IAC-20-D4.1.20

ASTRAX UNIVERSAL SERVICE PLATFORM BY USING BLOCKCHAIN TECHNOLOGY

Taichi Yamazaki [a*]

a CEO and commercial astronaut, International Space Services, Inc. and ASTRAX, Inc., 2-23-17 Komachi, Kamakura, Kanagawa, Japan 248-0006, taichi.yamazaki@astrax-by-iss.com
* Corresponding Author

Abstract

Human activities have evidently gone from Earth to space, the Moon, Mars and beyond. We are moving towards such a time where advanced technology will be required to address our unending challenges on Earth. ASTRAX uses this principle through its blockchain technology to develop a unified Space Economic Sphere Platform on the solar system scale. In this space platform based on blockchain technology, it is possible to efficiently match what is needed for a person living in space and on Earth, with an appropriate service provider. In the long run, ASTRAX aims to issue a dedicated Space Token that can be used on Earth, Space, the Moon and Mars, allowing for efficient and reliable exchange of the value of goods and services on the platform.
Subsequently, we will create a dedicated system for all products and services necessary for living in space hotels, space colonies, and on the Moon and Mars. Starting from the initial launch, verified information is shared on our system. We conceptualized a functional virtual city called ASTRAX Lunar City, and combined with other existing living areas on Earth, in which we hope to use this new system to develop the real-life Lunar City. These systems can be used in spaceships, future space hotels, space colonies, the Moon, Mars and beyond. This is the course of the expansion for the ASTRAX vision in the future.
This paper shows the outline of the concept, examples, and presentation of the results we have so far.

Keywords: blockchain, Solar System Economic Sphere, ASTRAX Lunar City, ASTRAX USP (Universal Service Platform), ASTRAX VALUE, ASTRAX U2U (Universal User Interface)

1. ASTRAX initiatives

ASTRAX has established several business lines so far. We have sold space trips using various commercial spacecraft. In addition, we have been providing zero gravity flight services (including Moon gravity and Mars gravity) since 2012. (Fig. 1) Also, we have increased the number of owners of land on the Moon, managed their lunar addresses, and made a virtual town with more than 280 companies. We have given lectures to more than 100,000 people and provided consulting services to more than 500 companies. We have launched various space businesses into 20 group companies, including food, fashion, education, medical care, entertainment and videography. Within these services, we manage a total of 73 businesses simultaneously. In this way, we have been creating various products and services encompassing space for 15 years. We are not developing spacecraft, rockets or artificial satellites, but we are selling services revolving around life in space. We have steadily opened up the market and have continued to understand and respond to each customer's needs.

I have recognized that when the civil space era arrives, including civilian spaceships, civilian space hotels, civilian space colonies, trips to the Moon and Mars, there will be a need for many goods and services from Earth to live in these environments. However, it is important to acknowledge that everything will have to undergo a remake in the process. In an enclosed space where environmental control is performed, the created environment meant for people to live in is extremely similar to the conditions on Earth, except for one key factor. On Earth and in Space, various environmental factors such as temperature, humidity, pressure, and brightness change. However, on Earth, gravity is 1G everywhere while in outer space the gravity changes variously. An example of these changes can be seen between the difference of 1G on Earth, 3G for spacecraft acceleration, 0G for outer space, 1/6G for the Moon, and 1/3G for Mars. Therefore, gravity could change drastically when the human life sphere expands into space, meaning everything needs to be reworked to adapt to various gravitational conditions. While an astronaut is trained to endure harsh conditions, ordinary customers who will go to space most likely will not have that experience. Their purpose for going to space is for luxury, emotionally moving, discovery, entertainment, business, etc. It is necessary to respond to various requirements to accommodate people, and we must create a service that is flexible enough to respond to changes in gravity.

To accommodate the various demands, ASTRAX catalogues services one by one and creates a platform before more people visit space, so that they can all be managed centrally, converted into big data, and provided appropriately without excessive controlling.

