ESTCube-2 - Telemetry Decoder and Relay

Continued development proposal for a 4-person team.

ESTCube-2 is an in-development Estonian student satellite with educational and scientific missions. Frequencies that will be used for communication with the satellite are allocated for amateur radio usage, therefore amateur radio enthusiasts around the world will be able to receive and understand data transmissions from ESTCube. Such community involvement also helps us to receive ESTCube transmissions, even when it is not in range of Estonian groundstations. However, as ESTCube-2 will use a custom communication protocol, we need to develop and distribute a client software to be run by radio amateurs, capable of decoding and visualising packets from the satellite using our specific format. Last year, we had a team developing the bare bones functionality of the client, however, as always, unforeseen problems arose and only the critical functionality was able to be implemented. This year we would like to continue the work that was already started last year.

What does our current client do?

The current client is a cross-platform application written using Python 3 and Typescript with React libraries for the front-end. It is able to interface with software (and in theory, hardware) modems using the KISS protocol. In addition, the client interfaces with our mission control system, thus enabling the forwarding all received packets to our servers from the radio amateur users. Finally, we have a simple user interface that presents decoded data packets in human readable form. However, at the moment it is quite simplistic and needs further work to make the application appealing to non-technical users. The current ESTCube implementation can be found on GitHub: https://github.com/estcube/Telemetry-Forwarding-Client.

What needs to be done?

Most of the work would go into polishing the code that’s already developed, implementing additional functionality, creating a more appealing front-end for non-technical users and viewing images, adding support for multiple missions, implementing local storage to name a few. In addition, the need for more documentation with automated tests and CI has become apparent.

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References

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