, it is necessary to proactively and continuously provide accurate information to key leaders among administrative staff and local residents.

Furthermore, many residents perceive space as unrelated to their lives, presenting the challenge of overcoming this mental barrier. Demonstrating that participation in space education events brings tangible benefits to daily life is crucial. Examples include boosting children's motivation to study science and English through space education activities, and revitalizing the community by utilizing vacant houses and unused land as space education venues.

By fostering interest in private space travel and space projects through these activities and cultivating understanding among both the administration and residents, it will be possible to smoothly advance the project to develop Komono Town as a “Space Town.”

References

Reference to a conference/congress paper:

[1] T. Yamazaki, 民間商業宇宙飛行士と新規宇宙ビジネスの展開について, 3D18, 50th Space Science and Technology Conference, Kita Kyushu, Japan, 2006, 8- 10 November.

[2] T. Yamazaki, OVERVIEW OF ASTRAX SPACE SERVICES INCLUDING OVER 50 SPACE BUSINESSES, ISDC-2018-Many Roads to Space, International Space Development Conference 2018, Los Angeles, USA, 2018, 24-27 May.

[3] T. Yamazaki, ASTRAX ZERO GRAVITY FLIGHT SERVICES IN JAPAN, ISDC-2018-Many Roads to Space, International Space Development Conference 2018, Los Angeles, USA, 2018, 24-27 May.

[4] T. Yamazaki, ASTRAX LUNAR CITY DEVELOPMENT PROJECT, ISDC-2019-Many Roads to Space, International Space Development Conference 2019, Washington D.C., USA, 2019, 5-9 June.

[5] T. Yamazaki, ASTRAX SPACE SERVICES PLATFORM BY USING BLOCKCHAIN TECHNOLOGY, ISDC-2019-Many Roads to Space, International Space Development Conference 2019, Washington D.C., USA, 2019, 5-9 June.

[6] Taichi Yamazaki, Buhe Heshige, Yoshihide Nagase, ASTRAX UNIVERSAL SERVICE PLATFORM BY USING BLOCKCHAIN TECHNOLOGY, IAC-19-E6.5-GST.1.6, 70th International Astronautical Congress (IAC), Washington D.C., United States, 2019, 21-25 October.

[7] Taichi Yamazaki, MISSION CONTROL CENTER TO SUPPORT COMMERCIAL SPACE MISSIONS AND PASSENGER’S ACTIVITIES INSIDE OF THE CABIN, IAC-19-B3.2.3, 70th International Astronautical Congress (IAC), Washington D.C., United States, 2019, 21-25 October.

[8] Taichi Yamazaki, ASTRAX ACADEMY AND SPACE BUSINESS AND SPACE FLIGHT SUPPORT EDUCATIONAL SYSTEM, Next-Generation Suborbital Researchers Conference (NSRC), Broomfield, CO, United States, 2020, 2-4 March.

[9] Taichi Yamazaki, MISSION SUPPORT CONTROL CENTER AND SUBORBITAL SPACECRAFT SIMULATOR TO SUPPORT COMMERCIAL SPACE MISSIONS AND CUSTOMER ACTIVITIES, Next-Generation Suborbital Researchers Conference (NSRC), Broomfield, CO, United States, 2020, 2-4 March.

[10] Taichi Yamazaki, ZEROG-NAUT AND MISSION COMMANDER TO SUPPORT COMMERCIAL SPACE MISSIONS AND CUSTOMER ACTIVITIES INSIDE CABIN, Next-Generation Suborbital Researchers Conference (NSRC), Broomfield, CO, United States, 2020, 2-4 March.

[11] Taichi Yamazaki, “SPACE SCOOTER”: SPACE MOBILITY SYSTEM USED IN SPACE HOTELS AND SPACE STATIONS, IAC-20-B3.7.17, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.

[12] Taichi Yamazaki, ASTRAX LUNAR CITY DEVELOPMENT PROJECT 2020, IAC-20-D4.2.11, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.

[13] Taichi Yamazaki, ASTRAX LUNAR CITY ECONOMIC SYSTEM BY USING BLOCKCHAIN TECHNOLOGY, IAC-20-E6.2.9, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.

[14] Taichi Yamazaki, ASTRAX SPACE SERVICE CATALOG SYSTEM FOR SPACE TOURISM, IAC- 20-B3.2.12, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.

[15] Taichi Yamazaki, ASTRAX UNIVERSAL SERVICE PLATFORM BY USING BLOCKCHAIN TECHNOLOGY, IAC-20-D4.1.20, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.

[16] Taichi Yamazaki, EXPERIENCE AND LESSONS LEANED FROM THE COVID-19 PROBLEM IN JAPAN AND APPLICATION TO SPACE TRAVEL, IAC-20-A1.3.15, 71st International Astronautical

Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.
[17] Taichi Yamazaki, ZERO-G-NAUT AND MISSION COMMANDER TO SUPPORT COMMERCIAL SPACE MISSION AND CUSTOMER ACTIVITIES INSIDE CABIN, IAC-20-B3.2.13, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.
[18] Chieko Takahashi, Yuko Kirihara, Creating a new business of Space Flight Attendant service & SFA Academy, IAC-20-B3.2.10, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.
[19] Taiko Kawakami, Taichi Yamazaki, THE IMPORTANCE OF KIMONO IN SPACE, IAC-20-E1.9.2, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.
[20] Taiko Kawakami, Taichi Yamazaki, WHAT WOMEN NEED FOR SPACE TRAVEL, IAC-20-E3.2.9, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.
[21] Hayaki Tsuji, Taichi Yamazaki, Satoshi Takamura, Yoichi Sugiura, PEACE THOUGHT AND SOCIO-ECONOMY FOR THE SPACE AGE USING SATELLITES, IAC-20-E5.5.5, 71st International Astronautical Congress (IAC) – The CyberSpace Edition, 2020, 12-14 October.
[22] Taichi Yamazaki, ADVANCED SPACE SERVICE ACCESS APPLICATION TOOL: ASTRAX UNIVERSAL USER INTERFACE (U2U), IAC-20-B3.1.11, 71st International Astronautical Congress (IAC) – The CyberSpace Edition, 2020, 12-14 October.
[23] Taichi Yamazaki, Taiko Kawakami, ASTRAX LUNAR CITY DEVELOPMENT PROJECT 2021, IAC-21-D3.1.6, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[24] Taichi Yamazaki, COMMERCIAL SPACE MISSION SUPPORT CONTROL CENTER AND SUBORBITAL SPACECRAFT SIMULATOR TO SUPPORT COMMERCIAL SPACE MISSIONS AND PASSENGERS ACTIVITIES IN SPACE, IAC-21-B6.2.12, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[25] Taichi Yamazaki, INITIATIVE OF DEVELOPMENT OF THE SOLAR SYSTEM ECONOMIC BLOC BY USING BLOCKCHAIN TECHNOLOGY, IAC-21-D4.1.11, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[26] Taichi Yamazaki, Mika Islam, SPACE FASHION AND SPACE CULTURE IN THE AGE OF SPACE TRAVEL AND THE POSSIBILITIES OF "SPACE HAGOROMO", IAC-21-E5.3.6, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[27] Taichi Yamazaki, Taiko Kawakami, Keiichi Iwasaki, Akifumi Mimura, MAKING ASTRAX ACADEMY ONLINE AND MULTILINGUAL, IAC-21-E1.7.10, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[28] Taichi Yamazaki, POTENTIAL FUTURE PLAN OF SPACE IZAKAYA AS A PLACE TO CREATE NEW PRIVATE SPACE BUSINESS, IAC-21-E1.9.10, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[29] Taichi Yamazaki, FOSTERING UNIVERSAL HUMAN RESOURCES AND SUPER NEWTYPES FOR THE SPACE AGE, IAC-21-E1.9.8, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[30] Taichi Yamazaki, Shunsuke Chiba, DEMAND AND SUPPLY MATCHING BY THE ASTRAX LUNAR CITY BUSINESS COMMUNITY AND RESIDENCE CLUB, IAC-21-D3.3.3, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[31] Taichi Yamazaki, OUTLINE OF ASTRAX PRIVATE SPACE BUSINESS CREATION EDUCATION AND TRAINING CENTER, IAC-21-B3.2.5, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[32] Taichi Yamazaki, PROTOTYPE PLANS FOR VARIOUS COMMERCIAL SPACECRAFT TRAINING SIMULATORS, IAC-21-B3.2.2, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[33] Taichi Yamazaki, Yuki Yamazaki, EXPERIMENTS ON COLORING SOAP BUBBLES UNDER MICROGRAVITY, IAC-21-A2.6.5, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[34] Taichi Yamazaki, STUDY OF THE SELECTION OF LOCATION FOR COMMERCIAL SPACEPORTS IN JAPAN, IAC-21-D6.3.8, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[35] Taichi Yamazaki, SPACE RADIATION SHIELDING BY WATER DOME IN ASTRAX LUNAR CITY ON THE MOON, IAC-21-A1.5.10, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[36] Taichi Yamazaki, Hiroki Nakaegawa, INTRODUCTION OF A PRACTICAL EXAMPLE OF ASTRAX LUNAR CITY MAPPING WITH MINECRAFT AND ITS LINKAGE TO ECONOMIC ACTIVITIES ON EARTH, IAC-21-

