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ADVANCED SPACE SERVICE ACCESS APPLICATION TOOL: ASTRAX UNIVERSAL USER INTERFACE (U2U)

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Abstract

The era of space travel, where anyone can go to space is coming to life. However, there is yet to be a specific tool or system used for supporting everyday living in space, indicating that there is a requirement that needs to see fulfillment before space tourism expands to the Moon, Mars, and rest of the solar system. At ASTRAX, we are developing the Universal User Interface (U2U) as an application tool meant for space service providers to input space products and space services into this platform for customer needs. This means that all users, both space service providers and space customers such as space travelers, are identified by blockchain technology, and all supply (products and services) and demand needs are managed, matched and provided by blockchain. It looks like an Amazon application, but not only for Earth. U2U can be designed to be used before and during space flight, and for staying on the Moon or Mars. We call this space platform the Universal Service Platform (USP).

Furthermore, all value standards required for use and provision are matched using the Solar System Common Value Standard (ASTRAX VALUE) that works on U2U. 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/or 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, specialized 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 requirement of 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 would be available after the process.

To justify this, ASTRAX's product development, service development, business development, human resource development, training and rehearsal systems will be integrated to support the action of humans fulfilling their own needs from wherever in the solar system.

In this paper, details of ASTRAX U2U (Universal User Interface: Space Service Access Tool for each person) will be introduced.

Keywords: ASTRAX Universal User Interface (U2U), ASTRAX Value, ASTRAX Universal Service Platform (USP), ASTRAX Portal, Blockchain,

1. Introduction

Let's be realistic about 1000 people living on the Moon. They will probably need a convenience store or a café or something similar that provides a comfortable lifestyle. If it's a short-term space trip, you can just bring your own food and drink, just like camping. But for a long stay, with a thousand people, you'll have to live there permanently, and will require adequate infrastructure to live on. So, in this paper, I'm going to examine the economic system and the necessary tools for a long term stay on the Moon for a large number of people.

2. New Economic Value Standards for Life on the Moon

First, we will try to imagine life on the Moon by referencing ordinary people with a few examples.

2.1 If an accident occurs before reaching the Moon

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The first example could be that an accident occurs 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.), so the passengers 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 possess in respective value. But it won't be helpful for the last person no matter how much money they have. In other words, the place of living in space is established without an economy of money. Rather, money, gold, and jewels have no meaning at all, and those that become an alternative become valuable. ASTRAX defines its value as "ASTRAX VALUE" (Universal 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 versatile for life on Earth as well. It will be 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.

2.2 How to buy coffee on the Moon

Another example. If someone buys coffee at the Moon Cafe on the Moon, how do they buy it? The question arises as to what currency to use. 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. It is a world where bartering is established from the beginning. In other words, the Moon will be the same as the primitive age of Earth. Therefore, 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 point 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.

2.3 How to use a nail clipper on the Moon

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 terrible waste if all 1000 people packed a nail clipper with them. It is only necessary to bring a few nail clippers and share them together because it will only be used a few minutes within the duration of their 3 months stay. 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.

2.4 New Economic System and Value Standards on the Moon

Thus, on a Moon with nothing to begin with, it would be efficient to create a world where everything can be shared and reused. And if we can recycle most of what people on the Moon consume, combined with the barter system I mentioned earlier, we could create the ultimate ecosystem. And that can be achieved using blockchain technology. By eliminating the notion of individual ownership and tracking the status of everything that is shared, we can create the most efficient living system possible. To do this, we need to establish a value standard for things, information, knowledge, and labor. Their value will fluctuate depending on the type of good or service, whether it's new or old, or whether it's necessary or unnecessary for you. Everything will be managed by blockchain and A.I., and that value standard will be used to ensure that it's provided at the best time and with the best match.

At ASTRAX, we define that value as ASTRAX VALUE (Universal Space Common Value Standard), which we believe will be a common value standard that can be used across the entire solar system, not on just the Moon and

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spacecraft. This Solar System Common Value Standard will be used for life on Earth. It would be most convenient if there was only one standard of value that could be used throughout the solar system. There is no need for disparity or friction between nations as to which nation is stronger or weaker. Whether you go to the Moon, to Mars, or anywhere else on Earth, ASTRAX VALUE will pay the same amount for your goods or services within the solar system.

