Shortcut: ESA’s Mars probe to take advantage of Earth and Mars positioning to save time.

Mars today is a cold and somewhat a dry place but scientists believe that billions of years ago, it had lakes and even an ocean as big as the Arctic; some scientists also believe that, because there was liquid ocean, the Red Planet could have supported life, alien life.

As NASA’s Curiosity rover digs upon the Martian surface looking for traces of life, the European Space Agency, or the ESA, is preparing for the launch of its first ExoMars mission. It is a package. One device will sniff out traces of life on the Red Planet, and the other will land on the surface for a special but short mission.

In a statement to press, ESA said that the Trace Gas Orbiter and Schiaparelli will leave Earth in March this year via the Proton rocket; it will take a ‘shortcut’ by taking advantage of the positioning of two planets—allowing the spacecraft to arrive at Mars in October.

The orbiter spacecraft was designed by ESA, and Roscosmos, the Russian space agency, will provide the launch vehicle.

Three days before reaching the Martian atmosphere, Schiaparelli will be ejected from the Orbiter toward the surface. It will then coast toward its destination and enter the atmosphere of Mars at 21,000 kilometers per hour; Schiaparelli will decelerate using aerobraking and a parachute before braking with the aid of a thruster system.

From its coasting to the Red Planet till its landing, Schiaparelli will communicate with the Trace Gas Orbiter. ESA said that once on the surface, its communication will be supported from the Mars Express and from the NASA Relay Orbiter; meanwhile, the orbiter will be inserted into an elliptical orbit around the planet and then sweep through the atmosphere to finally settle into a circular orbit approximately 400-km above the surface where it will conduct its scientific mission: sniff out traces of life on Mars.

In an interview with The Guardian, ExoMars project scientist Jorge Vago said the orbiter is “essentially a giant nose in the sky.” He said they’re going to use it to sniff out the presence of methane and if it is being produced by biological processes.

Methane on Earth’s atmosphere, most of it, is produced by micro-organisms and many species—so perhaps you know already why ESA and Roscosmos are looking for traces of it on Mars.
It is worth noting that in 2014, just days before the end of that year, NASA made headlines after announcing Curiosity’s discovery of methane at the Gale Crater where evidence suggests liquid water once flowed billions of years ago.

“This temporary increase in methane — sharply up and then back down — tells us there must be some relatively localized source,” said Sushil Atreya of the University of Michigan, Ann Arbor, and the rover’s science team. “There are many possible sources, biological or non-biological, such as interaction of water and rock.”

**Schiaparelli: a step toward future Mars missions**

The ExoMars team said Schiaparelli is a step toward the future allowing them to test the techs for next Mars missions.

It is a “descent and landing demonstrator module” that will provide the ESA with the technology for landing on the surface of Mars with a controlled landing orientation and touchdown velocity.

The team said it is equipped with technologies such as special material for thermal protection, a parachute system, a braking system controlled by liquid propulsion and a radar Doppler altimeter system.

Schiaparelli is expected to survive on the surface of the Red Planet for a short time by using the excess energy capacity of its built-in battery system. Its possibilities are limited by the absence of long-term power and the fixed amount of space and resources; it is however set to perform a limited but useful investigation with its set of scientific sensors.

**Credit**: Featured image shows artist’s impression of the Trace Gas Orbiter; image via the ESA website.