D4.2.6, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[37] Taichi Yamazaki, Hiroki Nakaegawa, DEVELOPMENT OF A CIVILIAN SPACECRAFT INTERIOR SIMULATOR USING MINECRAFT, IAC-21-B6.3.11, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[38] Taichi Yamazaki, PROPOSAL TO ADD A SPACE ECONOMICS SUBCOMMITTEE TO THE UN OFFICE FOR OUTER SPACE AFFAIRS' COMMITTEE ON THE PEACEFUL USES OF OUTER SPACE (COPUOS IN UNOOSA), IAC-21-E3.4.7, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[39] Ayako Kurono, Haruto Kurono, Taichi Yamazaki, THE GENDER GAP AND ITS IMPACT IN MANGA, ANIME AND OTHER SPACE CREATIONS, IAC-21-E5.3.10, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[40] Ayako Kurono, Haruto Kurono, Taichi Yamazaki, CAREER DESIGN IN SPACE - FROM CHALLENGED TO CHALLENGING, IAC-21-B3.9-GTS.2.1, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[41] Haruto Kurono, Ayako Kurono, Taichi Yamazaki, THE EFFECTS OF USING MINECRAFT TO TEACH CHILDREN ABOUT SPACE, IAC-21-E1.8.2, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[42] Tomoko Imaizumi, Taichi Yamazaki, MAINTAINING THE HEALTH OF PILOTS AND CREW, IAC-21-D6.3.4, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[43] Taichi Yamazaki, Mami Oka, CONSIDERATION ON THE CREATION OF A CHICKEN EGG MARKET AT THE MOON VILLAGE, IAC-21-D4.2.10, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[44] Chieko Takahashi, Yuko Kirihara, Taichi Yamazaki, CONSIDERATION OF THE FUTURE PROSPECTS OF THE SPACE FLIGHT ATTENDANT(SFA) PROFESSION WITH THE EXPANSION OF SPACE TRAVEL MARKETING.IAC-21-B3.9-GTS.2.10, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[45] Taiko Kawakami, Taichi Yamazaki, PROBLEMS AND SOLUTIONS THAT ARE PREVENTING MORE WOMEN FROM BECOMING SPACE TOURISTS, IAC-21-B3.2.3, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[46] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT OF A TERIPPER FOR INTRA-SPACECRAFT TRANSPORTATION, IAC-22-A1.3.17, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[47] Taichi Yamazaki, Taiko Kawakami, POSSIBILITY OF ZERO-GRAVITY FLIGHT SERVICE BY MRJ (MITSUBISHI REGIONAL JET), IAC-22-A2.IPB.1, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[48] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT OF ASTRAX COMMERCIAL SPACECRAFT EDUCATION AND TRAINING SIMULATOR, IAC-22-B3.IPB.4, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[49] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT OF SPACE SHOWER, IAC-22-B3.3.5, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[50] Taichi Yamazaki, Taiko Kawakami, PRODUCTION OF SPACE SUITS AND REPLICAS FOR SPACE TRAVEL, IAC-22-B3.9-GTS.2.1, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[51] Taichi Yamazaki, Taiko Kawakami, ADVANCED SPACE SERVICE ACCESS APPLICATION TOOL “ASTRAX UNIVERSAL USER INTERFACE (ASTRAX U2U)”, IAC-22-B5.IP.7, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[52] Taichi Yamazaki, Taiko Kawakami, ASTRAX SOLAR SYSTEM ECONOMIC BLOC CONCEPT USING NFT AND METAVERSE TECHNOLOGIES, IAC-22-D4.1.10, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[53] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT OF A REAL-LIFE (ANALOG) ASTRAX LUNAR CITY CONSTRUCTION PROJECT IN JAPAN, IAC-22-D4.2.6, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[54] Taichi Yamazaki, Taiko Kawakami, MULTILINGUALIZATION OF ASTRAX ACADEMY, IAC-22-E1.7.10, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[55] Taichi Yamazaki, Taiko Kawakami, POSSIBILITY OF ZERO-GRAVITY FLIGHT AND SPACE FLIGHT BY PEOPLE WITH

DISABILITIES, IAC-22-E1.9.18, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[56] Taichi Yamazaki, Kentaro Chimura, Taiko Kawakami, DEVELOPMENT OF SPACE TOILET "SPACE BENKING" IN JAPAN, IAC-22-E5.IP.10, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[57] Taichi Yamazaki, Taiko Kawakami, DISASTER PREVENTION AND EVACUATION TECHNOLOGIES ON EARTH AND THEIR APPLICATION TO SPACE TRAVEL, IAC-22-E5.4.9, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[58] Mika Islam, Taichi Yamazaki, CLEANING METHODS FOR REUSING CLOTHES IN SPACE, IAC-22-B3.7.7, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[59] Mika Islam, Taichi Yamazaki, HOW TO GO TO SPACE WITH DIFFERENT HAIRSTYLES, IAC-22-E1.9.7, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[60] Yuko Kirihara, Airi Negisawa, Chieko Takahashi, Taichi Yamazaki, Cocoro Tamura, RESEARCH ON PSYCHOLOGICAL CHANGES AND GROWTH OF CHILDREN THROUGH EDUCATION RELATED TO COMMERCIAL SPACE BUSINESS, IAC-22-E1.IPB.9, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[61] Ayako Kurono, Taichi Yamazaki, WHAT DO THEY NEED FOR A SPACE MUSEUM?, IAC-22-E5.5.8, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[62] Haruto Kurono, Taichi Yamazaki, ESTABLISHMENT AND DEVELOPMENT OF A LUNAR COMMUNITY AND ACTIVITY SPACE BY CHILDREN FOR CHILDREN, IAC-22-D4.2.10, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[63] Akifumi Mimura, Taichi Yamazaki, VIDEO EDITING SERVICES FOR SPACE TRAVELLERS, IAC-22-B3.2.6, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[64] Akifumi Mimura, Taichi Yamazaki, TECHNOLOGIES ON A TRANSPARENT RESTROOM COULD BE USED FOR LUNAR HABITATS, IAC-22-E5.1.8, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[65] Taiko Kawakami, Taichi Yamazaki, ASTRAX LUNAR CITY PROJECT 2022, IAC-22-D3.1.12, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[66] Chikako Murayama, Taichi Yamazaki, THE NEED FOR A SPACE VERSION OF HAND SIGNALS, A COMMUNICATION TOOL FOR SPACE TRAVELERS, IAC-22-B3.2.1, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[67] Chikako Murayama, Taichi Yamazaki, Taiko Kawakami, PHOTOGRAPHY SERVICES AND TECHNIQUES REQUIRED FOR SPACE TRAVEL, IAC-22-D6.1.8, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[68] Chikako Murayama, Taichi Yamazaki, ON IMAGES OF THE UNIVERSE INFLUENCED BY MANGA AND ANIME, IAC-22-E1.9.3, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[69] Hikaru Otsuka, Taichi Yamazaki, A SPACE EDUCATION PROGRAM TO SOLVE THE SHORTAGE OF COMMERCIAL SPACE TEACHERS IN JAPANESE SCHOOLS, IAC-22-E1.7.8, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[70] Yasuko Fukushima, Taichi Yamazaki, HOW TO CAPTURE THE COSMIC DIVERSITY THAT IS COMING, IAC-22-E1.9.22, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[71] Chieko Takahashi, Taichi Yamazaki, THE ROLE OF SPACE FLIGHT ATTENDANTS IN LARGE, LONG-DURATION SPACE TRAVEL, IAC-22-B3.2.10, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[72] Kiyomi Shigematsu, Taichi Yamazaki, PROPOSAL FOR A BUSINESS MODEL THAT ENABLES AND ENCOURAGES OLDER ADULTS TO TRAVEL TO SPACE, IAC-22-E5.IP.22, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[73] Taichi Yamazaki, Taiko Kawakami, Fumihiro Oiwa, DEVELOPMENT OF ASTRAX ZERO GRAVITY AIRCRAFT EDUCATION AND TRAINING SIMULATOR, IAC-23-A2.5.9, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[74] Taichi Yamazaki, Taiko Kawakami, DEVELOPING TECHNOLOGY FOR DRINKING CHILLED CARBONATED BEVERAGES IN SPACE, IAC-23-B5.1.11, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October."
[75] Taichi Yamazaki, Taiko Kawakami, Hiroki Nakaegawa, DEVELOPMENT OF COMMERCIAL SPACECRAFT EDUCATION AND TRAINING SIMULATOR USING THE METAVERSE, IAC-23-