Eventually, this concept and system will be spun off to Earth. And unlike lunar development, which some countries are doing as a national project, this is a global, universal business that can only be done by private companies and individuals across borders and a major evolution of humanity.

3. 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. Because, 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 the planet 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. So, this system should be only spread worldwide. More recently, personal authentication can be done easily with fingerprints and face recognition technologies, even possible with just a smartphone. 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 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 in section 3, 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, and 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.

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

What ASTRAX finally 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 it is likely that 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 will be allowed to own items, but if they don't need something, they can exchange it for another. 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 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 the Earth. We will make it possible to efficiently match and

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exchange or share items. By gathering all the space-related items (things that can be used in space, or those that can be used in space or on Earth) all over the world into one platform, users can choose the right combination and service from 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. Of course, 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 meant for service providers to use to input products and services into this platform, or to fulfill customer's needs. (Fig. 6) This means that all users, both service providers and customers, are identified by blockchain technology, all supply (products and services) and demand needs are managed, matched and provided by 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, specialized 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 requirement of 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 after the process.

To justify this, ASTRAX's product development, service development, business development, human resource development, training and rehearsal systems will be integrated to support the action of humans fulfilling their own needs from wherever in the solar system.

5. 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.

5.1 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 private 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 Space Settlement Value)
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 a separate paper for each system detail.
[7, 8, 9, 10, 12, 13, 14, 15, 17]

5.2 Overview of ASTRAX U2U versions and features

Version 1.0 of the ASTRAX app was created in 2016 (it wasn't called ASTRAX 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)

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- U2U 4.0 (link 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) continuing

ASTRAX U2U looks like a smartphone app. It's currently built on Apple's iPhone app but will be made available for iPad, Android and etc. 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 Lunar City members. (Fig. 1) This version is now gone and has been replaced by version 2.0.

Fig. 1 ASTRAX App. = ASTRAX U2U Version 1.0

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. (Fig. 2)

Fig. 2 ASTARX U2U Version 2.0

Version 2.0 is a portal app that allows the public to access private space information needed for space services. ASTRAX is working in conjunction with 500 businesses, and we are making 73 products and services for 73 businesses at the same time, so we are trying to provide access to those businesses by using the U2U. However, 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.

Fig.3 ASTRAX U2U 2.0 and ASTRAX Portal

In the next version 3.0, you'll be able to link to 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, people will be able to book the pastor and photographer from this app. Also, although cash is being used at this stage, ASTRAX VALUE will be launched 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 next 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 for use by people who go into space and support 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, the Moon and Mars 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

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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 on 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.

5.3 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, so we need everything 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. We might even 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 coexisting as competitors, but 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 is 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 make what we're doing completely visible to each other.

6. Conclusions

The U2U will be built initially as a tool for space travelers and their supporters, but as the number of space travelers grows over time, we will expand it from space travel to life in space. In other words, we have to be able to access everything we need to live in space.

U2U is a tool for space travelers and the space industry and space operators, but it's also a tool for connecting individuals to other individuals in space. The goal is to connect individuals to space, and through space, individuals to individuals, people all over the world, and the world to be at peace.

There are various conflicts on Earth, such as wars, tariffs, and disparities between rich and poor within the framework of countries, but we believe that space should not be a place of conflict. In addition, people on Earth tend to look to the side and compete for limited space, limited resources and limited markets. ASTRAX will continue to increase the number of people with this kind of orientation and connect individuals around the world, so that the world can be like a family, without regard to the framework of nations, so that we can create a peaceful and prosperous world. I believe that we can create a society without any disparities. To this end, I am convinced that in this era of space pioneering and exploration, an application called U2U can contribute to the convenience of people all over the world. (Fig.4 and see a video of this link:
https://www.youtube.com/watch?v=Bj65rrls2vk)

Fig. 4 ASTRAX Universal Service Platform and Universal User Interface (U2U)
https://www.youtube.com/watch?v=Bj65rrls2vk

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