

Proceedings of the

7th ESA Workshop on



Advanced Space Technologies for Robotics and Automation

ASTRA 2002

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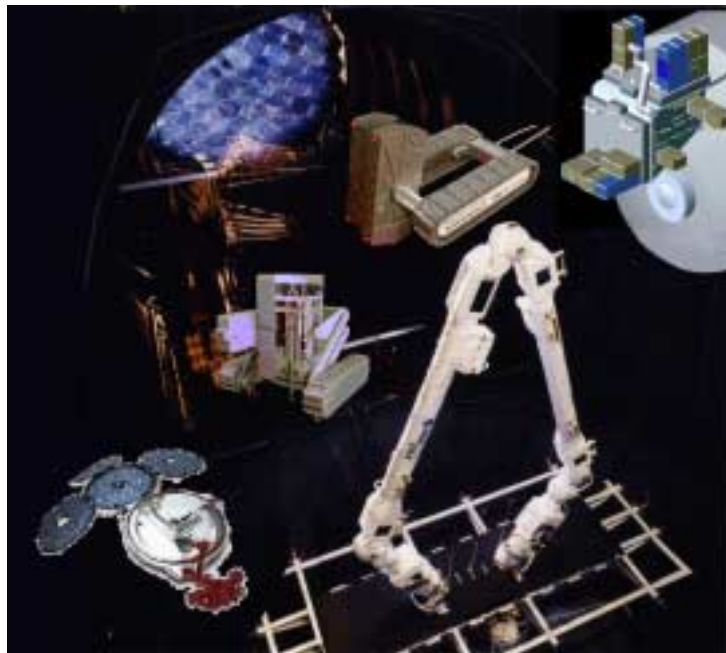
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**7th ESA Workshop on
Advanced Space Technologies for Robotics and Automation
'ASTRA 2002'**



For Beagle2 Lander image: All Rights Reserved Beagle2

ESTEC, Noordwijk, The Netherlands

November 19 - 21, 2002

Organised by the European Space Agency (ESA)

Directorate of Technical and Operational Support

Mechanical Systems Division, Automation and Robotics Section (TOS-MMA)

Advanced Space Technologies for Robotics and Automation

'ASTRA 2002'

19-21 November 2002
ESTEC, Noordwijk, The Netherlands

Organised by the European Space Agency (ESA)
Directorate of Technical and Operational Support
Mechatronics and Optics Division, Automation and Robotics Section (TOS-MMA)

INTRODUCTION

The Automation and Robotics Section of the European Space Agency (ESA) Directorate of Technical and Operational Support is organising the seventh Workshop on "Advanced Space Technologies for Robotics and Automation (ASTRA)". ASTRA 2002 will be held from November 19th - 21st, 2002, at the European Space Research and Technology Centre (ESTEC) in Noordwijk, The Netherlands.

OBJECTIVES OF THE ASTRA WORKSHOP

ASTRA 2002 will build on the tradition of the previous six ASTRA Workshops. It wants to be a forum for information exchange and discussion of the European space Automation and Robotics (A&R) community. Participants shall obtain an up-to-date picture of currently envisaged space missions and application scenarios where A&R could play a major role, the A&R technology needs which can be derived from these application scenarios, the current status of European research and development programmes in the field of space A&R, and new technology trends for space A&R.

The recently approved Aurora long-term mission framework for robotic and human exploration of the bodies of the Solar System - particularly those holding promise for traces of life, is expected to increase the need for space Automation and Robotics. See Liftoff for Aurora: Europe's first steps to Mars, the Moon and beyond

ASTRA will provide an overview of technologies which are available or are being developed in Europe and Canada and in the ESA member states in particular, or which should be included in future ESA-managed R&D activities.

ORGANISATION

Workshop Chairman

H. Lutz, ESA D/TOS, Head of Mechatronics and Optics Division

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ASTRA 2002 Workshop

WELCOME ADDRESS

H. Lutz
Head, Mechatronics and Optics Division (TOS-MM)
ASTRA 2002 Chairman

Ladies and Gentlemen,

It is a great pleasure and honour for me to welcome you all to the 2002 edition of the ESA Workshops on Advanced Space Technologies for Robotics and Automation.

Since the ASTRA Workshop held here two years ago, we all have witnessed the expansion of the International Space Station. The ISS is now inhabited, equipped with the first robotic elements, which already contribute to its enlargement and support its productive utilisation.

Indeed, the developments in the field of space Automation and Robotics - which were addressed at a preliminary stage two years ago - are making very good progress, despite some unavoidable problems. The many programmatic and technological presentations of this Workshop will testify to this.

The European Robot Arm too is getting ready for its tasks on the International Space Station. While the first practical uses of space robotics will be on the Space Station, ESA is also intensifying its activities in the area of planetary exploration by robotic means.

Development of the Mars Express mission with its Beagle 2 lander is underway. A very ambitious landing mission to the planet Mercury is being developed by our Science Directorate.

Furthermore a New programme, AURORA promises to make space robotics the main means by which several planetary exploration missions will be accomplished.

We trust that these endeavours into new worlds will enthral the world-wide science community and public alike, and we are convinced that Automation and Robotics technologies will be essential elements for their success.

Large international co-operation might be initiated soon for human exploration beyond the Earth orbit. Also in such scenarios, Automation and Robotics will play a key role in preparing, enabling, supporting, amplifying, and protecting human operations on these new frontiers.

Ladies and gentlemen, it is you who can reach these ambitious goals with your contributions as planners, researchers, technology developers, managers, and users. I wish you all the best in your efforts together with us, and I look forward to yet another stimulating and rewarding conference.

I hereby declare OPEN the ASTRA Workshop 2002.

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