

INTERNATIONAL SPACE EXPLORATION CONFERENCE

BERLIN 8-9 NOVEMBER 2007

ISEC INTERNATIONAL SPACE EXPLORATION CONFERENCE, 8-9 November 2007 in Berlin, Germany

Hosted by ESA and DLR, the German Aerospace Research Centre, the International Space Exploration Conference took place in Berlin, Germany in November 2007. More than 200 politicians, economists, scientists, and representatives of many national space agencies attended the conference and discussed future missions to the Moon, Mars, and beyond. The participants described their vision of peaceful robotic and manned missions, in order to find common interests and to identify opportunities for potential cooperation and synergies. The conference was a first step for the definition of a roadmap for space exploration that will be presented to the ESA Council on Ministerial Level, which will take place in The Hague in November 2008.

Background

In 2001, ESA Member States identified space exploration as one of the major topics of European interest. As a result of the considerable interest shown by stakeholders, the European "Aurora" space exploration programme was initiated.

The Aurora programme is based on a long-term strategy for the exploration of the Solar System. One of the main aspects of Aurora is the implementation of space exploration within a global framework and the establishment of broad support from society in general.

In 2006, 14 national space agencies came together to work out a global strategy for space exploration. At the end of that process, all of the participating agencies agreed on a document, called the "Global Exploration Strategy". This strategy is meant to coordinate all of the global robotic and manned exploration strategies for our Solar System.

As a continuation of that work, the International Space Exploration Coordination Group (ISECG) was set up in 2007. The purpose of ISECG is to exchange national points of view regarding space exploration and to encourage national exploration efforts that support international cooperation and coordination of future Solar System exploration.

One of Europe's main aims is to act as a political and economic power in the field of space exploration while actively considering global strategy, cooperation and exchange.

In that context, the main aim of the November 2007 ESA-DLR "International Space Exploration Conference" was to gain an overview of the different aspects of space exploration. In particular, topics of relevance for the Ministerial Council in autumn 2008 were addressed by selected speakers and stakeholders.

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The purpose of this summary is to reflect on the opinions of the presenters and to show the key messages coming out of the panel discussions, as well as give inspiration for the implementation of the European exploration spirit in future space exploration.

Summary

More than 200 delegates from all over the world came to Berlin. They represented the fields of politics, economy, science, and numerous national space agencies. In addition to numerous presentations, many panel discussions gave the audience an opportunity to interact by giving their opinions or adding comments.

ESA's Director General, Jean-Jacques Dordain, stressed the importance of the exploration of our Solar System, including all its planets. With regard to the expected decisions of the 2008 Ministerial Council, Dordain expected new missions to be announced – including a European mission to the Moon. The decisions on new missions will be based on three fundamental questions:

1. Where do we want to explore? (focusing on Earth's orbit, Moon and Mars);
2. How can we make good use of the expertise gained in earlier missions?
3. What is the level of cooperation?

Prof. Johann-Dietrich Woerner, Chairman of the Executive Board of the German Aerospace Centre (DLR), also emphasised that exploration of the Moon is the next logical step. In this context he mentioned the Lunar Exploration Orbiter, a planned German mission to the Moon, which is likely to be launched in 2012. Furthermore, Woerner explained the social, intellectual and economic importance of space exploration. He went on to suggest that an action plan should be drawn up, aimed at making best use of all existing capabilities and on interlinking national space strategies in an optimal way. If Europe wants to successfully explore space, a strong partnership between ESA, national space agencies, industry, and politics, as well as international cooperation, is mandatory.

Peter Hintze, Parliamentary State Secretary at the German Federal Ministry of Economics and Technology and Federal Government Coordinator of German Aerospace Policy, said that astronautics is of major importance for science and a key technology for every national economy. Astronautics will not lose its importance for Germany after the International Space Station (ISS) programme comes to an end. Currently, the ISS is a laboratory in space for the whole world. Human presence in low Earth orbit is vital and important, and ESA's Columbus module will improve significantly opportunities for science in microgravity. Looking at robotic exploration, it is clear that Europe has a leading role, Hintze said. In this context Hintze is expecting a positive decision for the development of Germany's Lunar Exploration Orbiter.

Prof. John M. Logsdon, Director of Space Policy Institute at George Washington University and member of the NASA Advisory Council and the Commercial Space Transportation Advisory Committee of the Department of Transportation, stressed the importance and necessity for a human presence in the Earth-Moon-Mars system, including infrastructures at the Lagrange points. Furthermore, he advocated manned missions to asteroids.

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Daniel Sacotte, ESA's Director of Human Spaceflight, Microgravity and Exploration Programmes, explained that the international search for life on Mars has begun. He pointed to the fact that planetary exploration helps enormously to understand our own planet Earth. Sacotte said that there is a need for Europe to continue human activities in space, even after the completion of the ISS programme. To develop necessary technologies for future exploration, Europe envisages exploration missions such as ExoMars, NEXT and Mars Sample Return. In the short term, activities for the extension of the ISS utilisation, ISS follow-on missions and Moon initiatives are foreseen. In the field of technology, Europe can contribute excellent capabilities for the long-term stay of astronauts in space, e.g. life support systems (ECLS) and In-Situ Resource Utilisation (ISRU).

Edelgard Bulmahn, former German Federal Minister for Research and Education, and current Head of Committee for Economy and Technology, stressed that children and young people should be introduced to space exploration as early as possible. She also thinks that the human presence in space is promoting the enthusiasm of young people. This is important, because, by generating the interest for space and science in young school students, it will be possible to encourage enough engineers and scientists for universities and industry.

During the course of the conference, many speakers mentioned that Europe currently depends on the human space transportation capabilities of the U.S.A. and Russia to gain human access to space. Most presenters emphasised that it is high time for Europe to develop its own human space transportation systems, based on existing technologies (Ariane 5 and ATV).

There was also a discussion about what should be on the European space agenda after the end of the ISS utilisation programme. This is particularly important in the context of ESA's astronaut corps. A consensus among the panellists was reached concerning the need for Europe to aim for autonomous human access to space. Otherwise, emerging space nations like Japan, China or India would take over Europe's leading role. One long-term goal of the European exploration roadmap should be human missions to planets and other celestial bodies. There was also agreement on the international character of human spaceflight: human exploration of the Solar System should be done in cooperation with international partners.

During the next Ministerial Council, decisions should be taken about the space programme of future decades, based on a solid, financially sustainable, space exploration strategy.

During the panel discussion with industrial stakeholders, all participants considered that the use of the ISS and its further enhancement through supporting technologies should be a European priority. The panellists also agreed on the fact that the preparation of a robotic Mars mission is a major technological challenge.

According to European representatives from space industry, the Moon would be a suitable environment for testing logistics, ISRU, life support systems, and technologies for protection against radiation. In particular, this panel demonstrated that the capabilities and skills required for successful space exploration are available within the European research and development community.

Additional Conclusions from the Conference

Space technologies have a big potential for making daily life easier and better. According to the conference's audience, politicians and the general public are not sufficiently aware of this advantage. There is also a need to increase an awareness of the role of space technologies in daily life.

Another important objective should be to draft, as soon as possible, a European roadmap for space exploration. This action should be undertaken sooner rather than later, preparing the way for the vision to be turned into reality.

Human exploration is the ultimate challenge for mankind. This is a strong, emotional message which has to be transmitted to the "outside world".

Robotic and human exploration should go hand in hand. Separation of these two branches of astronautics is counterproductive and destroys the possible synergies between them.

The Moon may be regarded as a kind of stationary platform where critical technologies can be demonstrated.