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Sustainable Utilization of the ISS Beyond 2015 - Joint Session of the Human Space Endeavors and Space Operations Symposia (6.-B3.4)

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ISS EXTENSION - NEW OPPORTUNITIES FOR HIGH VALUE SCIENTIFIC AND INDUSTRIAL UTILISATION

Abstract

The ISS operations extension to 2020 and beyond enables a comprehensive research and sustainable utilization of a microgravity platform 400 km above the earth surface. The ISS is now completely built-up. Since last year the ISS is occupied by an average of four to six astronauts. Europe's laboratory Columbus is in space since two years, controlled by the ESA Columbus Control Centre in Munich. User Support and Operation Centres in nine different European countries, each specialised in a specific research area, support the scientists. Institutional and industrial scientists have already done excellent research in human physiology, life science, biology, materials sciences, fluid physics, and other disciplines. New research fields, such as climate change, development of exploration technologies and long-term experiments, are possible with the operation extension. For example, the externally mounted SOLAR facility will increase knowledge of the interaction between the solar energy flux and Earth's atmosphere, which is of great importance for atmospheric modelling, atmospheric chemistry, and climatology. Industries gain a competitive edge by research and developments under microgravity conditions. How do nano-wires grow in microgravity? Can new instruments developed for measuring the astronauts' physiology in space ease medicine measurements on earth? Can space-induced skin aging be prevented? To promote research and development of ISS by companies outside the established space community DLR is funding -on behalf of the German Ministry for Economics and Technology- the initiative "GoSpace". Space experts familiar with e.g. life science, materials sciences, management, and communications consult and support industries in executing experiments in microgravity. In the past "GoSpace" built up networks and was a partner in preparation of microgravity experiments. In the future "GoSpace" will continue the support and enhance the utilisation of Columbus by industries. New application areas and processes are possible with industrial research on ISS and will provide new benefit for society as well as maximum return of investment. "GoSpace" can pave the way to turn ISS into a valuable tool for industrial endeavours. A profound change can take place: Non-space industry research on ISS will be much more than just a vision.