D1.1.6, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[76] Taichi Yamazaki, Taiko Kawakami, CONSTRUCTION PLAN OF ASTRAX LUNAR CITY SIMULATION FACILITY IN JAPAN, IAC-23-D4.2.9, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[77] Taichi Yamazaki, Taiko Kawakami, Kentaro Chimura, DEVELOPMENT OF THE SPACE TOILET CALLED "SPACE BENKING" 2023, IAC-23-E5.4.3, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[78] Taichi Yamazaki, Taiko Kawakami, INTRODUCTION OF COMMERCIAL SPACE R&D CENTER "ASTRAX LAB" IN JAPAN, IAC-23-B3.IPB.5, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[79] Taichi Yamazaki, Taiko Kawakami, ANALYSIS OF PASSENGERS' NEEDS AND DEMANDS OF ASTRAX ZERO GRAVITY SERVICES AND APPLICATION FOR SPACE TRAVEL SERVICES, IAC-23-B3.IP.1, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[80] Taiko Kawakami, Taichi Yamazaki, THE SENSES AND CREATIVITY THAT CAN BE ACHIEVED BY BRINGING ENTERTAINMENT IN SPACE, IAC-23-E1.IP.22, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[81] Taiko Kawakami, Taichi Yamazaki, TECHNOLOGY, PROBLEMS AND SOLUTIONS FOR DRINKING ALCOHOL IN SPACE, IAC-23-E1.9.2, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[82] Taiko Kawakami, Taichi Yamazaki, TECHNOLOGY, PROBLEMS, AND SOLUTIONS FOR SPACE TRAVEL MEALS AS REPRESENTED BY "YAKITORI", GRILLED CHICKEN, IAC-23-B5.IP.2, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October."
[83] Taiko Kawakami, Taichi Yamazaki, THE POSSIBILITY OF DEVELOPING JAPANESE CULTURE THROUGH “NATTO” IN SPACE, IAC-23-E5.IP.17, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[84] Hikaru Otsuka, Taichi Yamazaki, LOCAL REVITALIZATION PROJECT TO TURN MY HOMETOWN, KOMONO TOWN, INTO "SPACE TOWN", IAC-23-E1.9.3, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[85] Hikaru Otsuka, Taichi Yamazaki, METHODS AND PRACTICES FOR INTRODUCING PRIVATE SPACE EDUCATION PROGRAMS INTO JAPANESE SCHOOLS, IAC-23-E1.2.8, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[86] Masahiko Takehara, Taichi Yamazaki, ASTROLOGY IN THE SPACE AGE: WHAT WILL HAPPEN TO THE HOROSCOPES OF THOSE BORN ON THE MOON?, IAC-23-E1.9.8, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[87] Taichi Yamazaki, Taiko Kawakami, COMMERCIAL SPACE SUIT R&D CENTER ”ASTRAX WAER LAB” 2024, IAC-24-E5,IP,26, 75th International Astronautical Congress (IAC), Milan, Italy, 2024, 14-18 October.
[88] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT OF ASTRAX COMMERCIAL SPACECRAFT MISSION SUPPORT CONTROL CENTER IN JAPAN 2024, IAC-24-B6,1,8, 75th International Astronautical Congress (IAC), Milan, Italy, 2024, 14-18 October.
[89] Taichi Yamazaki, Taiko Kawakami, ASTRAX LUNAR CITY SIMULATION FACILITY CONSTRUCTION PLAN IN JAPAN 2024, IAC-24-D4,2,9, 75th International Astronautical Congress (IAC), Milan, Italy, 2024, 14-18 October.
[90] Ayako Kurono, Taichi Yamazaki, EXPLORING THE CONCEPT AND POTENTIAL OF SPACE MUSEUMS FOR PRESERVATION, EDUCATION, AND TOURISM, IAC-24-E5,5,10, 75th International Astronautical Congress (IAC), Milan, Italy, 2024, 14-18 October.
[91] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT OF RAMEN EATEN IN SPACE, IAC-25-B3,IP,21,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[92] Taichi Yamazaki, Taiko Kawakami, THE POTENTIAL OF SPACE NFTS, IAC-25-E3,IP,15,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[93] Taichi Yamazaki, Taiko Kawakami, UNIFORMS FOR PRIVATE SPACEFLIGHT MISSION COMMANDERS AND SPACE FLIGHT ATTENDANTS, IAC-25-B3,IP,22,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[94] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT AND EXPANSION OF NEW BEVERAGES FOR THE COMMERCIAL SPACE TRAVEL ERA, IAC-25-E6,IP,39,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[95] Taichi Yamazaki, Taiko Kawakami, A VERSATILE SPACE APPLICATION TOOL TO SUPPORT LIFE IN SPACE: INTRODUCTION TO ASTRAX U2U, IAC-25-D2,IP,25,76th International

Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[96] Taichi Yamazaki, Taiko Kawakami, A SPACE VALUE STANDARD TO SUPPORT LIFE IN SPACE: INTRODUCTION TO ASTRAX VALUE, IAC-25-IP,6,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[97] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT OF ASTRAX SPACE MISSION SUPPORT CONTROL CENTER 2025, IAC-25-B3,4-B6.4,15,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[98] Taiko Kawakami, Taichi Yamazaki, ASTRAX LUNAR CITY PROJECT 2025, IAC-25-D4,2,12,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[99] Taiko Kawakami, Taichi Yamazaki, CONSTRUCTION PLAN OF ASTRAX LUNAR CITY SIMULATION FACILITY IN JAPAN 2025, IAC-25-E5,IP,21,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[100] Hikaru Otsuka, Taichi Yamazaki , IMPLEMENTING A RURAL REVITALIZATION PROJECT TO TURN MY HOMETOWN, KOMONO TOWN, INTO A 'SPACE TOWN', IAC-25-E1,9,12,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[101] Ayako Kurono, Haruto Kurono,Taichi Yamazaki, WHO GOVERNS SPACE MUSEUMS? LEGAL AND POLICY CHALLENGES IN THE NEW SPACE ERA, IAC-25-E5,5,9,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[102] Taiko Kawakami, Taichi Yamazaki, ESTABLISHING A CULTURE OF DRINKING IN SPACE: REALIZING A BEER EXPERIENCE IN SPACE EQUIVALENT TO THAT ON EARTH, IAC-25-E1,9,18,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[103] Taichi Yamazaki, Taiko Kawakami, SPACE BUSINESS DEVELOPMENT EDUCATION AND TRAINING ACADEMY: ASTRAX ACADEMY 2025, IAC-25-E1,LBA,9,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.

IAC-25-E1.9.12(x95673)

故郷の菰野町を「宇宙の町」にする地方活性化プロジェクトの実践

Hikaru Otsuka[a]*, Taichi Yamazaki[b]

[a] *CEO of Online School SKIP, 4229 Chikusa, Komono, Mie-gun, Mie, 510-1251, Japan, hikaru.choko68@gmail.com*
[b] *CEO and Astronaut, ASTRAX, Inc., 2-23-17 Komachi, Kamakura, Kanagawa, 248-0006, Japan, taichi.yamazaki@astrax.space*
* Corresponding Author

アブストラクト

故郷の菰野町を「宇宙の町」にする地方活性化プロジェクトの実践

日本では、都市部への人口集中と少子高齢化により地方が衰退するという問題が生じています。地方の人口減少に伴い、そこに住む人々も活力を失ってきています。

そこで、このような問題を解決するため、私の故郷である菰野町を「宇宙の町」にすることにより、地域を活性化する宇宙プロジェクトを計画しました。その計画内容について、２０２３年の論文で発表しました。

その計画に基づき、昨年 2024 年 2 月に、故郷のすべての小学校・中学校で民間宇宙飛行士の講演会を開催して、子ども達に夢を与えるプログラムを実施しました。

また、2024 年 8 月に、故郷の子ども達と保護者に、最先端の宇宙開発に触れてもらうため、インド人の宇宙開発研究者を招待して、宇宙について学び交流できるイベントを開催しました。

今年 2025 年は、インド、フィンランド、中国、南米の宇宙関係者と共同して、各国の人々とオンラインで宇宙について学び、交流できるイベントも開催する予定です。これにより、温泉の観光地である故郷の町に興味を持ってもらい、海外からの観光客を呼び込みます。

また、地方の人口の半数近くは高齢者です。人口減少により増加している空き家を利用して、子供だけでなく高齢者を対象に民間宇宙教育を行います。同時に、高齢者を対象にした地元メディアと協力して、宇宙教育番組を発信していきます。

高齢者が、宇宙旅行という目標を持つことで生きがいを見つけることができます。また、空き家を有効活用できるため地方活性化につながります。

本論文では、私の故郷の菰野町を、「宇宙の町」にすることで、地方を活性化するためのプロジェクトの実践と効果、課題点について、検証結果を報告します。

Keywords: 菰野町、地方活性化、SKIP

Nomenclature
菰野町：三重県にある地方都市

1. はじめに

近年、日本では若い人々が都市部に移動することで人口が減少し、地方が衰退するという問題が生じています。私の故郷・菰野町も同様に、人口が減少し、空き家・空き地が増えています。

私が運営するオンライン学習塾 SKIP（Star Kids International Program）では、授業の一環として、民間宇宙教育プログラムを実施しています。

2023年の論文では、「故郷の菰野町を「宇宙の町」にする地方活性化プロジェクト」を発表しました。
この民間宇宙教育プログラムによって、故郷の菰野町を、「宇宙の町」として活性化することを計画して、この2年間、様々な宇宙教育イベントを実践してきました。
具体的には、①菰野町のすべての小学校と中学校で、民間宇宙飛行士による講演会を実施、②菰野町に、インド人の宇宙開発研究者を招待して、宇宙教育イベントを実施、③子ども食堂で、宇宙教育の講座を実施、④地元の人気ユーチューバーと提携して、高齢者向けの宇宙番組の発信、⑤親子向け民間宇宙飛行士の講演会を実施しました。
今後は、フィンランド、インド、中国、南米の宇宙教育関係者と協力して、オンラインによる宇宙教育イベントを行うことを計画しています。

2. 民間宇宙飛行士の講演会を実施

2.1 講演会の概要

菰野町に在住する児童生徒に、宇宙に対する夢を持ってもらうため、民間宇宙飛行士タイチ氏による宇宙講演会を2024年2月に実施しました（図1、図2参照）。
自治体内のすべての小学校と中学校（小学校 5 校、中学校 2 校）で講演会を行いました。在籍する生徒数は、合計約4千人になります。
学校の授業カリキュラムとの調整のため、小学5・6年生と中学1・2年生を対象に、講演会を行いました。
学校での講演会という方法をとることにより、多くの子ども達に、民間宇宙旅行への夢や希望を持ってもらうことができました。

図 1　菰野町の中学校　宇宙講演会


図2　菰野町の中学校　宇宙講演会

2.2 効果と課題

講演会終了後に実施したアンケート調査の結果、児童生徒は民間宇宙旅行に強い好奇心を示し、宇宙に関する学習意欲が高まっていることが確認できました。アンケート数は、約1500枚になります。
特に、「将来、宇宙に行ってみたい」、「宇宙開発に関わる仕事をしてみたい」という回答が多くみられ、一定の教育効果が得られたことが明らかになりました。

しかしながら、多くの児童生徒は、家に帰ると保護者から、宇宙よりも宿題やテストに集中するように指導される傾向があります。そのため、講演会によって喚起された好奇心は、家庭環境においては持続せず、短期間で失われてしまう現象が見受けられます。
すなわち、教育現場のみでのアプローチでは、児童生徒の宇宙に対する好奇心を長期的に維持することは困難であるという限界が明らかになりました。

2.3 解決策

この課題を解決するため、児童生徒のみを対象とするのではなく、家庭を含めた親子向けの宇宙イベントの開催が必要といえます。
親子向けイベントでは、保護者に、民間宇宙産業の未来だけでなく、宇宙教育の持つ教育効果についても理解していただきます。
具体的には、親子向けの宇宙講演会や飛行船操縦体験会を実施しました（第3章、第6章参照）。

3.宇宙開発研究者（インド出身）による宇宙講演会、飛行船操縦体験会の実施

3.1 宇宙イベントの概要

2024 年 2 月に実施した民間宇宙飛行士による学校での講演会は、児童生徒のみを対象としたものであったため、

前記 2.2 で示したように、家庭環境での好奇心の持続という問題が生じました。
そこで、2024 年 8 月に,親子を対象とした地域全体向けの宇宙イベントを開催しました。
本イベントでは、東北大学大学院工学研究科、航空宇宙工学専攻に所属し、宇宙探査ロボットの研究に従事するインド出身の Shreya Santra 准教授を、菰野町に招聘し、宇宙開発の最先端研究について講演をしていただきました。これにより、参加者は、国際的かつ学術的な視点から宇宙探査の現状と将来像を学ぶことができました（図３参照）。

加えて、飛行体空間協議会との提携により、子供向けの飛行船操縦体験会を実施しました。この体験により、参加者は、上記の理論的な学びに加えて、操縦という実践的体験を通じて、航空宇宙分野への興味を深めることができました（図4参照）。

さらに、日本火星協会の専門家を招き、将来的な火星移住に関する最新の研究動向についての報告をしていただきました。

図 3 東北大学航空宇宙工学准教授 講演会

図 4 子供向け飛行船の操縦体験会

3.2 効果と課題

本イベントは宇宙開発に関わる専門家達を、遠方から招待する大規模な取り組みでした。地元メディアの取材も入り、新聞やテレビのニュースでも報道され、夏の一大イベントとなりました。お盆連休中の開催だったこともあり、他県からの参加者もいました。イベント後に、地元の観光地を訪れてもらい、地域経済の活性化にも一定の効果がありました。
また、親子向けの体験会だったため、イベント後に飛行船操縦体験の話で盛り上がる親子の姿も見られ、一定の効果がありました。

しかし、最大の課題は、集客の困難さでした。
前記2の民間宇宙飛行士による講演会は、地元の小学校と中学校で実施をしました。そのため、集客という問題は生じませんでした。
これに対して、今回のイベントは、夏休みに、学校外の施設に来ていただく必要があるため、集客という新たな課題が生じました。
日本のほとんどの人々にとって、宇宙は依然として遠い存在であり、宇宙に対する関心の薄さから、集客は非常に困難でした。
加えて、宣伝媒体や周知方法が限られていたことも原因として挙げられます。

3.3 解決策

イベント参加者を対象に、SNS 上のコミュニティに招待して、登録を促しました。これにより、イベント終了後も、宇宙に対する関心を持ち続ける場を提供できます。また、次回以降の宇宙イベント告知について、持続的な情報共有を行うことができます。
また、地元で、YouTube 発信を行っているインフルエンサーと提携して、次回以降のイベントは、YouTube の番組内で告知を行う計画を立てました。これにより、従来の広告手法では届かなかった層へのアプローチが期待できます。

4. 子ども食堂で、宇宙のお話会を開催

4.1 講座の概要

子ども食堂とは、地域の子ども達に温かい食事を提供するとともに、居場所づくりや交流促進の役割を担うコミュニティです。
その子ども食堂において、「宇宙のお話会」を開催しました。具体的には、食事前に、宇宙に関する講座を実施し（図5参照）、その後、食事を取りながら、将来の民間宇宙旅行や宇宙に関する夢について、参加者同士で語り合いました（図6参照）。

図 5　子ども食堂　宇宙のお話会

図 6 子ども食堂　食事の風景

4.2 効果と課題

子ども食堂は、ボランティアスタッフの大人と、その地域の子ども達が参加して、食事をとりながら交流を楽しみます。宇宙という専門的で難解に思われがちなテーマを、地域コミュニティの場に持ち込むことで、子ども達が日常の延長として、宇宙を身近に感じられることができました。

しかし、子ども食堂は、本来、食事の提供や交流を中心とした場であり、講演や講座の開催を前提とした環境設備は整っていません。
そのため、インターネット接続環境(Wi-Fi)が整備されていない場合が多いです。そのため、オンライン上にある資料や映像を活用する場合に支障が生じる可能性があります。
　また、マイクやスピーカー等の音響設備、スクリーンやプロジェクターなどの機器が不足している場合もあります。そのため、会場が広い場合は、参加者全員が講座内容を十分に理解することができない可能性もあります。

4.3 解決策

主催者側が、携帯式 Wifi 機器を持参することで、オンライン資料や映像の活用が可能になりました。

　また、可能な範囲で携帯スピーカーやタブレット端末を活用し、参加者が映像や音声を共有できるように工夫をしました。

5. 地元の人気ユーチューバーと提携して、高齢者向けの宇宙教育番組の発信

5.1 宇宙教育番組の概要

菰野町では、人口の半数近くを高齢者が占めています。このような地域特性を踏まえると、宇宙教育活動は、子どもや親子を対象とするだけでは不十分であり、高齢者層に向けたプログラムの展開が必要です。
　そこで、地元で、高齢者向け情報発信を行っている人気ユーチューバー（チャンネル登録者数 3,000 人）と提携して、高齢者が楽しめる宇宙教育番組の制作・配信を始めています（図7参照）。

図7　YouTube の宇宙教育番組

5.2　効果と課題

宇宙教育番組の配信後、視聴者から、「宇宙旅行という新しい分野を知ることができました」とのコメントをいただき、高齢者の知的好奇心を刺激する一定の効果を感じました。

しかし、本 YouTube の視聴者の多くは、地元の飲食店情報や生活情報を得る目的で、チャンネル登録をしています。そのため、宇宙に関心を持つ割合は低く、宇宙番組の視聴者数が低いという課題が生じています。
具体的には、登録者数が約 3,000 人であるのに対し、宇宙番組の視聴回数は 100 回程度にとどまっています。他の人気番組の視聴回数は 90,000 回を超えていることから

も、宇宙番組の視聴回数は、著しく低い数値であるといえます。

5.3 解決策

高齢者の関心を喚起する番組設計を行っていきます。宇宙番組の中で、「孫と一緒に行く民間宇宙旅行」など、高齢者が、孫と一緒に動画を楽しめる工夫をしていきます。

また、現時点では宇宙番組の存在が十分に知られていないため、宇宙講演会や子ども食堂での宇宙講座など、他の宇宙関連イベントの場を活用して告知していきます。これにより、イベント参加者に宇宙番組を認知してもらい、視聴者数の増加に繋げていきます。

6.親子向け宇宙講演会の実施

6.1 講演会の概要

2024年2月に菰野町の小学校・中学校で、民間宇宙飛行士タイチ氏による宇宙講演会を実施しましたが、前記 2-2 の課題が残りました。

そこで今回は、子ども達だけではなく、親子を対象に、2025年9月に、民間宇宙飛行士による宇宙講演会を実施しました。

また前記 3-2 の課題解決に向けて、地元で人気の YouTube 番組を運営するインフルエンサーに、イベント告知を協力していただきました（図8参照）。

図8　親子向け宇宙講演会の告知

6.2 効果と課題

インフルエンサーの SNS にてイベント告知を行い、一定数の集客が見込めました。また、親子だけでなく、高齢者の参加申込みもあり、幅広い年代にアクセスできました。

しかし、十分な人数の集客はできませんでした。約500人収容できる会場で、300人集客を目標にしましたが、100人ほどにとどまりました。

6.3 解決策

宇宙関係者による講演会、体験型ワークショップ、宇宙教育番組による教育活動などを、継続的に行っていくことで、認知度を上げていく必要があります。

7.海外の宇宙教育関係者と提携して、オンライン宇宙イベントを実施

7.1 宇宙教育オンライン国際イベントの概要

国際的なネットワークを活用したオンライン宇宙教育イベントを行います。フィンランド、インド、中国、南米の宇宙教育関係者と協力して、親子向けのオンラインイベントを開催します。

本イベントの目的は、宇宙よりも海外に関心を持つ親子が、国際交流の体験を通じて、宇宙という新しいテーマに触れることを狙いとしています。

これにより、新たな参加層の拡大をはかります。さらに、宇宙を媒介として国際理解を深めることができます（図 9 参照）。

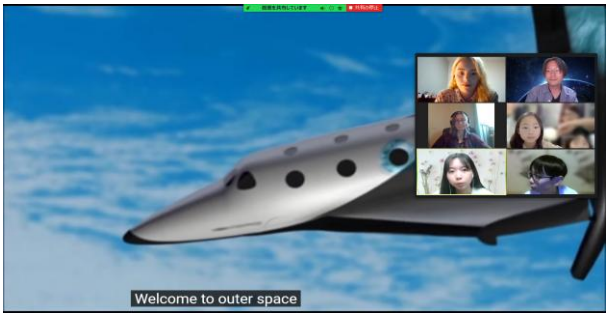

図 9　海外オンライン宇宙教育イベント
（過去に実施した際の写真）

7.2　課題

日本人参加者の多くは、英語によるコミュニケーションに不安を抱えており、国際的な参加者同士での交流、相互理解に困難が生じる可能性があります。

また、参加者の宇宙に関する知識は、初心者から専門的な興味がある者まで幅広いです。この知識レベルの差を考慮せずにプログラムを実施すると、プログラムの理解度や満足度に差が生じるおそれがあります。

7.3 解決策

コミュニケーション言語の問題は、通訳ボランティアの配置と Zoom の自動字幕機能の活用で対応していきます。

また、参加者のレベル差の問題は、参加者数が一定数を超えた場合は、Zoom のブレイクアウトルーム機能を活用して、レベル別やテーマ別にチーム分けを行います。これにより、参加者全員が満足できるプログラム運営を目指します。

8. 結論

本論文では、故郷である菰野町を「宇宙の町」として位置づけ、地方活性化につなげるための教育的・社会的取り組みについて検討しました。その実現には、行政機関と地域住民の理解、さらには多くの協力者による継続的な支援が不可欠であるといえます。しかし現時点では、まだ、これらの基盤が十分に整っているとは言い難い状況であることが分かりました。

その背景として、民間宇宙旅行や宇宙産業に関する情報が地域社会に十分に行き渡っておらず、偏った認識や情報不足が存在していることが挙げられます。そのため、今後は行政職員や地域住民の主要なリーダー層に対し、積極的かつ継続的に正確な情報を提供していく必要があります。

さらに、多くの住民は、宇宙は自分の人生とは無関係であると認識しており、この意識の壁を乗り越えることも課題であるといえます。そのためには、宇宙教育イベントへの参加が日常生活に具体的なメリットをもたらすことを示すことが重要です。たとえば、宇宙教育活動を通じて、子供達の理科や英語に対する学習意欲が高まること、空き家や未利用地を宇宙教育の場として活用することで地域の活性化委につながることなどが、その一例といえます。

