



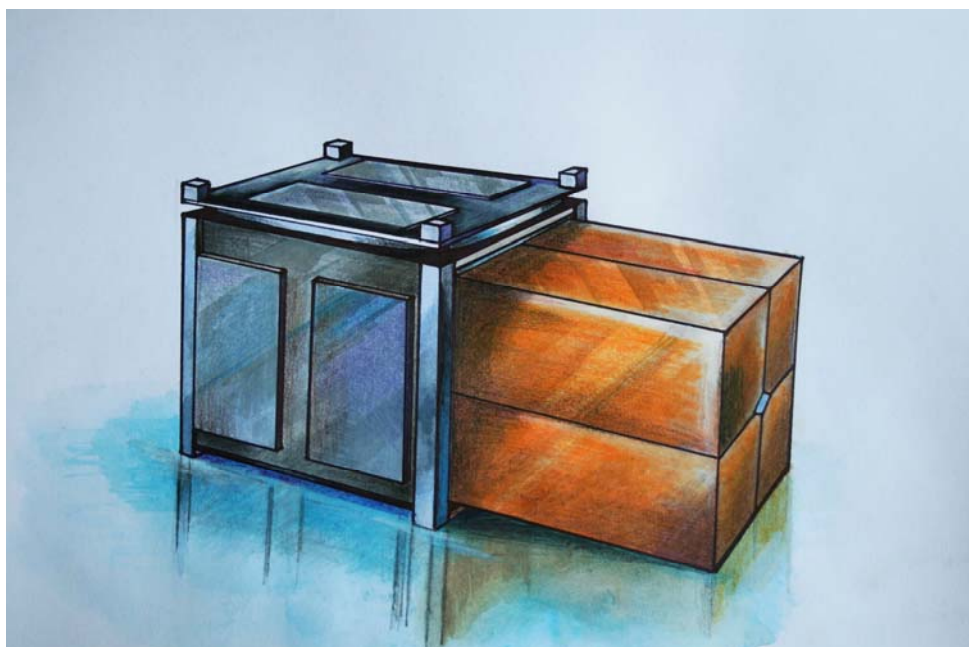
CALL for TEAMS and PROPOSALS for the SSETI Swarm Project

The SSETI Association looks for dedicated enthusiasts, teams and universities to join our new project. The project will be about creating a swarm of small sub-satellites to be deployed from a Cubesat.

The Teams selected from this call will focus on creating the main CubeSat from which the sub-satellites will be deployed. This will involve being responsible from the design phase to construction and testing. The full project deadline will be mid 2010. After this preparations will be made for the launch and operation campaign where representatives of each team will take part in. The launch date will be depending on the availability of launch opportunities in the months after the project deadline.

Four sub-satellites proposals will be selected from this call. The dimensions of these will be circa 4x4.5x9 cm and can house any experiment you may think of. These sub-satellites will be deployed from the main satellite once in orbit and will communicate with the main satellite to relay the data back to earth. These teams will have to work closely with the teams working on the main CubeSat regarding the communication interfaces, mass/volume budget and deployment mechanisms.

All Teams will be responsible in putting in the time for there assigned area or subsystems and to acquiring the required hardware where required. SSETI in turn will provide for this project support, infrastructure, legal advice, reviews, opportunity, pr, coordination for integration, coordination for systems test and will look for co-sponsors to achieve the testing campaign tasks and to find launch opportunities.



Artist impression of SSETI Swarm Project.

TEAM application must provide the following:

- Go to <http://www.sseti.net>, select "Join SSETI", and choose a team from the list of vacancies.
- 1 (one) or more experienced person; working with or as advisor to the team.
- 2 (two) or more students/amateurs/semi-professionals or professionals.
- The group has to designate a Team Leader.
- Team members shall provide their details and present relevant experience.
- The group shall provide a document (proposal) in which they would state how the team would function (eg spare time, part as an university course or as part of a professional environment).
- The group shall present approximate time that can be dedicated to the project in a week/month.
- The group shall present some details about their intended place of work (eg computer room, mechanical workshop etc).

Sub Satellite Proposals must provide the following:

- *A letter of interest*, which should be followed by a proposal before the end of the deadline. The letter of interest should contain any basic relevant information, such as the experiment idea and personal data of Sub Satellite Team members (maximum one page). In the proposal the function and purpose of the Sub Satellite shall be described in more detail, together with delivery timeline stated and all team make-up defined as stated in the previous paragraph (for the team applications) .

General rules:

This call is open to any entity being an agency, industry or university. Agencies and Industry will be asked to put forward in their proposal their choice of sponsorships or type of assistance they can provide in return for this flight opportunity.

When you are ready to submit your proposals, please notify us using the contact form on <http://www.sseti.net> ('Contact Us'), and we will send you instructions for submission.

