



Mars Mission

The year is 2032. A meteorite has damaged an important Martian power station and we need to assess the damage and restart the main generator. We have 16 robots on site. Each robot can be controlled by a team of engineers and space experts from Earth. Between Mars and the Earth there is a delay in the video transmission and direct remote control is impossible. Therefore the Earth experts need to program the robots to solve the task and your teams have been selected for this very important mission! You have three hours to restart the generator. Otherwise, the connection with Mars will be lost...

Rules of conduct

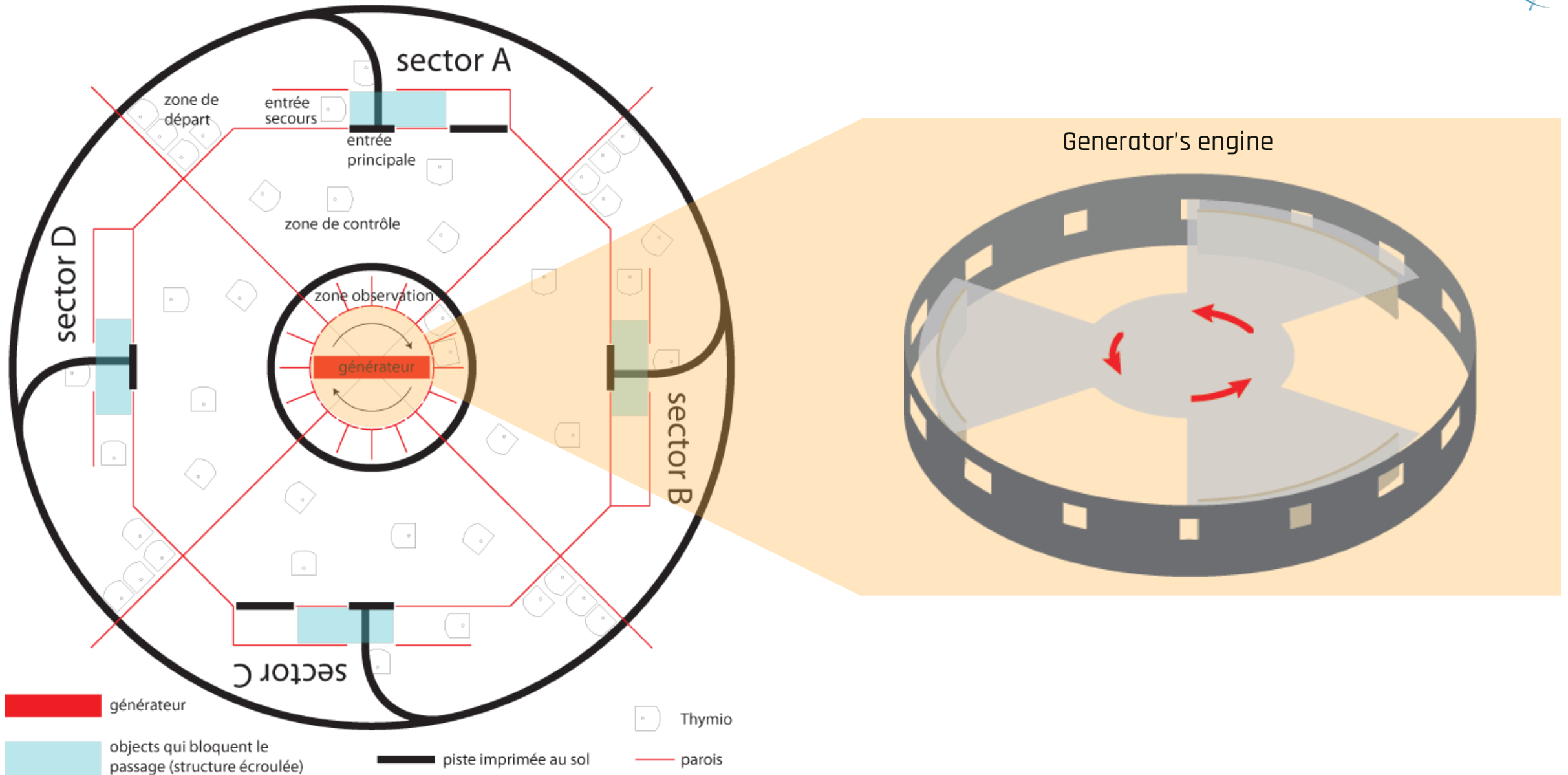
When you join an R2T2 mission you have the chance to work and chat with students in classrooms all over the world. Your teacher will supervise your activity. Your activity during each R2T2 mission is also monitored by R2T2 Collaboration association to ensure that everyone can enjoy the event.