これらの活動を通じて、民間宇宙旅行や宇宙プロジェクトに対する関心を喚起し、行政と住民の理解を醸成することができれば、菰野町を「宇宙の町」として発展させるプロジェクトを円滑に推進していくことが可能であるといえます。

参考文献

References

Reference to a conference/congress paper:
[1] T. Yamazaki, 民間商業宇宙飛行士と新規宇宙ビジネスの展開について, 3D18, 50th Space Science and Technology Conference, Kita Kyushu, Japan, 2006, 8- 10 November.
[2] T. Yamazaki, OVERVIEW OF ASTRAX SPACE SERVICES INCLUDING OVER 50 SPACE BUSINESSES, ISDC-2018-Many Roads to Space, International Space Development Conference 2018, Los Angeles, USA, 2018, 24-27 May.
[3] T. Yamazaki, ASTRAX ZERO GRAVITY FLIGHT SERVICES IN JAPAN, ISDC-2018-Many Roads to Space, International Space Development Conference 2018, Los Angeles, USA, 2018, 24-27 May.
[4] T. Yamazaki, ASTRAX LUNAR CITY DEVELOPMENT PROJECT, ISDC-2019-Many Roads to Space, International Space Development Conference 2019, Washington D.C., USA, 2019, 5-9 June.
[5] T. Yamazaki, ASTRAX SPACE SERVICES PLATFORM BY USING BLOCKCHAIN TECHNOLOGY, ISDC-2019-Many Roads to Space, International Space Development Conference 2019, Washington D.C., USA, 2019, 5-9 June.
[6] Taichi Yamazaki, Buhe Heshige, Yoshihide Nagase, ASTRAX UNIVERSAL SERVICE PLATFORM BY USING BLOCKCHAIN TECHNOLOGY, IAC-19-E6.5-GST.1.6, 70th International Astronautical Congress (IAC), Washington D.C., United States, 2019, 21-25 October.
[7] Taichi Yamazaki, MISSION CONTROL CENTER TO SUPPORT COMMERCIAL SPACE MISSIONS AND PASSENGER'S ACTIVITIES INSIDE OF THE CABIN, IAC-19-B3.2.3, 70th International Astronautical Congress (IAC), Washington D.C., United States, 2019, 21-25 October.
[8] Taichi Yamazaki, ASTRAX ACADEMY AND SPACE BUSINESS AND SPACE FLIGHT SUPPORT EDUCATIONAL SYSTEM, Next-Generation Suborbital Researchers Conference (NSRC), Broomfield, CO, United States, 2020, 2-4 March.
[9] Taichi Yamazaki, MISSION SUPPORT CONTROL CENTER AND SUBORBITAL SPACECRAFT SIMULATOR TO SUPPORT COMMERCIAL SPACE MISSIONS AND CUSTOMER ACTIVITIES, Next-Generation Suborbital Researchers Conference (NSRC), Broomfield, CO, United States, 2020, 2-4 March.
[10] Taichi Yamazaki, ZEROG-NAUT AND MISSION COMMANDER TO SUPPORT COMMERCIAL SPACE MISSIONS AND CUSTOMER ACTIVITIES INSIDE CABIN, Next-Generation Suborbital Researchers Conference (NSRC), Broomfield, CO, United States, 2020, 2-4 March.
[11] Taichi Yamazaki, "SPACE SCOOTER": SPACE MOBILITY SYSTEM USED IN SPACE HOTELS AND SPACE STATIONS, IAC-20-B3.7.17, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.
[12] Taichi Yamazaki, ASTRAX LUNAR CITY DEVELOPMENT PROJECT 2020, IAC-20-D4.2.11, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.

[13] Taichi Yamazaki, ASTRAX LUNAR CITY ECONOMIC SYSTEM BY USING BLOCKCHAIN TECHNOLOGY, IAC-20-E6.2.9, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.
[14] Taichi Yamazaki, ASTRAX SPACE SERVICE CATALOG SYSTEM FOR SPACE TOURISM, IAC- 20-B3.2.12, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.
[15] Taichi Yamazaki, ASTRAX UNIVERSAL SERVICE PLATFORM BY USING BLOCKCHAIN TECHNOLOGY, IAC-20-D4.1.20, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.
[16] Taichi Yamazaki, EXPERIENCE AND LESSONS LEANED FROM THE COVID-19 PROBLEM IN JAPAN AND APPLICATION TO SPACE TRAVEL, IAC-20-A1.3.15, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.
[17] Taichi Yamazaki, ZERO-G-NAUT AND MISSION COMMANDER TO SUPPORT COMMERCIAL SPACE MISSION AND CUSTOMER ACTIVITIES INSIDE CABIN, IAC-20-B3.2.13, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.
[18] Chieko Takahashi, Yuko Kirihara, Creating a new business of Space Flight Attendant service & SFA Academy, IAC-20-B3.2.10, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.
[19] Taiko Kawakami, Taichi Yamazaki, THE IMPORTANCE OF KIMONO IN SPACE, IAC-20-E1.9.2, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.
[20] Taiko Kawakami, Taichi Yamazaki, WHAT WOMEN NEED FOR SPACE TRAVEL, IAC-20-E3.2.9, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 2020, 12-14 October.
[21] Hayaki Tsuji, Taichi Yamazaki, Satoshi Takamura, Yoichi Sugiura, PEACE THOUGHT AND SOCIO-ECONOMY FOR THE SPACE AGE USING SATELLITES, IAC-20-E5.5.5, 71st International Astronautical Congress (IAC) – The CyberSpace Edition, 2020, 12-14 October.
[22] Taichi Yamazaki, ADVANCED SPACE SERVICE ACCESS APPLICATION TOOL: ASTRAX UNIVERSAL USER INTERFACE (U2U), IAC-20-B3.1.11, 71st International Astronautical Congress (IAC) – The CyberSpace Edition, 2020, 12-14 October.
[23] Taichi Yamazaki, Taiko Kawakami, ASTRAX LUNAR CITY DEVELOPMENT PROJECT 2021, IAC-21-D3.1.6, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[24] Taichi Yamazaki, COMMERCIAL SPACE MISSION SUPPORT CONTROL CENTER AND SUBORBITAL SPACECRAFT SIMULATOR TO SUPPORT COMMERCIAL SPACE MISSIONS AND PASSENGERS ACTIVITIES IN SPACE, IAC-21-B6.2.12, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[25] Taichi Yamazaki, INITIATIVE OF DEVELOPMENT OF THE SOLAR SYSTEM ECONOMIC BLOC BY USING BLOCKCHAIN TECHNOLOGY, IAC-21-D4.1.11, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[26] Taichi Yamazaki, Mika Islam, SPACE FASHION AND SPACE CULTURE IN THE AGE OF SPACE TRAVEL AND THE POSSIBILITIES OF "SPACE HAGOROMO", IAC-21-E5.3.6, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[27] Taichi Yamazaki, Taiko Kawakami, Keiichi Iwasaki, Akifumi Mimura, MAKING ASTRAX ACADEMY ONLINE AND MULTILINGUAL, IAC-21-E1.7.10, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[28] Taichi Yamazaki, POTENTIAL FUTURE PLAN OF SPACE IZAKAYA AS A PLACE TO CREATE NEW PRIVATE SPACE BUSINESS, IAC-21-E1.9.10, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[29] Taichi Yamazaki, FOSTERING UNIVERSAL HUMAN RESOURCES AND SUPER NEWTYPES FOR THE SPACE AGE, IAC-21-E1.9.8, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[30] Taichi Yamazaki, Shunsuke Chiba, DEMAND AND SUPPLY MATCHING BY THE ASTRAX LUNAR CITY BUSINESS COMMUNITY AND RESIDENCE CLUB, IAC-21-D3.3.3, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[31] Taichi Yamazaki, OUTLINE OF ASTRAX PRIVATE SPACE BUSINESS CREATION EDUCATION AND TRAINING CENTER, IAC-21-B3.2.5, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[32] Taichi Yamazaki, PROTOTYPE PLANS FOR VARIOUS COMMERCIAL SPACECRAFT TRAINING SIMULATORS, IAC-21-B3.2.2, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.

