

**ESA 4th International Workshop on
Tracking, Telemetry and Command
Systems for Space Applications**

19th January 2007

Dear Colleague,

The EUROPEAN SPACE AGENCY Ground Station Systems Division is organizing the **4th International Workshop on Tracking, Telemetry and Command Systems for Space Applications (TTC 2007)**, which will take place at the European Operations Centre in Darmstadt, Germany, from the 11th to the 14th of September 2007.

You are invited to submit a suitable technical article for presentation in this workshop and subsequent publication in its proceedings.

A workshop "Call for Abstracts" brochure is enclosed. Please notice that abstracts should be submitted before the 15th of February 2007 to the ESA Conference Bureau, which is located at the Web site:

<http://www.congrex.nl/07a08/>

In this site you will find additional information on the workshop and also an appropriate Abstract Submission Form.

Your cooperation in further distributing this message to your staff and colleagues in case they consider submitting a paper or attending to the workshop is kindly requested.

Should you have any question related to this event do not hesitate to contact any member of the Organizing Committee who will be glad to provide you with further assistance.

Yours sincerely,

ESA Conference Bureau
(On behalf of the Workshop Organizing Committee)

Call for Abstracts

**4th ESA Workshop on
Tracking, Telemetry and Command Systems
for Space Applications**



TTC 2007

11-14 September 2007

ESOC, Darmstadt, Germany

Organised by the European Space Agency (ESA)



The Ground Station Systems Division of the Directorate of Operations and Infrastructure is pleased to announce the Fourth Workshop on Tracking, Telemetry and Command Systems for Ground and Space Applications, TTC 2007. The workshop will be held from the 11th to the 14th of September 2007 at the European Space Operations Centre (ESOC) in Darmstadt, Germany.

Tracking, Telemetry and Command systems are of fundamental importance in the space programmes. Recent developments in the areas of telecommunications, signal processing, computing and electronics provide new capabilities in the design and functionality of TTC systems either in space or in ground systems. New frequency bands will be used for space applications. Their adequate exploitation is very attractive and it is a promising area for innovation of the space to ground link and for extraction of the consequent benefits. Deep space applications introduce new conditions and new challenges in system TTC design. Methods and architectures for the handling of TTC components and their interconnection are also evolving and will cause the space systems to be closer to the community of users.

Alongside with the workshop, an industrial exhibition will be organized. European companies active in the TTC area will be invited to exhibit samples of their products either by mean of equipment demonstrations or by appropriate posters.

OBJECTIVES OF THE TTC 2007 WORKSHOP

The aim of the TTC 2007 Workshop is to assemble an international forum where TTC equipment designers, systems developers, added value system suppliers, operators, experts, universities and space agencies can openly discuss their ideas, share their experiences and formulate challenges to be met. The workshop will offer an overview of the technologies in use or in development. Hence, it will be a suitable forum for identifying trends in the requirements, architectures and technologies to be given attention during the coming years. Participants will have the opportunity to share their technical expertise and views by formal presentations, informal discussions and round tables leading to:

Explore innovative approaches and new technology trends in the area of TTC that will permit to satisfy the needs of future space programmes

Identify potential areas for cross-fertilisation between the different space programmes, taking also benefit of synergies between commercial and scientific applications

ABSTRACTS REQUEST/TOPICS

Abstracts of original papers are solicited for inclusion in the workshop programme. The papers could range from research work or description of new system concepts to innovative technologies in design, testing, validation or operation of systems/subsystems. The following list of topics could be used as a guidance of the workshop development:

1. GROUND STATION ANTENNA SYSTEMS	2. ON BOARD TTC TECHNOLOGY
<ul style="list-style-type: none"> • Antennae and Servosystems • Radiofrequency subsystems, including cryogenic elements • High Power Amplifiers • Deep Space Technology • Near- Earth Technology • Autotrack in high frequency bands • Antennae Arrays 	<ul style="list-style-type: none"> • Antennas • Transponders • Miniaturization • Current trends • HPA's, LNAs
3. DIGITAL SIGNAL PROCESSING IN TTC SYSTEMS	4. CODING AND MODULATION
<ul style="list-style-type: none"> • Algorithms • Software radio architectures • Software Receivers • On-board computers technology 	<ul style="list-style-type: none"> • Adaptive modulation • Bandwidth efficient modulation schemes • Turbo-codes • High data rate systems
5. STANDARDIZATION, PROTOCOLS AND INTERFACES	6. RANGING, TRACKING TECHNIQUES AND RADIOSCIENCE
<ul style="list-style-type: none"> • TTC Frequency Allocation • Internet in Space • International Regulation Entities • SLE services 	<ul style="list-style-type: none"> • Delta-DOR (Differential Omni-Range) • Radiolocation • VLBI techniques • Radio-Science (signal propagation, calibration techniques)
7. TTC OPERATIONAL ASPECTS	8. SECURITY IN TTC SYSTEMS
<ul style="list-style-type: none"> • TTC Networks • Deep Space Missions • Autonomous Operations 	<ul style="list-style-type: none"> • Threats and Vulnerabilities • Encryption and Authentication techniques • Robustness: interference and jamming resistance • Risk Assessment
9. OPTICAL TTC SYSTEMS	
<ul style="list-style-type: none"> • Advanced optical components • Propagation. Atmospheric effects • Adaptive Optics • Optical modulation/demodulation schemes 	

ABSTRACT SUBMISSION

Papers will be selected on the basis of abstracts of 600-800 words in length. Abstracts should contain the following information:

- Workshop name and proposed topic for the paper
- Title of paper
- Name and affiliation of author(s)
- Addresses, e-mail, telephone and fax numbers
- Name of the prime author or contact person
- Summary of the paper

The author(s) should also indicate whether the paper is proposed for an oral or poster presentation.

Abstracts should be submitted before the 15th of February 2007 to the ESA Conference Bureau. They may be submitted by using the form on the Web address: <http://conferences.esa.int/>. Please get in contact with the Conference Bureau via email address: esa.conference.bureau@esa.int, for any question related to this matter.

Authors will be notified of the decision of the programme committee by the 15th of March 2007. Author(s) whose papers have been accepted will then receive instructions for the preparation of their full-length paper. The deadline for paper submission is 15th of May 2007. The proceedings will be distributed during the Workshop.

CALENDAR OF EVENTS

15 February 2007	Abstract deadline
15 March 2007	Authors notification and preliminary programme
15 May 2007	Final papers due

FURTHER CONTACTS AND INFORMATION

The following web addresses:

<http://conferences.esa.int>

<http://www.congrex.nl/07a08/>

provide detailed information on the workshop.

For technical matters you may contact any member of the Technical Committee or address your questions to

daniel.de.pablo@esa.int or

salvador.marti@esa.int