We expect participants to follow these simple rules during every R2T2 mission:

- Do your best to work with your team members to make the mission a success.
- Be respectful of others. That means don't use bad language, don't insult other participants, listen to what others have to say, and be a team player.
- Look after privacy. Don't share your full name, your personal contact details, or anyone else's personal contact details, during mission chats. If you want to keep in touch with someone you meet through an R2T2 mission, ask your teacher to help you organise it.
- Don't misuse the chat function. You should only use the chat to talk about the mission.

If you don't follow the rules, we will contact your teacher to let him or her know, and ask that you stop taking part in the mission.

Structure of the Mars power station



Phases of the mission

Some recommendations:

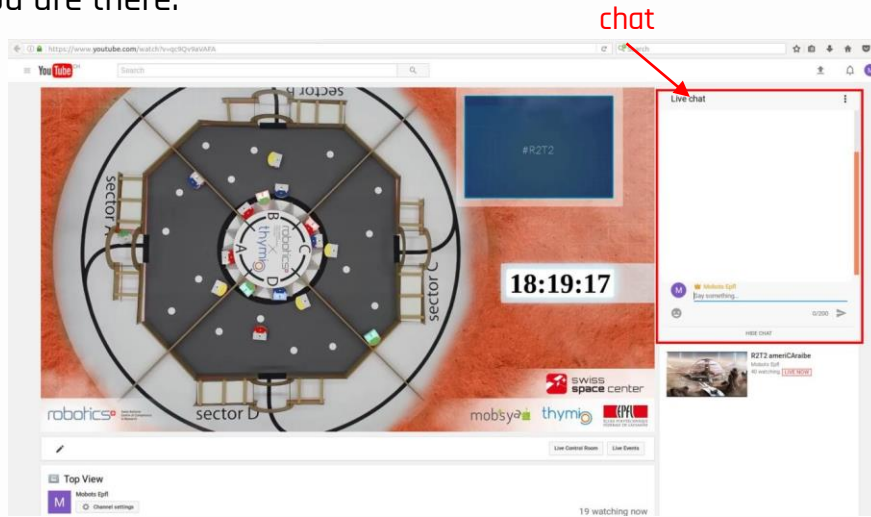
Always discuss with the other teams of your sector to coordinate your actions and plan the mission together.

You must test a new program with a local robot before sending it to the robot on Mars.

	Phase	Description
30 min	PHASE 0 "Connection-Planning-Coordination"	Read, please, the detailed instructions of this phase on the next page
50 min	PHASE 1 "Entering the station"	One of the four robots in each sector needs to take the very difficult task of clearing access to the main door by pushing away the obstructing object using the back door. In parallel, the others need to line up in front of the entrance so as to be ready to enter. Once the collapsed structure is removed, the robots can all enter the station.
50 min	PHASE 2 "Finding controls to access the generator"	The robots need to find the reflective spots and stay on them, indicating that they have found them by lighting a green LED. As soon as all 4 robots of the sector are correctly positioned, access to the "observation zone" of the central generator will be opened. The engine inside of the generator will start to turn a little bit when all slots in the observation zone of the station are opened.
45 min	PHASE 3 "Observing the generator"	There are 4 slots in the observation zone where the robots can connect to the generator. To check the connection, each Thymio needs to determine when the rotating engine of the generator is passing in front of its slot, show this event by lighting up the top LEDs in the colour of the robot and turn off the LEDs if it sees nothing.
3 min	PHASE 4 "Recharging the generator"	The generator can recharge when at least 14 robots are connected to it. When enough robots are connected, the generator's engine will start to accelerate its velocity step by step until reaching full power.
2 min	PHASE 5 "Opening the generator"	The generator will be opened. You can observe the rotating engine and congratulate everyone on the success of the mission!
Fin	End of the mission	The streaming video from Mars will be finished and the chat will not be available anymore.

