



# Fourth and Last Facility TNA Periodic Report

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***This report cover the seven and last semester (from 8/2018 to 2/2019) of the project.*** No milestone was foreseen during this reference period that was essentially devoted to accommodate some of the visits approved during the previous semesters and not yet performed. In particular the plan was to perform the visits for the two TNA proposals approved during the sixth semester.

The first proposal from the AVIOSONIC SME team is centred on quite a topical activity, space debris mitigation, that is very relevant to development of any future space program and the requested facilities have been considered well suited to development of the program. After the positive scientific evaluation by the selection panel, the WP coordinator has analysed the proposal to verify the eligibility of the proposed activities according to EU rules and has informed via email the proponent Italian team that they cannot access, under the AHEAD TNA program, the facilities hosted in Italy, while they can access the two other facilities, they asked for, hosted in other countries and can also perform the mentoring/preparatory visits they have asked for. The facility contact points as well as the proponent have been informed of the successful evaluation to agree on the way to proceed further with the caveat that all activities need to be concluded not later than February 25<sup>th</sup> 2019. As matter of fact the proponents have been in touch with the LAM (Marseille, FR) facility where Mr. Bercella and his team from the AVIOSONIC have been able to perform a preparatory visit to discuss their vibration test and then a visit to perform the actual vibration test. Piermarco Martegani of AVIOSONIC SME had approved a mentoring visit at the ULSRC (Leicester, UK) facility. The visit achieved its primary goal of informing our visitor of the relevant facilities and their characteristics, and learning from him the relevant characteristics of his instrumentation, and the background to it. The visit also helped to promote general understanding of the goals of AVIOSONIC and the University's space-related activities. For the ULSRC, the visit was supported by Mr Tony Crawford (SRC senior mechanical-engineering technician) and Dr. J. Pye. Each of them committed approximately 1 day of effort in regard to the visit. Attached is a short report by Piermarco Martegani of AVIOSONIC, following his visit to the ULSRC, University of Leicester on 14 Feb 2019.

The second proposal was submitted by a science team lead by Rua Curado de Silva and addresses a topic at the core of High Energy Astrophysics, specifically of gamma-ray space polarimeter, and the asked facility (LARIX@Ferrara) appears to be appropriate for the measurements that they need. The guest team has performed the preparatory visits they asked for and then a visit to perform the actual measurements both of which have been very successful.

Regarding another proposal approved in a previous semester, this has resulted in a preparatory visit at the LARIX facility by the COSINE SME (from NL), but, at the very end the guest team has to cancel the measurement visits because they have suffered a major problem in the planned technological development. They wrote in their last email "We have encountered a major issue with the fabrication of the SiLCs: We did not manage to bond the plates together. As a result, we simply do not have any sample to measure yet. This is a major issue, and we are working towards understanding what causes it".

At the conclusion of the entire program it is worth to summarize some of the lessons we have learned running this TNA program especially devoted to hardware testing. In brief guest teams have greatly appreciated the preparatory visits and indeed any visit to perform actual test has requested a preparatory visits. Additionally the mentoring visits to help guest team to better understand the capability of offered facilities have been appreciated, request and indeed performed. The guest team have clearly appreciated the increase from 2 to 3 persons of the travel and lodging support covered by the EU funds. The quest for longer visits that originally assumed has clearly emerged even with the limited statistics accumulated. The number of proposals that such a program will receive is likely to be small, essentially because of the limited number of teams that have hardware to test at any given time. The adoption, in due course, of a very flexible scheme for the submission and evaluation of proposal has proven to be appreciated by the proponents. We have also learned that it is worth to have a proper choice of the



infrastructures/installations to be offered in order to cope with the likely request in the given activity fields.

For reference facility call announcement is available at <http://ahead.iaps.inaf.it> and <http://ahead.astropa.inaf.it>. Facility call and facility detail descriptions are available at <http://ahead.astropa.inaf.it>.



**Aviosonic Space Tech**  
*Aerospace & Safety*



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## **AHEAD VISITORS PROGRAMME FINAL REPORT (Max. 1 page)**

GRANTEE'S NAME (FAMILY/FIRST NAME): **Martegani Piermarco**  
HOME INSTITUTION: **AVIOSONIC SPACE TECH**  
HOST INSTITUTION: **UNIVERSITY OF LEICESTER SRC**  
DATES OF VISIT: **14/02/2019**  
TITLE OF THE PROJECT: **Debris Collision Alert System (DeCAS)**

Milan 18/02/2019

### Work carried out during the visit:

During the visit at the university Aviosonic had the opportunity to present DeCAS project and the next steps of its implementation.

Prof. Martegani, Founder, Owner and CTO of the company, had the opportunity to visit the test facility to verify if its technical characteristics meet the test needs of the DeCAS system.

### Main results achieved:

The technical descriptions provided during the visit and the documentation made available by the University have confirmed that the structure has a Thermal Vacuum Chamber, a Vacuum Bakeout Chamber and a Long Beam-line Test Facility capable of performing the tests necessary for the qualification of the DeCAS system with the exception of vibration tests for which it will be necessary to contact a different structure.

### Future collaborations:

A description of Future collaborations with the Host Institution (if applicable).

After evaluating the characteristics of the university test facility, Aviosonic team confirm their interest in continuing the evaluation of collaboration opportunities.

Prof. Martegani also confirms his availability for collaborations involving university students in the development of the DeCAS system and other didactic projects.

**Aviosonic Space Tech Srls**

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