

IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)  
Governmental Human Spaceflight Programmes (Overview) (1)

Author: Mr. Daniel Neuenschwander  
European Space Agency (ESA), France

Dr. Juergen Schlutz  
European Space Agency (ESA), Germany

Mr. Frank De Winne  
European Space Agency, ESA, (*country is not specified*)

Dr. David Parker  
European Space Agency (ESA/ESTEC), The Netherlands

TERRAE NOVAE: AN UPDATE AND OUTLOOK ON ESA'S HUMAN EXPLORATION  
PROGRAMME

**Abstract**

At the beginning of this decade exploration is at an unprecedented crossroads. Leading countries are accelerating investments, while emerging countries and private investors are scaling up efforts even more and gaining record momentum. At the European Space Agency (ESA), the Terrae Novae Programme bundles the human spaceflight and robotic exploration activities across the three destinations of low Earth orbit (LEO), Moon (including cislunar space) and Mars. The ESA Council at Ministerial level in 2022 has consolidated the European activities and taken a number of decisions to ensure continuity of ISS utilisation and the timely development of critical European capabilities such as the participation in Mars Sample Return and in the Gateway. In order to put these investments in perspective, the Terrae Novae 2030+ vision has been translated into ambitious goals for each of the exploration destinations with the Terrae Novae 2030+ Strategy Roadmap:

1. Ensure continuity in LEO, leading to a sustained European presence and utilisation in order to prepare for the post-LEO era;
2. Realise the ambition to have the first European Astronaut on the Moon surface before 2030 by fulfilling essential roles in the Artemis programme (incl. Gateway) and providing autonomous Moon landing capabilities both self-standing and within an international cooperation context;
3. Implement a vision for long-term robotic exploration of Mars that paves the way for the horizon goal to have the first European to Mars by the end of the next decade.

A record budget of 2.7 billion Euros has been subscribed by ESA participating states at the Council at Ministerial level for the programme period 2023-2025. While ISS utilisation, European Service Module provisions for Artemis missions and the Gateway participation are continuing in synchronisation with our international partners, the European Argonaut Moon lander will provide European recurrent access to the lunar surface for the next decade, addressing both scientific interests, technology demonstration and maturation, and programmatic objectives. ESA is advancing its first modules to stay permanently in the lunar vicinity at the Gateway, and European astronauts are preparing for their missions beyond low Earth orbit. New facilities such as the ESA-DLR LUNA Analogue Facility will prepare astronauts, operational teams, scientists and technology developers for the challenges and routines of future lunar human missions.