Instructions for Phase 0

1. Visit the administration's page and enter the password (ask your teacher for this information)
2. Find the robot assigned to your team in the table.
3. Follow the link to the streaming video of your sector and say on the chat that you are there:



3. If you would like to see all sectors at once, click on the "Top View" button to follow the link. We will do an introduction to the mission via this Top View video stream and will make some announcements there during the mission.
4. Visit the web site time.is/Switzerland and compare the time (actual time) shown there with the time that you see on the video. In this way, you can see the time offset between the video signal from Mars and reality.
5. Each time you send a program to the robot on Mars, note the time that you sent it. You will see the result of your programming when that same time is shown on the video.

6. Establish the connection with the robot assigned to your team by following the instructions for the remote connection that you will find on the next page.
7. Check the connection by sending a simple program to the Thymio on Mars, for example, to turn on its top LEDs.
8. If you are experiencing a delay between the video stream and real time that is more than 40 seconds long, check the red timeline bar of the video stream and refresh it if necessary:



9. If you have any problems with the remote connection to your robot, please let us know as soon as possible in the chat.
10. Test your program with a local robot before sending it to your robot on Mars in order to avoid mistakes!
11. Do not forget to follow the rules of conduct, respect your teammates and other teams! All of us have the same goal in this mission!

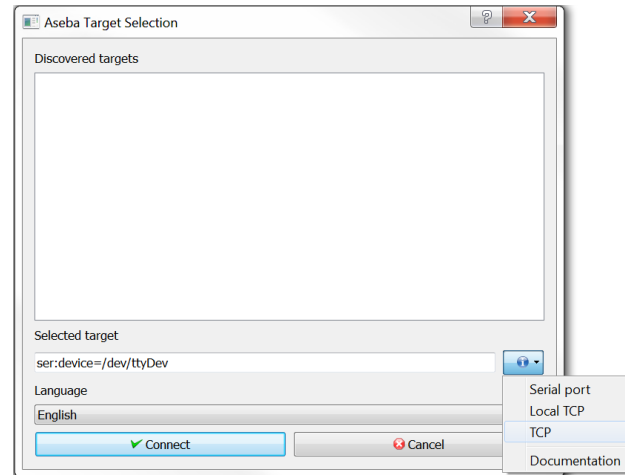
GOOD LUCK!

Connecting to the remote robot on Mars

1. Exit Aseba Studio of the Aseba 1.6.1 package if it is open and re-open it again:

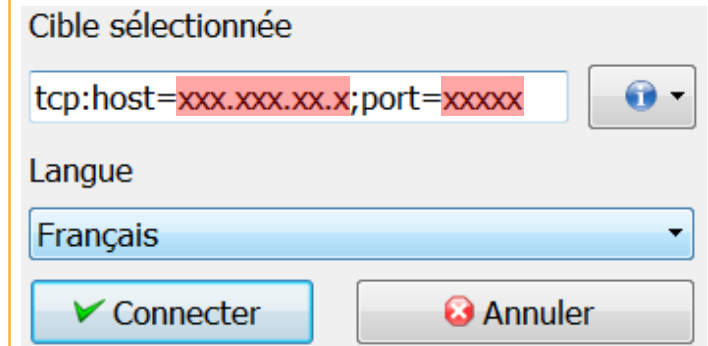


2. Click on the button  and chose the "TCP" option:

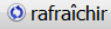


3. You will find the IP address and the port number assigned to your robot in the table given on the administration's page.

Change the IP address and port number to those concerned for your robot. Click on the "Connect" button:



4. If your remote robot is properly connected, then the Aseba Studio window will appear. Deselect the "auto" option that you see next to "Variables":

Variables	
<input type="checkbox"/> auto	 rafraîchir
Nom	valeurs
prox.horizontal	(7)
0	1537
1	1869
2	2047
3	0
4	0
5	1512
6	1514
prox.comm.rx	0
prox.comm.tx	0
prox.ground.ambient	(2)
prox.ground.reflected	(2)
prox.ground.delta	(2)
0	921
1	930

Use the "refresh" button if you want to see current sensor data.

5. If you would like to use VPL, you can find it in the "Local tools" at the bottom left corner of Aseba Studio:

