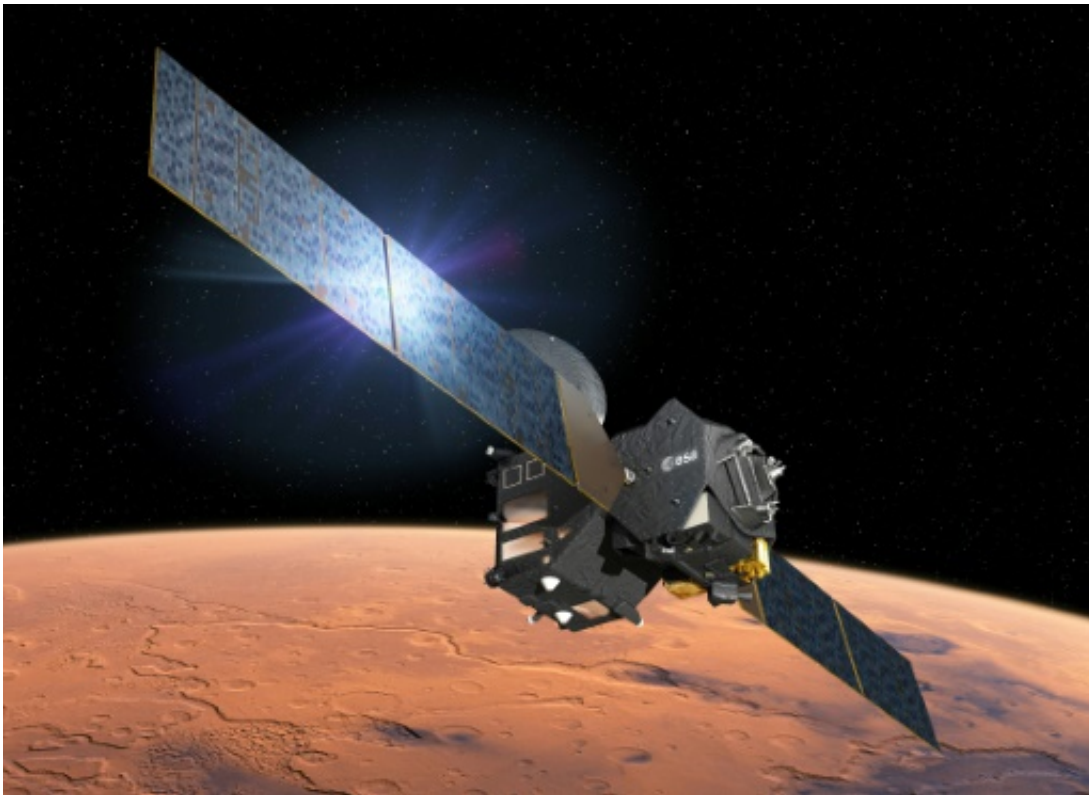


Robot explorers all set for Mars quest: ESA (Update)

October 19 2016



High-stakes manoeuvres should see a lander dubbed Schiaparelli make a dash for the surface of Mars, while the Trace Gas Orbiter enters orbit in phase one of the ExoMars mission

Europe will send a tiny lander on a scorching, supersonic tumble to Mars Wednesday as part of an ambitious quest with Russia to find evidence of life on the Red Planet, past or present.

The Schiaparelli craft will end a seven-month, 496-million-kilometre (308 million-mile) trek from Earth with a dangerous dash through the Martian atmosphere, a critical trial-run for a larger and more expensive rover to follow.

"Things could not be better," said Richard Bessudo of Thales Alenia Space, who helped prepare the Exomars mission which could become Europe's first successful Mars touchdown 13 years after its first, failed, attempt.

"Everything is nominal," Bessudo told AFP hours ahead of the historic touchdown 175 million kilometres from Earth.

Schiaparelli has been free falling to the Martian surface since Sunday, when it separated from its Trace Gas Orbiter (TGO) mothership.

The lander was asleep and programmed to wake up minutes before arriving at Mars' atmosphere at 1442 GMT for a hair-raising six-minute descent.

Radio telescopes on Earth and satellites in space will monitor signals from the landing module throughout its entry, descent and landing, which is scheduled for 1448 GMT.

The TGO and Schiaparelli comprise phase one of the ExoMars mission, through which Europe and Russia are seeking to join the United States in putting a rover on the hostile Martian surface.

