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

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

Mr. Bernhard Hufenbach
European Space Agency (ESA), The Netherlands

# KEYNOTE: HUMAN SPACEFLIGHT WITHIN ESA'S SPACE EXPLORATION PROGRAMME FOR THE NEXT DECADE

**Abstract**

ESA's space exploration activities were integrated in 2016 into a single programme, the European Space Exploration Envelope Programme. This programme includes the operations and utilisation of the International Space Station in Low Earth Orbit as well as robotic and human missions to cis-lunar space and Mars. The Council Meeting at Ministerial level in 2019 made important decisions to prepare the next decade of space exploration, paving the way for the post-ISS era, European contributions to the international lunar exploration endeavour and future missions to Mars after the European flagship mission ExoMars. Specifically, in the field of human spaceflight, the development of two European-led elements of the NASA-led lunar Gateway - an international habitat as well as a robotic element for refuelling, science and communication - and the continued production of the European Service Module for the NASA Orion system have all been decided. It is expected that these elements will secure the first European Astronaut mission(s) to cis-lunar space and open access to European scientists to human-assisted science and research in deep space and eventually on the lunar surface.

Furthermore, important preparatory activities will start in the next three years to position European in an international industry providing lunar mission support services in the field of transportation, communication, navigation and lunar resource management. ESA will study two alternative transportation services for delivering cargo and science to the lunar gateway or directly to the lunar surface as well as the deployment of a lunar spacecraft constellation for providing broadband communication and navigation services. While no major new developments have been initiated for human platforms in Low Earth Orbit, ESA has increased its efforts to support the development of a LEO economy through the establishment of industrial services enabling access to ISS for commercial customers and to stimulate non-ESA funded demand for such services. The most visible flagship project of the ESA commercialisation initiative, the Airbus build Bartolomeo platform, has been installed on the European Columbus module in March 2020 and commercial operations is planned to start later in 2020.