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Luplink, an Open Source Web Application for an Ergonomic Link Budget Analysis

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Computing a link budget allows to determinate the possibility to communicate with a satellite. This is done by accounting for all the power gains and power losses encountered by a signal along its transmission path. Due to the numerous amount of such gains and losses, computing a link budget can prove to be a difficult and tedious task, especially to students and newcomers.

Some tools to compute link budgets exist and can help mitigate these issues. Luplink uses web technologies and already existing open-source software to provide a simple and ergonomic interface allowing the user to easily compute such link budgets. Luplink is Open Source (AGPL v3) and available here: https://gitlab.isae-supaero.fr/jsatorb-dev/luplink.

For this project, we used the Angular framework to build a frontend that allows the user to provide data. The frontend communicates with a REST API in order to transmit data to the back-end. The backend handles the link budget calculation. For this backend, we used an already existing open-source project called python-linkpredict (https://gitlab.com/librecube/lib/linkpredict).

Taking advantage of Angular's modular architecture, it becomes possible to ship Luplink as an Angular library which can then be integrated into other Angular applications. This is what we did by integrating Luplink inside JSatorb, an already existing tool dedicated to mission analysis used for pedagogical purposes (https://gitlab.isae-supaero.fr/jsatorb-dev/).

Primary authors: PRISSIMITZIS, Julien;   GATEAU, Thibault (ISAE-SUAPERO)

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