GENERAL PROJECT INFORMATION

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| PROJECT NAME | | | PROJECT MANAGER | PROJECT SPONSOR |
| SPxY: Systeme de pointage en X-Y | | | Valentin Suppa-Gallezot | Armasuisse |
| EMAIL | | PHONE | ORGANIZATIONAL UNIT(S) | |
| Valentin.suppa-gallezot@epfl.ch | | +33 6 17 63 54 47 | System Engineering and Project Management | |
| NUMBER OF PEOPLE ASSIGNED |  |  | EXPECTED START DATE | EXPECTED COMPLETION DATE |
| 4-5 | | | 20/09/2023 | 30/01/2024 |

PROJECT OVERVIEW

|  |  |
| --- | --- |
| PROBLEM  OR ISSUE | Our goal for this project is to conceive and produce a state-of-the-art X-Y pointing mechanism for satellite tracking in X and S frequency bands |
| PURPOSE OF PROJECT | The purpose of this project is to support the EPFL Spacecraft team ground Segment in the tracking of their future satellites with a new type of mechanism which doesn’t present keyhole effect limitation and ensure a more precise and faster tracking. |
| BUSINESS CASE | The idea behind the beginning of the project, is to create a cheap APM for space data reception and transmission while keeping the mechanical properties and accuracy of a top-level tracking mechanism. |
| GOALS / METRICS | The goal of this project is to have commissioned the tracking system by February 2024, the evaluation metrics will be its accuracy in tracking, quality of the received signal and compliance with the established requirements |
| DELIVERABLES | The deliverables of this project are the prototype of the X-Y pointing mechanism, its pier, power electronics, control algorithms, user interface and Antenna Feed for X/S band. + Documentation (User manual, ) + Elements testés ? |

PROJECT SCOPE

|  |  |
| --- | --- |
| WITHIN SCOPE | The Project SPxY is responsible to deliver a usable antenna pointing mechanism on the Roof of ELB in EPFL while ensuring its maintenance along the time of operation. |
| OUTSIDE OF SCOPE | In case of external use of any deliverables from the project the SPxY project and EPFL Spacecraft team are not in any case responsible for the damage caused by the antenna operators to him and external personnel. |

TENTATIVE SCHEDULE

|  |  |  |
| --- | --- | --- |
| **KEY WORK PACKAGES** | **START** | **FINISH** |
| Form Project Team / Preliminary Review / Scope | 19/09/2023 | 25/09/2023 |
| Ordering the parts | 19/09/2023 | 23/12/2023 |
| Create Work demand (2ds, tolerances, etc.) | 19/09/2023 | 31/10/2023 |
| Control Algorithm creation | 19/09/2023 | 23/12/2023 |
| Antenna feed design and manufacturing | 19/09/2023 | 23/12/2023 |
| Electrical cabinet manufacturing | 19/09/2023 | 23/12/2023 |
| Test Phase | 01/01/2024 | 14/01/2024 |
| Project Summary Report and Close Out | 15/01/2024 | 30/01/2024 |

RESOURCES

|  |  |  |
| --- | --- | --- |
| PROJECT TEAM | Valentin Suppa-Gallezot - Project Manager / SE Valentin Perret – Control Engineer  Léonard Lebrun – RF Engineer | Victor Bonnet – Electrical Engineer  Rayan Bouchallouf – Software Engineer  Kieran Sharp – Mechanical Engineer |
| SUPPORT RESOURCES | E-Space , EPFL, DLL , + Arma, EPFL Space Center | |
| SPECIAL NEEDS | TBD | |

COSTS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **COST TYPE** | **VENDOR / LABOR NAMES** | | **RATE** | **QTY** | **AMOUNT** |
| **Nema 32 stepper**  **motor** | Valder | | CHF 200 | 2 | CHF 200 |
| **HTx36ES radial**  **encoder** | TDS Precision | | CHF 750 | 2 | CHF 750 |
| **DM06225B reducer**  **(true 0 backlash)** | Onvio | | CHF 10000 | 2 | CHF 10000 |
| **Bearing OD160 ID90**  **40** | NTN | | CHF 250 | 2 | CHF 250 |
| **General electronics**  **(in weatherproof**  **cabinet)** | Distrelec, Digitec, etc | | CHF 1000 | 1 | CHF 1000 |
| **General mechanics**  **(machining of parts,**  **welding and**  **supporting**  **foundations)** | EPFL Workshop | | CHF 12000 | 1 | CHF 12000 |
| **Miscellaneous** |  | | CHF 1000 | 0 | CHF 1000 |
| Preciser supply cost |  |  | TOTAL COSTS | | CHF 25200 |

BENEFITS AND CUSTOMERS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PROCESS OWNER | Valentin Suppa—Galllezot – Project Manager | | | | |
| KEY STAKEHOLDERS | EPFL Spacecraft team, CHESS Mission, Armasuisse | | | | |
| FINAL CUSTOMER | EPFL Spacecraft Team | | | | |
| EXPECTED BENEFITS | Implementation of the cheapest APM (Ratio Size/price) on the market, independence of the EPFL Spacecraft team in the tracking of satellites. | | | | |
|  |  |  |  |  |  |

RISKS, CONSTRAINTS, AND ASSUMPTIONS

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| RISKS | Though contract is signed, Operations still does not have approval from EPFL to accept the funding. + Technical Risks | | | | | |
| CONSTRAINTS | Time constraints – Deadline of the project in February 2024 | | | | | |
| ASSUMPTIONS |  | | | | | |
|  | |  |  |  |  |  |
|  | |  |  |  |  |  |
| PREPARED BY | | TITLE | | | | DATE |
| Valentin Suppa-Gallezot | | Project Manager | | | | 16/11/2023 |