[33] Taichi Yamazaki, Yuki Yamazaki, EXPERIMENTS ON COLORING SOAP BUBBLES UNDER MICROGRAVITY, IAC-21-A2.6.5, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[34] Taichi Yamazaki, STUDY OF THE SELECTION OF LOCATION FOR COMMERCIAL SPACEPORTS IN JAPAN, IAC-21-D6.3.8, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[35] Taichi Yamazaki, SPACE RADIATION SHIELDING BY WATER DOME IN ASTRAX LUNAR CITY ON THE MOON, IAC-21-A1.5.10, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[36] Taichi Yamazaki, Hiroki Nakaegawa, INTRODUCTION OF A PRACTICAL EXAMPLE OF ASTRAX LUNAR CITY MAPPING WITH MINECRAFT AND ITS LINKAGE TO ECONOMIC ACTIVITIES ON EARTH, IAC-21-D4.2.6, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[37] Taichi Yamazaki, Hiroki Nakaegawa, DEVELOPMENT OF A CIVILIAN SPACECRAFT INTERIOR SIMULATOR USING MINECRAFT, IAC-21-B6.3.11, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[38] Taichi Yamazaki, PROPOSAL TO ADD A SPACE ECONOMICS SUBCOMMITTEE TO THE UN OFFICE FOR OUTER SPACE AFFAIRS' COMMITTEE ON THE PEACEFUL USES OF OUTER SPACE (COPUOS IN UNOOSA), IAC-21-E3.4.7, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[39] Ayako Kurono, Haruto Kurono, Taichi Yamazaki, THE GENDER GAP AND ITS IMPACT IN MANGA, ANIME AND OTHER SPACE CREATIONS, IAC-21-E5.3.10, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[40] Ayako Kurono, Haruto Kurono, Taichi Yamazaki, CAREER DESIGN IN SPACE - FROM CHALLENGED TO CHALLENGING, IAC-21-B3.9-GTS.2.1, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[41] Haruto Kurono, Ayako Kurono, Taichi Yamazaki, THE EFFECTS OF USING MINECRAFT TO TEACH CHILDREN ABOUT SPACE, IAC-21-E1.8.2, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[42] Tomoko Imaizumi, Taichi Yamazaki, MAINTAINING THE HEALTH OF PILOTS AND CREW, IAC-21-D6.3.4, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[43] Taichi Yamazaki, Mami Oka, CONSIDERATION ON THE CREATION OF A CHICKEN EGG MARKET AT THE MOON VILLAGE, IAC-21-D4.2.10, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[44] Chieko Takahashi, Yuko Kirihara, Taichi Yamazaki, CONSIDERATION OF THE FUTURE PROSPECTS OF THE SPACE FLIGHT ATTENDANT(SFA) PROFESSION WITH THE EXPANSION OF SPACE TRAVEL MARKETING.IAC-21-B3.9-GTS.2.10, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[45] Taiko Kawakami, Taichi Yamazaki, PROBLEMS AND SOLUTIONS THAT ARE PREVENTING MORE WOMEN FROM BECOMING SPACE TOURISTS, IAC-21-B3.2.3, 72nd International Astronautical Congress (IAC), Dubai, United Arab Emirates, 2021, 25-29 October.
[46] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT OF A TERIPPER FOR INTRA-SPACECRAFT TRANSPORTATION, IAC-22-A1.3.17, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[47] Taichi Yamazaki, Taiko Kawakami, POSSIBILITY OF ZERO-GRAVITY FLIGHT SERVICE BY MRJ (MITSUBISHI REGIONAL JET), IAC-22-A2.IPB.1, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[48] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT OF ASTRAX COMMERCIAL SPACECRAFT EDUCATION AND TRAINING SIMULATOR, IAC-22-B3.IPB.4, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[49] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT OF SPACE SHOWER, IAC-22-B3.3.5, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[50] Taichi Yamazaki, Taiko Kawakami, PRODUCTION OF SPACE SUITS AND REPLICAS FOR SPACE TRAVEL, IAC-22-B3.9-GTS.2.1, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[51] Taichi Yamazaki, Taiko Kawakami, ADVANCED SPACE SERVICE ACCESS APPLICATION TOOL “ASTRAX UNIVERSAL USER INTERFACE (ASTRAX U2U)”, IAC-22-B5.IP.7, 73rd

International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[52] Taichi Yamazaki, Taiko Kawakami, ASTRAX SOLAR SYSTEM ECONOMIC BLOC CONCEPT USING NFT AND METAVERSE TECHNOLOGIES, IAC-22-D4.1.10, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[53] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT OF A REAL-LIFE (ANALOG) ASTRAX LUNAR CITY CONSTRUCTION PROJECT IN JAPAN, IAC-22-D4.2.6, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[54] Taichi Yamazaki, Taiko Kawakami, MULTILINGUALIZATION OF ASTRAX ACADEMY, IAC-22-E1.7.10, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[55] Taichi Yamazaki, Taiko Kawakami, POSSIBILITY OF ZERO-GRAVITY FLIGHT AND SPACE FLIGHT BY PEOPLE WITH DISABILITIES, IAC-22-E1.9.18, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[56] Taichi Yamazaki, Kentaro Chimura, Taiko Kawakami, DEVELOPMENT OF SPACE TOILET "SPACE BENKING" IN JAPAN, IAC-22-E5.IP.10, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[57] Taichi Yamazaki, Taiko Kawakami, DISASTER PREVENTION AND EVACUATION TECHNOLOGIES ON EARTH AND THEIR APPLICATION TO SPACE TRAVEL, IAC-22-E5.4.9, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[58] Mika Islam, Taichi Yamazaki, CLEANING METHODS FOR REUSING CLOTHES IN SPACE, IAC-22-B3.7.7, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[59] Mika Islam, Taichi Yamazaki, HOW TO GO TO SPACE WITH DIFFERENT HAIRSTYLES, IAC-22-E1.9.7, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[60] Yuko Kirihara, Airi Negisawa, Chieko Takahashi, Taichi Yamazaki, Cocoro Tamura, RESEARCH ON PSYCHOLOGICAL CHANGES AND GROWTH OF CHILDREN THROUGH EDUCATION RELATED TO COMMERCIAL SPACE BUSINESS, IAC-22-E1.IPB.9, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[61] Ayako Kurono, Taichi Yamazaki, WHAT DO THEY NEED FOR A SPACE MUSEUM?, IAC-22-E5.5.8, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[62] Haruto Kurono, Taichi Yamazaki, ESTABLISHMENT AND DEVELOPMENT OF A LUNAR COMMUNITY AND ACTIVITY SPACE BY CHILDREN FOR CHILDREN, IAC-22-D4.2.10, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[63] Akifumi Mimura, Taichi Yamazaki, VIDEO EDITING SERVICES FOR SPACE TRAVELLERS, IAC-22-B3.2.6, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[64] Akifumi Mimura, Taichi Yamazaki, TECHNOLOGIES ON A TRANSPARENT RESTROOM COULD BE USED FOR LUNAR HABITATS, IAC-22-E5.1.8, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[65] Taiko Kawakami, Taichi Yamazaki, ASTRAX LUNAR CITY PROJECT 2022, IAC-22-D3.1.12, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[66] Chikako Murayama, Taichi Yamazaki, THE NEED FOR A SPACE VERSION OF HAND SIGNALS, A COMMUNICATION TOOL FOR SPACE TRAVELERS, IAC-22-B3.2.1, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[67] Chikako Murayama, Taichi Yamazaki, Taiko Kawakami, PHOTOGRAPHY SERVICES AND TECHNIQUES REQUIRED FOR SPACE TRAVEL, IAC-22-D6.1.8, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[68] Chikako Murayama, Taichi Yamazaki, ON IMAGES OF THE UNIVERSE INFLUENCED BY MANGA AND ANIME, IAC-22-E1.9.3, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[69] Hikaru Otsuka, Taichi Yamazaki, A SPACE EDUCATION PROGRAM TO SOLVE THE SHORTAGE OF COMMERCIAL SPACE TEACHERS IN JAPANESE SCHOOLS, IAC-22-E1.7.8, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[70] Yasuko Fukushima, Taichi Yamazaki, HOW TO CAPTURE THE COSMIC DIVERSITY THAT IS COMING, IAC-22-E1.9.22, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[71] Chieko Takahashi, Taichi Yamazaki, THE ROLE OF SPACE FLIGHT ATTENDANTS IN LARGE, LONG-DURATION SPACE TRAVEL, IAC-22-B3.2.10, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.