The Deadline for the CALL for TEAMS is 23.59 CEST **30th of June 08.**

The Deadline for the CALL for SUB SATELITES PROPOSALS is 23.59 CEST **31st of July 08.**

Best regards,
SSETI Committee
SSETI Swarm Project Manager
4th June 2008

Disclosure:

The application is open to everyone. Be aware that a preference for Teams located in Europe/ North America may be given. Please note that one individual will not be able to work in a team - a team of several people located at the same place is required. Teams from Universities are welcome to apply – Places for semi-professionals (eg fresh graduates) amateurs (eg an astronautic or radio amateur societies) or professionals can be awarded as well. As all other SSETI positions, these are volunteer and educational positions.

Companies and agencies looking to test there products or new technology in LEO are welcome to contact SSETI and join this project in a partnership or sponsorship program. If you would like to contact us, please use the contact form on <http://www.sseti.net> , and we will send you instructions for submission.

SSETI Association is currently looking for the following Teams:

- *System Engineering (SYS)* team (CLOSED),
- *Mission analysis (MIAS)* team,
- *Structure & Dispenser (STRUCT/DISP)* team
- *Communication (COMM)* team,
- *Electrical Power System & Harness (EPSH)* team,
- *On-board data handling* (on-board computer) (**OBDH/DPS**) team,
- *Navigation systems & Attitude control (GNC)* team,
- *Space environment and effects (SPENV)* team.

0. System Engineering team (please note – this position is CLOSED):

This team has the task to perform and coordinate the global engineering tasks. This means that it will keep track of power budgets, volume, link budget and the general system design. It will provide the availabilities and limitation to all other teams using the inputs from all teams.

The coordination of this team has already been awarded to the winners of the proposal of this mission.

1. Mission analysis (MIAS) team:

Your duties - analyse possible orbits for our project. - You will investigate various effects on the mission such as, eccentricity, altitude, eclipse time, orbit decay, sessions with ground stations. Later, you will investigate interactions between main satellite and Subsatellites.

Required skills;

STK, MATLAB, FORTAN and other relevant software.

2. Structure and Dispenser (STRUCT/DISP) team:

You will be responsible of producing the launch adapter and structure for the M-Sat satellite which will need to survive the harsh temperature environment of Space and Vibrations during launch. You will be responsible for delivering a proper configuration model of a main satellite and external shape of a sub satellite.

You will be responsible for creating a sub team to design, produce and test the deployment mechanism that will 'eject' the subsatellite from the main structure once the satellite is on orbit. You will investigate best possible materials and method of deploying the sub-satellite into orbit. You will need to take into account at least 2 electrical interfaces for power and communication when the subsatellites are still attached to the main cubesat.

Required skills;

Good knowledge of selected CAD (eg Catia), FEM (Patran/Nastran, Ansys, Mark) and calculation softwares.

3. Communication (COMM) team:

You will be responsible for delivering the communication subsystem between the main satellite and the ground station(s) - as well as between the main satellite and all sub-satellites. You will investigate the best antenna properties (such as length of antenna) for the main satellite and also try to maximize the data sent and received by the main satellite. Optical link as between the main satellite and all sub-satellites may also be considered.

We plan to use UHF radio frequencies for communicating with main satellite. – this frequency range will maximise chances for the signal to be reached by radio amateurs world wide. Most probably, the main satellite will use an Omni directional antenna/wire with the length of at least 150 mm.

4. Electrical Power System & Harness (EPSH) team:

You will be responsible to select a proper solar panels and batteries for the main satellite. You will provide experimental data and simulations. You will be responsible for the harness onboard main satellite. The space environment will also be part of your consideration regarding electric charge build-up and proper grounding of all subsystems.

Current design call for at least four faces covered with solar panels (area - around 350 cm²) and power output of around 0.5 - 2 W with 1 W of average power. Orientation control systems are not currently seen for this mission.

5. On-board data handling (on-board computer) OBDH/DPS team:

This team will be responsible for assembling the main computer for this Cubesat which will perform all types of data handling, communication tasks between the subsystems and run dedicated applications related to other teams. You have the choice to design one from scratch or obtain one commercially which need to be able to withstand the Low Earth Orbit space environment for several weeks. In either case you will need to be innovative to make such a unit robust enough to handle electrical upsets, random reboots and radiation environment.

6. Navigation systems & Attitude control (GNC) team:

You will be responsible to find ways to detect how the CubeSat is oriented and/or rotating. This maybe for example in retrospect to the sun and/or earth. As a team will have the additional task to propose, design and build an innovative way to stabilize or even control the rotation of the Cubesat. Be aware of limited space in the cube sat! Physics, Math, Orbital mechanics, electronics and some basic knowledge in control systems may provide you an answer.

7. Space environment and effects (SPENV) team:

This Team will have the responsibility to investigate the Space environment of Low Earth Orbit (LEO) in regards to radiation environment, electric charges, debris and other..From this investigation you will have the task the inform and advice the other teams, prepare simulation models (e.g. GEANT4) where required and determine any required shielding and grounding if necessary. Your first stop might be <http://www.spennis.oma.be/> .