General Assembly
of the Alphasat Aldo Paraboni Propagation Experimenters

Future broadband satellite communication systems shall offer terabit capacity and very high data rates as requested by the current market both for broadcast and multimedia applications. The goal is to offer satellite-based solutions competitive to the ones provided by the terrestrial network, with in addition the ability to reach directly any end user, whichever his location. This requires the use of high carrier frequencies in the Ka or Q/V bands and beyond in order to achieve the large bandwidth requested.

The utilization of millimetric waves (Ka, Q, V bands and above) in satellite communications requires the use of Propagation Impairments Mitigation Techniques (PIMT, such as ACM, on board reconfigurable antenna pattern, up/down link power control, site/frequency diversity, smart gateway configuration, etc.) to counteract severe atmospheric phenomena without excessive power expenditures. The possibility to design and exploit profitably these techniques is based on the knowledge coming from the propagation science, i.e. on accurate models for the space- and time-distribution of attenuation and on measurements for their validation.

Some of these aspects were initially addressed in the past by a number of propagation campaigns (e.g. NASA ACTS, ESA OLYMPUS and ASI ITALSAT F1 satellites) and are currently addressed at Ka band by several organisations. From 2014 a new European measurements campaign at Ka and Q band is possible thanks to the **Alphasat Aldo Paraboni payload**. This Scientific experiment was conceived by Prof. **Aldo Paraboni** and it was supported by the Italian Space Agency (ASI) as contribution to the Technology Demonstration Payload of Alphasat project, implemented by the European Space Agency (ESA) in the framework of the ARTES 8 Telec§om programme.

The Alphasat satellite has been launched successfully on **July 25, 2013**. The Aldo Paraboni Scientific (propagation) payload was declared operational at the end of 2013 and allows simultaneous measurements of attenuation and depolarisation at 19.701 and 39.402 GHz during a long period (some years) all over Europe. In addition to the two ASI main ground stations installed in Tito Scalo and Spino d'Adda, many European research centres (presently about 10) and NASA have joined the scientific campaign. This is expected to provide to the scientific community new experimental data allowing the validation, among the others, of models of space-time correlation of rain/attenuation fields, of site diversity at small and large scale, and of spatial correlation of cloud fields. All these developments shall contribute to radio regulations and support the implementation of new satellite communication systems.

In order to achieve these objectives, a strong coordination of the experimenters is essential. The scientific community of propagation researchers has already collaborated within experimenters groups, since the COST 205 project on OTS and Sirio satellites, the ESA OPEX for Oympus, the NASA NAPEX for ACTS, the ASI CEPIT for ITALSAT and more recently the COST IC0802 for Ka band campaigns. The impact of these groups is demonstrated by the number of experimental data made available to ITU-R Study Group 3 and by the improvements of ITU-R-P recommendations on Radiowave Propagation for Satellite communication systems.

For these purposes, ASI and ESA are promoting the creation of the **Group of the Alphasat Aldo Paraboni Propagation Experimenters,** which is intended to be an open forum of researchers performing propagation campaigns with the Aldo Paraboni payload and other satellite payloads at Ka band. To this end the group shall promote coordination and cooperation on instruments, design and execution of campaigns, data analysis, use of remote sensing and meteorological data and use of numerical weather products. The group intends also to be a reference on the use of measurements for the development of models and theoretical advances and to actively pursue transfer of results to industry and into radio regulations.

The **First General Assembly** of the **Group of the Alphasat Aldo Paraboni Propagation Experimenters** will be held at the ***20th Ka Band Utilization Conference*** in Salerno/Vietri, in collaboration with the Conference Organizing Committee

The date of the meeting is

Thursday, October 2, 2014
14:30-18:30

Preliminary agenda:

1. The Alphasat Aldo Paraboni Coordination of scientific campaigns among European projects
   C. Riva and A. Martellucci
2. Data processing techniques for SatCom Propagation Campaigns
   L. Castanet, D. Vanhoenacker, J. Riera, A. Rocha, F. Teschl
3. Session of presentations from other Experimenters for introducing their plans and facilities
4. ITU-R SG3 activities on experimental databases and testing
5. Organization of the group
   (Planning, WGs, Inputs, Outputs, Actions and Scientific Dissemination)
6. Conclusions/AoB

All participants interested to contribute to the Meeting are invited to contact **Prof. Carlo Riva** (cc **Antonio Martellucci**) for submitting their proposal for the Meeting before the end of **July 2014**.

Interested participants **who do not plan** to attend the Ka Band Conference are invited to register to this Meeting by contacting the **Conference Organizing Committee** (organizingcommittee@kaconf.org).

The **documentation** of the Meeting will be made available to registered participants only.