Fig. 1 ASTRAX Zero Gravity Flight Services in Japan

2. Concept of a virtual city using the land on the Moon

ASTRAX has been using the land of the Moon sold by a company called Lunar Embassy in the United States for 13 years. Whether this land is legally valid or invalid will be left to another discussion, noting the fact that from 1980, the land has already been sold and owned by 6 million people worldwide for almost 40 years (Fig. 2) with most of them not being used at all. In other words, buying the land on the Moon is only a dream and has no actual use for most of these people.

Therefore, ASTRAX decided that instead of having people, corporations will purchase the land instead. As of today, 280 companies have already bought land on the Moon through ASTRAX. For example, companies and businesses in various industries, such as cafes and restaurants, clothing shops and electronic shops, schools and hospitals, real estate and architectural studios, entertainment companies and singers, are now owners of the land of the Moon. These companies then start their new businesses located on the Moon by including the lunar address on their business card. The following step is that we ask them to think about what they want to do with the land officially. As a result, ASTRAX can keep track of who has which land and what they want to do there. In addition, we are setting up a lunar city concept, where we create a community that connects these shops, companies, and organizations by having a lunar economic sphere. Through creating maps, applications (fig. 3), and shopping malls (Fig. 4) on the Internet, we are seeing an increasing number of ASTRAX Lunar City pioneering members. We are using our common foothold, the land of the Moon, to get people to realistically come up with supply and demand.

Following the idea that these 280 companies would open stores on the Moon, businesses have thought about products and services related to the Moon, and sold and offered them on Earth without going to the Moon. In other words, services using the Moon have already begun on Earth. If necessary, you can use a zero gravity flight to simulate the Moon gravity. Community colleagues can also collaborate to create new services with each other. Once Moon base facilities, similar to the Hawaiian HI-SEAS Mars base facility, start operating, we will be able to use it as well. The virtual city concept using Virtual Reality is also progressing. When we can go to the Moon, all the items and services necessary for life on Earth will also be needed on the Moon. Before that, if you create products and services related to the Moon now, you can create an immediate economic sphere when you actually go to the Moon.

However, there are some things to consider. Originally, there is nothing on the Moon. That means that at first, you will bring everything you need to live from Earth. When people actually live on the Moon, we are strongly taking consideration about what people actually need, which we believe is more realistic than engineering approaches such as how to use the lunar regolith to create concrete or extract water.

For example, food is an important part of life on the Moon. Do space tourists to the Moon want to eat restricted space food that astronauts eat in the spacecraft when they are going to the Moon? We don't think so. We think it is very important to have regular food that we eat on Earth available on the Moon.

It is not just food that we must think about. If you stay on the Moon for a long time, you will want to take a shower. If possible, you'll want a leisurely bath like an open-air bath. It will be ideal if a spa, gym and swimming pool can be offered as well. In other words, when people actually have the land on the Moon and live there, they will start thinking about what they really want there.

We meet once every two months with members of these communities (ASTRAX Lunar City Pioneers Civic Meeting) to present business ideas such as products and services on the Moon.

On the Moon, there is no air, the temperature environment is severe, the ground is covered with fine particles of regolith, and is bombarded with radiation from outer space. However, we basically ignore the extremely hard environments on the surface of the Moon like those mentioned above to do our business activities using land on the Moon. Because the people living on the Moon are living inside of the facility, we don't need to

focus on the environment outside of the facility. It's just like living inside a base in Antarctica.

On the other hand, low gravity is more important and inevitable. There are services that we think could make good use of the weak gravity and a service unique to the Moon. For example, Gravity Charge Salons may be necessary. There may be a rotating bedroom that supplies 1G while people are sleeping. Even if you can make a spaceship go to the Moon, land on the Moon, and build a base on the Moon with extremely high technology, it doesn't make sense unless there are people who want to go there. Even if many people come to the Moon, it doesn't make sense without offering appropriate services.

