TEAM NAME: RAJSAT

1.   Attach the team logo (both, hereunder and in a high resolution file attached to this document) with a short description of it:

There is a dark-blue hexagon with yellow edges. "RAJsat" is written there, too. The colours are the same as on our website RAJsat.cz.

2.   Where did you first hear about CanSats?

This is second year, we participate in this competition. All of us first heard the word "CanSat" after Michal (our last year's team leader) forwarded us an e-mail about the national competition from czech ESERO – it was on 1 December 2015. We had to decide really fast – it was the deadline for joining the competition.

3.   When and how did you decide to take part in the CanSat competition?

We decided to join the competition on the same day as we first heard about it – on 1 December 2015. We had no time to discuss and we joined immediately. This year, we want to perform a successful comeback after last year's misfortune during the launch.

4.   Short description of your secondary) mission:

Our RAJsat is capable of measuring almost all aspects of the atmosphere and conditions it will be exposed to, including the humidity, radiation, magnetic field, air pollution as well as its own status tilt, acceleration, inner temperature, battery voltage and solar panel voltage and sends the data to the ground station which can be placed really far as we use a 434MHz transmitter with narrowband modulation in order to be

worth using it on a potential real mission. The whole flight will be recorded with an on-board camera.

5.   Team members background presentation. (short)

We study different types of schools, Ondřej Menčík studies electrotechnics, but most of us are students at normal grammar schools. We all visit the OK1RAJ radio club, where we participate in various projects, like the RAJsat, RAJx balloon probes and Remote QTH.

6.   Structure of your team (responsibilities/roles): who does what in your team?

Ondřej Kučera is the teamleader, coordinates the whole team and helps with the propagation and documentation. His job is to design the PCB's.
Ondřej Menčík is the programmer, responsible for firmware inside the probe as well as the software for data interpretation.
Jan Horák's task is project documentation, completing the progress report, material purchasing and he is also responsible for our website and social media profiles.
Jan Souček is responsible for the ground station and data receiving.
Jáchym Mraček is preparing a reference station that is going to measure temperature and atmospheric pressure at the launch site.
Michael Holt takes care about mechanical testing and descent control.

7.   Strong and weak point of the team and the CanSat. (short video between 3 and 5 minutes duration)

https://youtu.be/iSpwX4br20M

8.   Explain one bad and one good moment. (be as specific as possible)

The bad moment came when we found out we cannot find Altimu10, which is hard to obtain and the delivery takes a long time. But ten minutes before sending this document we finally found it!

9. Write one or two lines of your code and explain it.

```
card.add(pres); // writes pressure onto the SD card
card.add(temp); //writes temperature onto the SD card
```

10. Details of descent and landing; how do you control the descent?

The descent is controlled by the size of our parachute – its diameter is 18" so the descending speed should be around 7 m/s. RAJsat4 is constructed to be really resistant so it won't get damaged when landing.

11. Attach a design of one subsystem and explain it briefly.
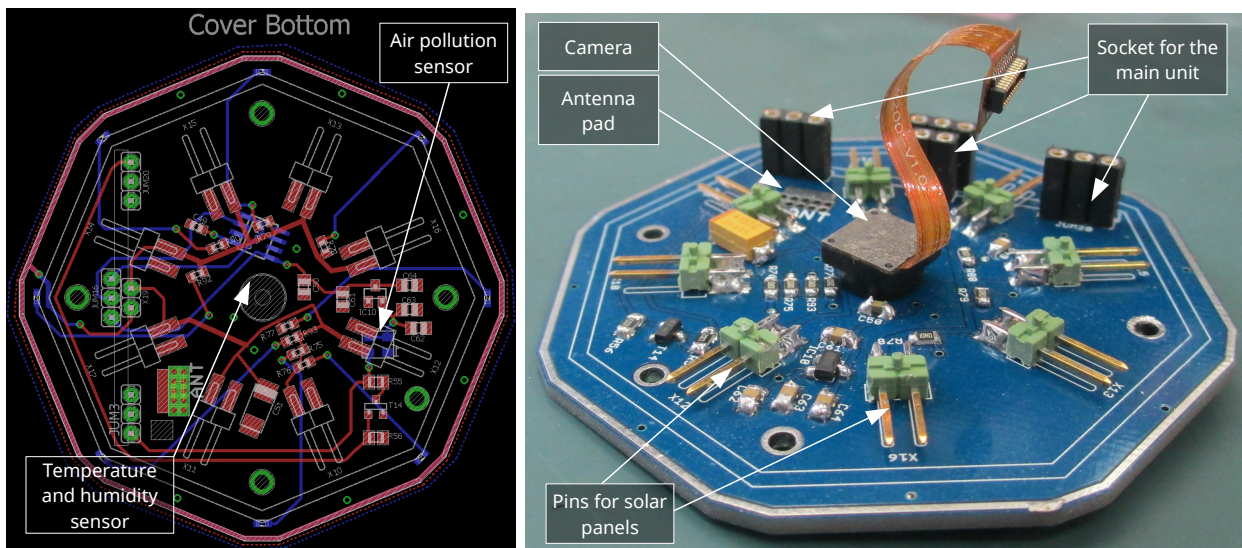
This is the bottom board of our CanSat, part of the satellite's outer construction. It carries the camera lens and the two sensors that are required to be placed outside – air pollution sensor and temperature & humidity sensor.

12. What type of things have you learned so far? (lessons learnt)

After last year's competition, we found out, that even when everything is prepared the best possible way, something critical can always go wrong. Sometimes nobody knows why.
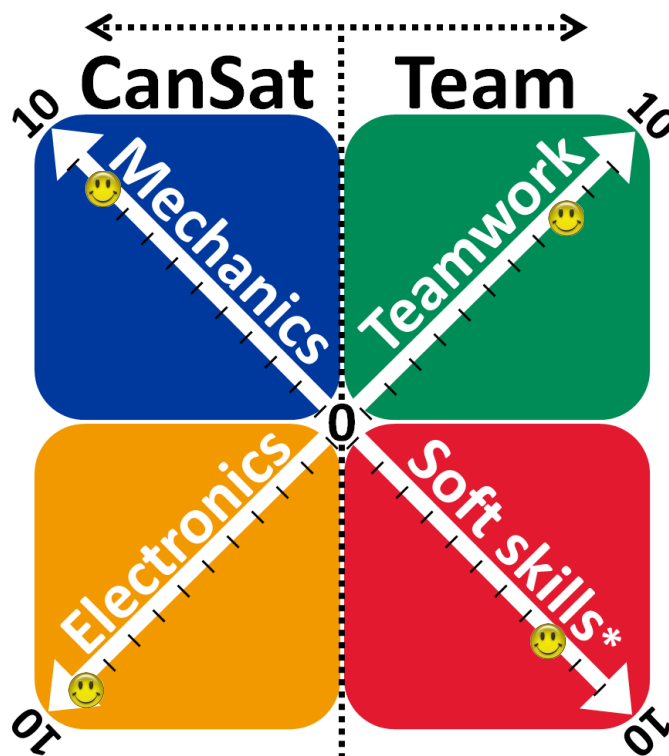
13. List of problems faced:

- Funding issues

14. Support obtained (e.g. financial, technical, school, etc.):

We got financial help for PCB production from RybkaLabs. Air pollution sensor was provided by SOS Electronic and we were given an LTE modem by Vodafone. Additional financial help was provided by ComAp and Junák. We are currently dealing with other possible sponsors.

15. Please move and situate the smileys were you think it represents best your skills in each of the 4 fields:

*http://bit.ly/12JVwBz