[72] Kiyomi Shigematsu, Taichi Yamazaki, PROPOSAL FOR A BUSINESS MODEL THAT ENABLES AND ENCOURAGES OLDER ADULTS TO TRAVEL TO SPACE, IAC-22-E5.IP.22, 73rd International Astronautical Congress (IAC), Paris, France, 2022, 18-22 September.
[73] Taichi Yamazaki, Taiko Kawakami, Fumihiro Oiwa, DEVELOPMENT OF ASTRAX ZERO GRAVITY AIRCRAFT EDUCATION AND TRAINING SIMULATOR, IAC-23-A2.5.9, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[74] Taichi Yamazaki, Taiko Kawakami, DEVELOPING TECHNOLOGY FOR DRINKING CHILLED CARBONATED BEVERAGES IN SPACE, IAC-23-B5.1.11, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October."
[75] Taichi Yamazaki, Taiko Kawakami, Hiroki Nakaegawa, DEVELOPMENT OF COMMERCIAL SPACECRAFT EDUCATION AND TRAINING SIMULATOR USING THE METAVERSE, IAC-23-D1.1.6, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[76] Taichi Yamazaki, Taiko Kawakami, CONSTRUCTION PLAN OF ASTRAX LUNAR CITY SIMULATION FACILITY IN JAPAN, IAC-23-D4.2.9, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[77] Taichi Yamazaki, Taiko Kawakami, Kentaro Chimura, DEVELOPMENT OF THE SPACE TOILET CALLED "SPACE BENKING" 2023, IAC-23-E5.4.3, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[78] Taichi Yamazaki, Taiko Kawakami, INTRODUCTION OF COMMERCIAL SPACE R&D CENTER "ASTRAX LAB" IN JAPAN, IAC-23-B3.IPB.5, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[79] Taichi Yamazaki, Taiko Kawakami, ANALYSIS OF PASSENGERS' NEEDS AND DEMANDS OF ASTRAX ZERO GRAVITY SERVICES AND APPLICATION FOR SPACE TRAVEL SERVICES, IAC-23-B3.IP.1, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[80] Taiko Kawakami, Taichi Yamazaki, THE SENSES AND CREATIVITY THAT CAN BE ACHIEVED BY BRINGING ENTERTAINMENT IN SPACE, IAC-23-E1.IP.22, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[81] Taiko Kawakami, Taichi Yamazaki, TECHNOLOGY, PROBLEMS AND SOLUTIONS FOR DRINKING ALCOHOL IN SPACE, IAC-23-E1.9.2, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[82] Taiko Kawakami, Taichi Yamazaki, TECHNOLOGY, PROBLEMS, AND SOLUTIONS FOR SPACE TRAVEL MEALS AS REPRESENTED BY "YAKITORI", GRILLED CHICKEN, IAC-23-B5.IP.2, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October."
[83] Taiko Kawakami, Taichi Yamazaki, THE POSSIBILITY OF DEVELOPING JAPANESE CULTURE THROUGH “NATTO” IN SPACE, IAC-23-E5.IP.17, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[84] Hikaru Otsuka, Taichi Yamazaki, LOCAL REVITALIZATION PROJECT TO TURN MY HOMETOWN, KOMONO TOWN, INTO "SPACE TOWN", IAC-23-E1.9.3, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[85] Hikaru Otsuka, Taichi Yamazaki, METHODS AND PRACTICES FOR INTRODUCING PRIVATE SPACE EDUCATION PROGRAMS INTO JAPANESE SCHOOLS, IAC-23-E1.2.8, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[86] Masahiko Takehara, Taichi Yamazaki, ASTROLOGY IN THE SPACE AGE: WHAT WILL HAPPEN TO THE HOROSCOPES OF THOSE BORN ON THE MOON?, IAC-23-E1.9.8, 74th International Astronautical Congress (IAC), Baku, Azerbaijan, 2023, 2-6 October.
[87] Taichi Yamazaki, Taiko Kawakami, COMMERCIAL SPACE SUIT R&D CENTER ”ASTRAX WAER LAB” 2024, IAC-24-E5,IP,26, 75th International Astronautical Congress (IAC), Milan, Italy, 2024, 14-18 October.
[88] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT OF ASTRAX COMMERCIAL SPACECRAFT MISSION SUPPORT CONTROL CENTER IN JAPAN 2024, IAC-24-B6,1,8, 75th International Astronautical Congress (IAC), Milan, Italy, 2024, 14-18 October.
[89] Taichi Yamazaki, Taiko Kawakami, ASTRAX LUNAR CITY SIMULATION FACILITY CONSTRUCTION PLAN IN JAPAN 2024, IAC-24-D4,2,9, 75th International Astronautical Congress (IAC), Milan, Italy, 2024, 14-18 October.
[90] Ayako Kurono, Taichi Yamazaki, EXPLORING THE CONCEPT AND POTENTIAL OF SPACE MUSEUMS FOR PRESERVATION, EDUCATION, AND TOURISM, IAC-24-E5,5,10, 75th International Astronautical Congress (IAC), Milan, Italy, 2024, 14-18 October.
[91] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT OF RAMEN EATEN IN SPACE, IAC-25-B3,IP,21,76th International Astronautical

Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[92] Taichi Yamazaki, Taiko Kawakami, THE POTENTIAL OF SPACE NFTS, IAC-25-E3,IP,15,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[93] Taichi Yamazaki, Taiko Kawakami, UNIFORMS FOR PRIVATE SPACEFLIGHT MISSION COMMANDERS AND SPACE FLIGHT ATTENDANTS, IAC-25-B3,IP,22,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[94] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT AND EXPANSION OF NEW BEVERAGES FOR THE COMMERCIAL SPACE TRAVEL ERA, IAC-25-E6,IP,39,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[95] Taichi Yamazaki, Taiko Kawakami, A VERSATILE SPACE APPLICATION TOOL TO SUPPORT LIFE IN SPACE: INTRODUCTION TO ASTRAX U2U, IAC-25-D2,IP,25,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[96] Taichi Yamazaki, Taiko Kawakami, A SPACE VALUE STANDARD TO SUPPORT LIFE IN SPACE: INTRODUCTION TO ASTRAX VALUE, IAC-25-IP,6,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[97] Taichi Yamazaki, Taiko Kawakami, DEVELOPMENT OF ASTRAX SPACE MISSION SUPPORT CONTROL CENTER 2025, IAC-25-B3,4-B6.4,15,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[98] Taiko Kawakami, Taichi Yamazaki, ASTRAX LUNAR CITY PROJECT 2025, IAC-25-D4,2,12,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[99] Taiko Kawakami, Taichi Yamazaki, CONSTRUCTION PLAN OF ASTRAX LUNAR CITY SIMULATION FACILITY IN JAPAN 2025, IAC-25-E5,IP,21,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[100] Hikaru Otsuka, Taichi Yamazaki , IMPLEMENTING A RURAL REVITALIZATION PROJECT TO TURN MY HOMETOWN, KOMONO TOWN, INTO A 'SPACE TOWN', IAC-25-E1,9,12,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[101] Ayako Kurono, Haruto Kurono,Taichi Yamazaki, WHO GOVERNS SPACE MUSEUMS? LEGAL AND POLICY CHALLENGES IN THE NEW SPACE ERA, IAC-25-E5,5,9,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[102] Taiko Kawakami, Taichi Yamazaki, ESTABLISHING A CULTURE OF DRINKING IN SPACE: REALIZING A BEER EXPERIENCE IN SPACE EQUIVALENT TO THAT ON EARTH, IAC-25-E1,9,18,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.
[103] Taichi Yamazaki, Taiko Kawakami, SPACE BUSINESS DEVELOPMENT EDUCATION AND TRAINING ACADEMY: ASTRAX ACADEMY 2025, IAC-25-E1,LBA,9,76th International Astronautical Congress (IAC 2025), Sydney, Australia, 29 Sep-3 Oct 2025.