As another example, the value of the land of the Moon is not currently determined by the size and location of the land. What is important is not only what people want to do on your land, but also who is located next to your land. For example, a land adjacent to a celebrity's land, even if it is small, will be much more valuable for fans than a person who has a lot of land. Or, if someone has launched thousands of ultra-small laser irradiation satellites in lunar orbit, depending on the projection mapping created by the laser, the Moon as seen from Earth may become a billboard for advertising. This could be a business opportunity for the person who has the land on the Moon to get paid from the advertiser for using the land.

At ASTRAX, we leave the development of spacecraft, landing ships and bases to engineering specialists, and we assume that ordinary people will actually live on the Moon, so that we can use the land on the Moon and the Moon itself to create businesses and products. In order to create a community and a base for that purpose, we need to use the right to own the land of the Moon first.

Therefore, the validity of the land on the Moon is not relevant at this stage. Just having land on the Moon is ok and there is no problem. The important thing is to think about ideas beyond that. It is important that each company has a realistic background in the business, and that it is an opportunity to realistically create products and services in the future.

As mentioned earlier, we have suggested writing the address of the Moon on our business card. This makes it fun to distribute business cards, and many are already distributed. People who have received business cards are brought to a new opportunity to start thinking about the Moon and can connect with other people with the same dream. There are no tools alike for such exciting sales opportunities. Everyone can easily become a lunar business member.

On Earth, we have the option of cash, credit and debit cards. But what about on the Moon? Of course, if we could bring such services and systems from Earth, we might be able to do the same. But at ASTRAX Lunar City, we think it would be better to use a currency specific to the Moon, rather than paying for your coffee in dollars, yen or euros. The idea of developing the Moon should be by the people of Earth, not by any particular country.

More preferably, when I buy a coffee on the Moon, I would like to be able to get it by exchanging it for something else (such as fruits) that I have instead of money. In other words, it is a world where bartering is established from the beginning. The Moon will have potential to be like the primitive age on Earth. Therefore, in order to match things with the value of goods, a common value standard that turns into money will be needed. On Earth, it was money, but on the Moon, there could be a points system that does not belong to any country. Furthermore, its value can vary greatly depending on the person and the situation. It suffices if the value can be determined by a contract established instantaneously between individuals. By doing so, the exchange of goods (the exchange of value and value) will be established more speedily.

Let's consider another example. First, suppose that 1000 people are staying on the Moon for three months. What do they bring to the Moon at that time?

In addition to what is necessary for work, people will most likely bring necessities such as clothes and food, but what about nail clippers? It would be a waste if all 1000 people packed a nail clipper with them since it will only be used a few minutes within the duration of their 3 months stay. It is only necessary to bring a few nail clippers and share them together. The person who brings the nail clipper initially can receive something in value by sharing it (the idea of currency has been abandoned).

Furthermore, if they leave the nail clipper on the Moon, someone else coming to the Moon later can simply reserve it through a smartphone app. The person who brought it in the beginning will gain value until it breaks. This can also apply to clothes and food, including everything that was brought to the Moon, or something that was created there, because it is considered efficient to create a world where various things can be shared and reused.

Combining with the bartering system mentioned above, an ultimate ecosystem can be created if most of what is consumed by people living on the Moon can be recycled; which can be realized by using blockchain technology. Eventually this concept and system will be reflected on

Earth. Unlike the lunar development that some countries do as a national project, it is a global business and evolution that can only be done by a private company or an individual across national boundaries.

