Interplanetary exchange platform

This document help to start to understand the logic of interplanetary exchange platform, in the future of write this document, I suggest method to help multiple interplanetary object to share informations and data.

Summary

About document author

Ayrton LECOUTRE is a French person passionate about space industry and development. He has worked on this project for about 2 years from 2020 to 2022. This document provides his ideas and how he has imagined the future of space payload service. According to him, he is “a Lambda human, who want help humanity to extend her position in space at the future”

1) Concept

In many year, private industry and governent able to launch rocket in space. Today, many operator can already send payload and get pay for it.
When a private company launch humans in space, this humans has need, and for now, only the earth provide natural resource for help human to survive.

I imagine, a exchange platform, where industrial, astronauts, governements etc... Can make a transaction between two space entity.

Our open source project : https://github.com/Simerca/itpmarket uses client technologie to interact with blockchain networks to operate the transactions.

The first subject is how to provide good user experience service for person who dont have a connection, for permit he to make a transaction without connection ?

We use the blockchain system because he use cryptographic method to sign a transaction. With modern electronic device we can do this technologie for do it directly in client.
When a user make a transaction and he has no connection, the sign token is let in cache, and whenever the connection be enable, he push it on the network automaticly.

Blockchain network validators can validate or not the sign transactions (check he has not altered by user, to prevent hacking or modification) and send the good transaction hash for the user who passed the order.

This is it . Simple, resilient, and based on the blockchain network.

2) Payload

When I started to work on this subject, the first thing that appealed to me, It's how to send a box with a rocket headdress ? The capabilities, the constraints etc…

I have worked with the Falcon 9 spec document.
This document provides a good User guide for using the Falcon 9 if I buy it.
The payload management it's the first problem to solve for the company to manage her logistics for launching items in space.

I provide a tool named Cargo.

Cargo is a simple 3D Sudoku solver; you set a list of item with dimensional, type (electronical, organic or chemical) and weight, you choose the good headdress size and volume type (rectangle or cylinder) and Cargo give your information about the max charge,max height, max width, max length and max volumes.

He optimized a volume based on a 3D grid like a 3D sudoku solver, simple.

This tool permits me to check if my headdress storage is full capacity or not.
When lot's of companies want to send payload in space, who want to automate the process and give users real-time information about the payload capacity.

You can find this tool inside this repository

https://github.com/Simerca/itpmarket

3) Tech specifications

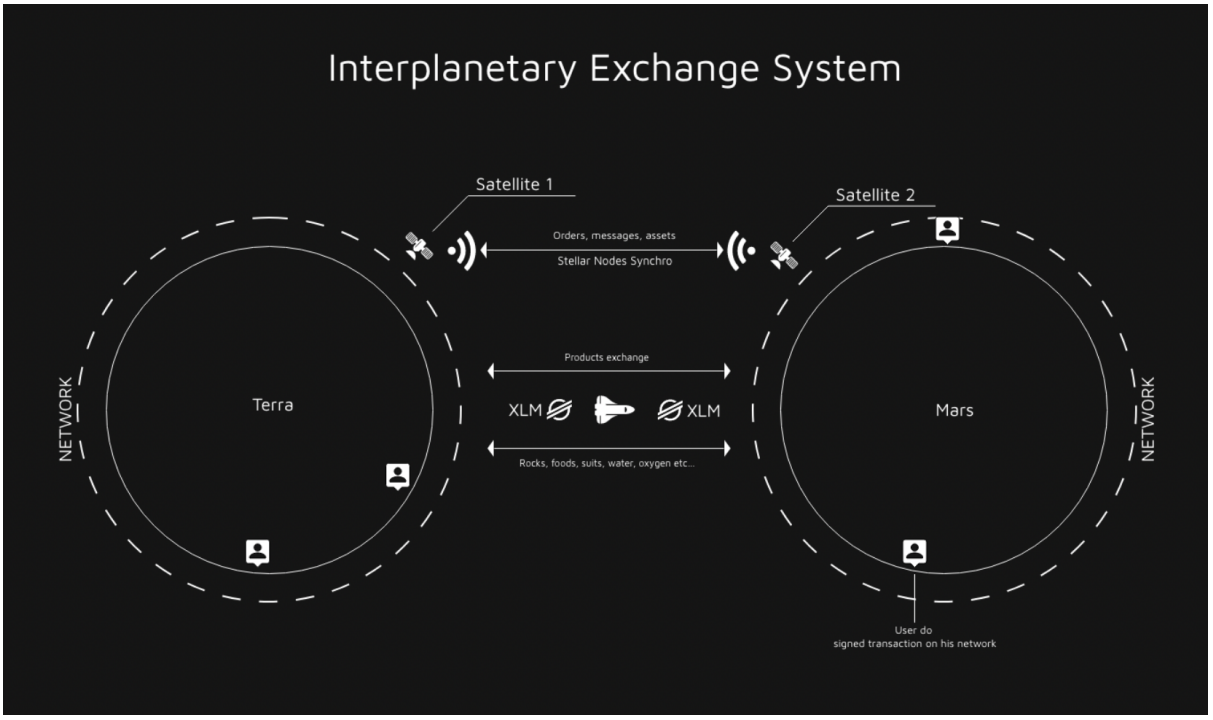
For our project we use only client technologie, like Javascript, Html, CSS for design. Because we use dependency projects, we provide a local installation of these modules.

We integrated the Stellar Lumens (XLM) blockchain sdk to manage the interactions with their API (Horizon)

We integrate an Offline mode, to permit of all users to continue benefit service platform (like orders/products consultation with images, transactions, and Cargo)

4) Uses cases

I imagined this use case :



Descriptions:

Users in space can make a transaction inside his tool. When a network is available, the blockchain network aprobate the token and submits it to the rest of the network. Operators who receive a transaction can use Cargo (optional) to optimize their payload and send orders to the right client, granted by the blockchain.

5) License

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6) Sources

Project : https://github.com/Simerca/itpmarket
SpaceX User guide : https://www.spacex.com/media/falcon-users-guide-2021-09.pdf
Stellar Lumens: https://www.stellar.org/

7) Special thanks

Infinity love to my Wife Aurore, and my children's Stanley and Ivann who support my crazy ideas.

Thank you to all the people who will believe in this document in the future, you made the right choice