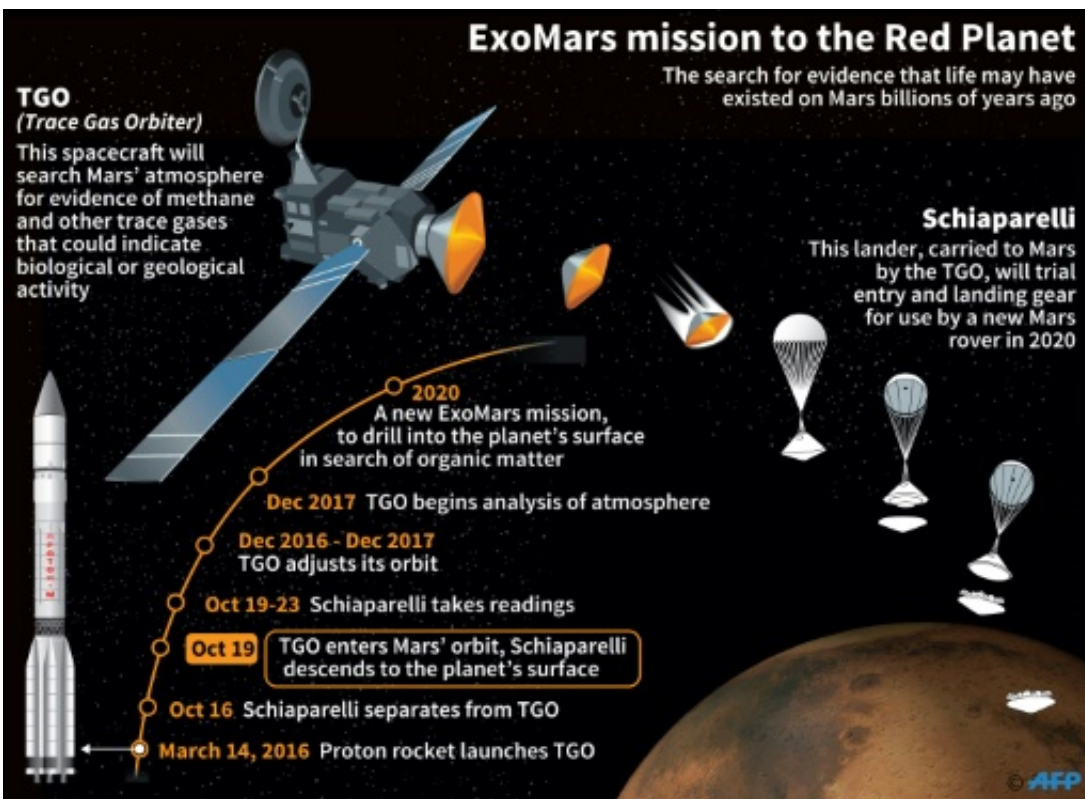
Paddling pool-sized Schiaparelli's main task is to test entry and landing technology for the planned rover—the second phase and high point of ExoMars.

The TGO faces its own high-stakes manoeuvre Wednesday—to enter the

Red Planet's orbit from where it will sniff atmospheric gases potentially excreted by living organisms—however small or primitive.

Life underground?

While life is unlikely to exist on the barren, radiation-blasted surface, scientists say traces of methane in Mars' atmosphere may indicate something is stirring under the surface—possibly single-celled microbes.



ExoMars mission to the Red Planet

The TGO's science mission will only start in early 2018, once it has changed its initial eccentric orbit into a more circular one at an altitude of some 400 kilometres.

"The ExoMars/TGO orbiter is in great shape and ready to swing into orbit," the European Space Agency (ESA) said in a blog update Wednesday.

The first manoeuvre, scheduled for 1304 GMT, will see the TGO execute its most critical command to date—starting a more than two hour-long engine burn to slow down and allow itself to be captured by Mars' gravity.

Confirmation is expected several hours later.

Schiaparelli, meanwhile, will be executing its own daredevil mission through Mars' thin, carbon dioxide-rich atmosphere.

A discardable "aeroshell" will protect the 600-kilogram (1,300-pound) craft against a heat of several thousand degrees Celsius generated by atmospheric drag, while a supersonic parachute and nine thrusters will brake its fall.

A crushable structure in the lander's belly is meant to cushion the final impact.

Schiaparelli was designed to send home vital data on how its body and instruments coped with the harsh hike through the atmosphere.

Powered purely by onboard batteries, it will stay online for two or three days, sending messages that will take about 10 minutes to reach Earth.

Since the 1960s, more than half of US, Russian and European attempts to operate craft on the Martian surface have failed.

ExoMars is Europe's first attempt at a Mars rover since the British-built Beagle 2 disappeared without trace in 2003 after separating from its

mothership.

The ExoMars rover is set for launch in 2020 after a two-year funding delay.

It will be equipped with a drill to seek for life clues up to a depth of two metres.

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