Fig. 2 Lunar Deed of ownership of land of the Moon

Fig. 3 ASTRAX Lunar City Application

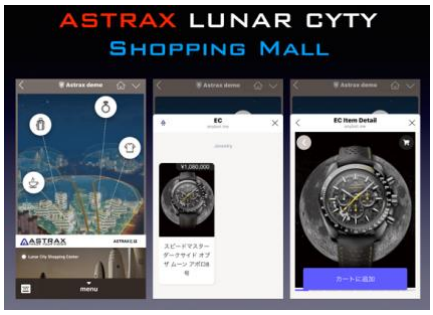

Fig. 4 ASTRAX Lunar City Shopping Mall App

3. If an accident occurs before reaching the Moon

Another example could be that an accident happened onboard a spacecraft heading to the Moon (engineering discussions are omitted here). Suppose that the communication is interrupted and there are no instructions from Earth or the spaceship company manager (spacecraft pilot, etc.). The passengers will have to solve the problem by themselves. If one person has food, one has water, one has air, one can fix spaceships, and one just has a lot of money and valuables; the first four people can help each other by exchanging what they have with each other. It won't be helpful for the last person no matter how much money he has. The place of living in space is established without an economy of money. Rather, money, gold, and jewels have no meaning at all, and necessity items that are needed for living become valuable. ASTRAX defines its value as "ASTRAX VALUE" (Solar System Common Value Standard). We believe that "ASTRAX VALUE" will be a common value standard that can be used not only on the Moon and in a spacecraft, but in the entire solar system. This solar system's common value standard will be used for life on Earth as well. This is because it is the most convenient if there is only one value standard that can be used throughout the solar system. There is no need for any disparity or friction between nations, such as which country is strong or weak. Whether you go to the Moon, to Mars, or anywhere on the planet, you can pay for a product by the same amount of ASTRAX VALUE within the solar system.

4. Application of the Common Value Standard for Solar System Economies to Earth

In this paper, we are approaching from the perspective of building a new economic sphere on the Moon, Mars and in spacecraft. When you think about Earth, there are many conflicts among competitors and concession industries, and there will always be backlash. It is easier in space than on Earth to develop a completely new economic system because nobody has touched it yet.

However, the time will come when we cannot say that anymore. For example, SpaceX is developing a spaceship called "Starship", and civilians will be able to travel to the Moon or Mars, as a result, sooner or later. At the same time, intercontinental transportation on Earth is about to change drastically as well. According to the announcement of SpaceX, it will be possible to reach anywhere on Earth within about 30 minutes using the spacecraft. Let's consider the world when this really happens.

First of all, we will not need to go through immigration or customs. Because if you do it every 30 minutes, it will be inconvenient. For example, passports are already not needed when traveling within the European Union. If it is possible, this system should spread worldwide. More recently, personal authentication can be done easily even with a smartphone using fingerprint and face recognition technologies. This could be a safer and more secure mechanism than a paper passport. If this happens, we will not need our passports anymore.
Furthermore, a nationality is given at the place where a person was born, or according to the nationality of their

parents, but various patterns will occur in the future (moving across countries or stars during birth). When that happens, the time will come when it is better to manage humans on the whole Earth, not in each country, or may not be managed at all. There could be a time when individuals are respected as individuals and no country can control them.

Next is currency. As mentioned above, when traveling on Earth, the transaction can be done in 30 minutes, and the concept of different currencies will disappear. It does not make sense to exchange money, have different rates, or charge fees. It's more convenient to use a single currency throughout the globe. We intend that it can be used anywhere on Earth, in the spacecraft, on the Moon, and Mars, just like the EU can do so in the Eurozone. A very convenient world will form, and the value of money by each country will no longer be meaningful.

However, those who depend on financial institutions and money in each country may be in trouble and may refuse to succeed in such an era. However, in the democratic world, since people have sovereignty, it is natural that what people think is useful, will be spread throughout the world. It is just a matter of time before the world becomes borderless in various fields, and we have no choice but to move in the direction where there is no gap between countries.

5. Concept of a solar system economic sphere (living sphere) based on blockchain technology

What ASTRAX ultimately arrived at is the need to build a solar economic sphere outside Earth. It is not an expansion of the Earth's economic sphere, but it means creating a completely different economic sphere from scratch. The basis of the concept is that everything is newly created for the universe from zero, and the new economic system is used in limited environments and restrictions where there is no gravity (or it is different or fluctuating from Earth).

Each item created will spread through bartering. Things that cannot be produced in the universe will be brought from Earth, but it will be difficult to bring items from Earth every time, so basically the concept of someone's possession will be lost and everything will be re-established. By making it available for use and sharing, it becomes very efficient.

People can own items, but if they don't need something, they can exchange it for another item. Therefore, it would be useful to have a system that can efficiently match those items and services (service provider side) with what people need (customer side). We will use blockchain technology to track everything that goes to and from the universe, from things that have been taken from and to space, things that have been created in space, and things that have been brought back to Earth. We will make it possible to efficiently match and exchange or share items. By gathering all the space-related items (things that can be used in space, or those that can be used both in space and on Earth) all over the world into one platform, users can choose the right combination and service from the right combination both automatically and manually.

The item combinations vary depending on the language, culture, religion, etc., but by putting them on one platform, they can be automatically identified and efficiently selected and matched. Also, it is difficult to perform these matching operations manually, so the most appropriate combination is selected by combining Artificial Intelligence and the Internet of Things. It also has an override function that allows you to select beyond the choice of AI. We named it the ASTRAX Universal Service Platform (USP), a platform that matches supply and demand in such a solar economic sphere. (Fig. 5) This is like an Amazon-style platform that can be used in the entire solar system, but there is no concept of buying and selling, and it is a mechanism that reserves what you want to exchange, share and reuse.

In addition, we are creating a Universal User Interface (U2U) as an application tool that service providers use to input products and services into this platform or to fulfill customers needs. (Fig. 6) This means that all users, both service providers and customers, are identified by blockchain technology, with all supply products and services and all demand needs managed, matched and provided by the blockchain.
Furthermore, all value standards required for use and provision are matched using the Solar System Common Value Standard (ASTRAX VALUE). This is similar to a cryptocurrency, but it cannot be converted into cash. It is a common value standard that is determined instantaneously between the person who creates and enjoys goods and services.

At ASTRAX, many people have applied for space travel, such as those who have experienced weightlessness, those who have taken courses, those who have listened to lectures, those who have participated in tours, lunar city members, advisory companies, and so on. We have established a connection with a related customer list, and we are creating a limited platform, limited tools, and temporary value standards (ASTRAX VALUE) for those people and services. This platform will be an open-source platform, and users will be able to add products and services on their own, which will be used by customers without permission. For example, one can apply for space travel using these tools (ASTRAX USP, ASTRAX

VALUE, ASTRAX U2U), and everything they need for space travel is available.

In addition, ASTRAX's product development, service development, business development, human resource development, training and rehearsal systems will all be integrated so that humans can provide themselves with everything they need to live anywhere in the solar system. This is our ultimate goal.

Fig. 5 Animation of ASTRAX Universal Service Platform (USP), ASTRAX Value, and Universal User Interface (U2U) https://www.youtube.com/watch?v=LM165_OwTRQ

Fig. 6 ASTRAX Universal User Interface (U2U)

6. The U2U that connects individuals to the universe

ASTRAX is developing U2U (Universal User Interface), a system that connects individuals, individuals and space, making life on Earth and in space borderless.

6.1 ASTRAX's Universal Service Platform and U2U

In addition to U2U, ASTRAX is developing the following systems to create and improve services in the era of civilian spaceflight.
ASTRAX U2U is one of the following systems that ASTRAX is developing at the same time, and the user interface is designed to connect each system. (Table 1)

We are trying to make all systems usable in this one application.

Table 1: ASTRAX Universal Service Systems

List of developing systems by ASTRAX
ASTRAX Space Mission (Life) Support and Control Center
ASTRAX Space Travel (Life) Simulator (spacecraft, Moon, Mars)
ASTRAX Online Space Business Creation (Life) Education System
ASTRAX Space Flight (Living) Training Center
ASTRAX Commercial Astronaut (Mission Commander, Space Life Concierge & Space Flight Attendant, etc.)
ASTRAX Space Demand and Supply Matching Platform
ASTRAX Value (Solar System Common Value Standard)
ASTRAX U2U (Universal User Interface)
ASTRAX Crowdfunding (ASCRA)
ASTRAX Universal Data Server (details to be determined)
Universal Sensor (Interface Universal IoT)
ASTRAX Universal Communities
ASTRAX Universal Contents

Please refer to the separate paper where each system detail is written. [7, 8, 9, 10, 12, 13, 14, 15, 17]

6.2 Overview of U2U versions and features

Version 1.0 of the ASTRAX app was created in 2016 (it was not called U2U at the time).
It is now 2.0, created in 2019.

- ASTRAX App. (U2U 1.0) (standalone app version)
- U2U 2.0 (link to ASTRAX Portal)
- U2U 3.0 (link to ASTRX E-commerce site)
- U2U 4.0 (linked to ASTRAX Space education and training system)
- U2U 5.0 (in conjunction with other ASTRAX positions and communities)
- U2U 6.0 (in conjunction with universal sensors)
- U2U 7.0 (link to ASTRAX Universal Database)
- U2U 8.0 (in conjunction with ASTRAX Value)
- U2U 9.0 (Multilingual & Multicultural)

Cont.

U2U looks like a smartphone app. It's currently built on Apple's iPhone app but will be made available for iPad and Android in the future.

Version 1.0 (ASTRAX App.) was a prototype version, which included space travel, zero gravity applications, and the ability to check the profiles of ASTRAX Lunar

City members and apply for new members. This version is now gone and has been replaced by version 2.0.

Starting from version 2.0, you can log in with your ID and password of your registered account. Personal information is also managed by the blockchain. It is currently managed privately, but we believe that in the future when human activity extends to the solar system, we will need to make that information available on a limited basis for personal identification and tracking (allowing users to choose). Also, starting with version 2.0, we plan to continue to evolve this app as the interlocking systems expand and evolve over time, and we plan to upgrade it with a long-term plan.

Version 2.0 is a portal app that allows the public to access civilian space information needed for space services, but the information on the portal system to which they are accessing (e.g., space services by the private sector.) ASTRAX is working in conjunction with 500 businesses, and are making 73 products and services for 73 businesses at the same time. We are trying to provide access to those businesses, and since we are working on the U2U and the portal system at the same time, the ability to access the U2U currently exists, but there is not enough content yet.

In the next version 3.0, you'll be able to link and buy everything you need in space from an e-commerce site (a sort of space version of Amazon). For example, whether it's buying tickets for a space trip, participating in a zero gravity flight, or a wedding dress for a wedding in space, the pastor and photographer will be able to choose and book from this app. Although cash is being used at this stage, ASTRAX VALUE will be given at the same time, and we'll try to shift it to that eventually. We're working on the EC site side at the same time, so we'll link it together when it's completed.

In the following version 4.0, we plan to add functionality to the online Space Business Creation (Life) Education System, which will integrate ASTRAX's spacecraft simulator, spacecraft operations control center, and educational and training texts. It will be a tool to educate and make available to customers going into space, supporting commercial astronauts (mission commanders) or Space Flight Attendant, ground control officer, and all other stakeholders. The systems and tools used in the training will be also available for use in real-time operations.

Up to version 4.0, we've been developing this tool to be used by people who go to space and to support those people, but starting with version 5.0, we're going to add features that will be useful to other operators, such as people in the lunar city community and people who educate children.

Version 6.0 will work in conjunction with universal sensors tailored to space, lunar and Martian environments to keep track of the state of everything in space and the environment so that we can provide the best possible goods and services. This will enable us to provide eco-friendly and waste-free services. We will shift from a system of ownership and trading to a system of sharing, reuse and bartering.

Version 7.0 will be developed at the same time as version 6.0. The data obtained and stored in version 6.0 will be shared and made freely accessible to any U2U user. It will allow customers as well as service providers to build services at will using what's in the universe at their disposal.

Version 8.0 will use the ASTRAX Value we've accumulated so far to not only allow for the exchange of various space services, but also to link, exchange and use them with life on Earth and external services on Earth.

Version 9.0 will probably be based by English or Japanese in the early stages of development, but we believe that it needs to be multilingual and multicultural to match the language and culture of each country. However, there is also the possibility of a single language and culture in space, so I think the key is how simple we can make it.

Versions will continue to grow for many years to come, but we will design and build it to be as interlinked and simple as possible while allowing users to do many things with a single app. To achieve this, we will simplify the specifications and open up the API and other features to further develop and evolve the app.

6.3 U2U for customers and space service providers

The basis of U2U is to provide individuals with what they need in space. To achieve this goal, ASTRAX is developing all kinds of services related to food, clothing, and housing in space, which are divided into 73 fields and further subdivided to enable 500 service providers to provide their services. (Please refer to the ASTRAX PORTAL website for more information on the 73 businesses and 500 providers.)

However, these are not enough. It's like creating a new, separate Earth in space. As I explained before, we will need everything that we have on Earth but we don't need competition there because with just 2-3 companies in each industry, it's a huge amount of work and business.

There is a possibility that we may dare to pick a few companies and dare to explore the universe in a limited way so that we can start with a limited number of people to cooperate with them and have some options.

We will proceed in such a way that they are not competing with each other, but are competitors that can live separately. We will be able to see what's in space now and what's missing in terms of needs and try to fit the puzzle together so that we don't have to compete with each other for a while. Once a set of puzzles are filled in, you'll likely expand in two directions: expanding the puzzles and building on them (upgrading them) at the same time.

To control them, we aim to consolidate them into one U2U and allow what we're doing to be completely visible to each other.

7. Aiming for the ultimate peaceful and safe world (Conclusions)

What will happen when we can get to anywhere in the world in 30 minutes? Earth will feel like a city. Nationalities and races around the world will be mixed, and the meaning of borders and even the existence of the country will change. We will not be able to start a war anymore because people will get along well regardless of their nationalities. Currently, there are a few conflicts around the globe and with this new vision There will be no more wars since boundaries will no longer exist, more people will be friendly and we will exist as one big family. Therefore, irrespective of the diverse nature of mankind currently living on Earth, we will only exist in this new universe as Earthlings in its true sense.

Furthermore, in this new world there will be no gap between rich and poor. This is because, anyone having challenges will immediately be assisted by residents of cities. To help refugees residing faraway from donors, even if we can only donate now, it becomes easier to help them by visiting directly in this concept.

With this in mind, not only the difference between rich and poor, but also education and technical skills will be cancelled. The disparity in socio-economic status will be eradicated from this world. With the current emphasis on labor and working hard, life often appears unstable. However, in this new world we will be creating life that will be much stabilized and directed purposefully with the view of achieving and realizing all your dreams.

Subsequently, this relieves mankind from unnecessary stress, making Earth far more peaceful and safe. The era of communal clashes and conflicts within villages, cities, countries or among ethno-religious groups who often fight themselves, will become extinct and the energy generated from the conflict and fights can be channelled positively to developing the planet and pioneering to the universe. We hope for an era in which people on Earth will work together for space pioneering, and at the same time make the whole planet and the whole solar system a better place. We hope the ASTRAX Universal Service Platform and all ASTRAX systems help this great new space world be created.

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 Road 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 Road 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 Road 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 Road 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, 21-25 October 2019.
[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, 21-25 October 2019.
[8] Taichi Yamazaki, ASTRAX ACADEMY and Space Business and Space Flight Support Educational System, Next-Generation Suborbital Researchers Conference (NSRC), Broomfield, CO, United States, 2-4 March 2020
[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, 2-4 March 2020
[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, 2-4 March 2020
[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, 12-14 October 2020
[12] 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, 12-14 October 2020
[13] Taichi Yamazaki, ASTRAX LUNAR CITY DEVELOPMENT PROJECT 2020, IAC-20-D4.2.11, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 12-14 October 2020
[14] Taichi Yamazaki, ASTRAX LUNAR CITY ECONOMIC SYSTEM BY USING BLOCKCHAIN TECHNOLOGY, IAC-20-E6.2.9, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 12-14 October 2020
[15] Taichi Yamazaki, ASTRAX SPACE SERVICE CATALOG SYSTEM FOR SPACE TOURISM, IAC-20-B3.2.12, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 12-14 October 2020
[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, 12-14 October 2020
[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, 12-14 October 2020
[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, 12-14 October 2020
[19] Taiko Kawakami, Taichi Yamazaki, THE IMPORTANCE OF KIMONO IN SPACE, IAC-20-E1.9.2, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 12-14 October 2020
[20] Taiko Kawakami, Taichi Yamazaki, What women need for space travel, IAC-20-B3.2.9, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 12-14 October 2020
[21] Masahiko Takehara, Taichi Yamazaki, Methodologies for Making “Takoyaki” Under Zero gravity and Making Lunar Shaped “Takoyaki.”, IAC-20-D4.2.14, 71st International Astronautical Congress (IAC), The CyberSpace Edition, 12-14 October 2020

Reference to a website:

[22] SpaceX, Starship | Earth to Earth, https://www.youtube.com/watch?v=zqE-ultsWt0, (accessed 22.Sep.2020)
[23] ASTRAX, Inc., ASTRAX UNIVERSAL SERVICE PLATFORM and U2U by Blockchain Technology, https://www.youtube.com/watch?v=Bj65rrls2vk, (accessed 22.Sep.2020)
[24] T. Yamazaki, ASTRAX Zero Gravity - Zero Gravity Flight Experience in Japan, https://astrax-by-iss.wixsite.com/zero-g, (accessed 22.Sep.2020)
[25] ASTRAX, Inc., 無重力チャレンジャーZERO PV (2012-2014), https://www.youtube.com/watch?v=HK02Z8dQ4ko, (accessed 27.Sep.2020)
[26] Lunar Embassy, https://lunarembassy.com, (accessed 27.Sep.2020)
[27] Lunar Embassy Japan, https://www.lunarembassy.jp, (accessed 27.Sep.2020)
[28] ASTRAX Lunar City Business Community, https://astrax-lunar-city.biz, (accessed 27.Sep.2020)
[29] ASTRAX Lunar City Residence Club, https://astrax-lunar-city.com, (accessed 27.Sep.2020)
[30] T. Yamazaki, 日経 xTECH 山崎大地の宇宙はビジネスの宝庫だ, https://tech.nikkeibp.co.jp/dm/atcl/column/15/060700050/, (accessed 27.Sep.2020)
[31] T. Yamazaki, ASTRAX BASE - 宇宙×秘密基地, https://www.facebook.com/ASTRAX.SECRET.BASE/, (accessed 27.Sep.2020)
[32] T. Yamazaki, 民間宇宙飛行士への道, https://www.facebook.com/TheWayToBeAnAstronaut/, (accessed 27.Sep.2020)
[33] T. Yamazaki, ASTRAX CHAIN - 宇宙×ブロックチェーン, https://www.facebook.com/ASTRAX-CHAIN-宇宙ブロックチェーン-253017488816808/, (accessed 27.Sep.2020)
[34] T. Yamazaki, ASTRAX Training Simulator - 宇宙 x 訓練シミュレーター, https://www.facebook.com/ASTRAX.SIMULATOR/, (accessed 27.Sep.2020)
[35] Club Tourism Space Tours website, https://www.club-t.com/space/qa.htm, (accessed 02.Oct.2020)
[36] Gateway Foundation website,

https://gatewayspaceport.com,
(accessed 02.Oct.2020)
[37] Virgin Galactic website,
https://www.virgingalactic.com/,
(accessed 02.Oct.2020)
[38] Blue Origin, website,
https://www.blueorigin.com/,
(accessed 02.Oct.2020)
[39] SpaceX website,
https://www.spacex.com/,
(accessed 02.Oct.2020)
[40] Space Perspective website,
https://thespaceperspective.com/,
(accessed 02.Oct.2020)