



GI/LRR/LRT Technical Committee “Computer Architectures in Space” (CompSpace)

## 1<sup>st</sup> Workshop on Computer Architectures in Space (CompSpace’17)

in conjunction with 30<sup>th</sup> ARCS 2017, Vienna, Austria, April 3<sup>th</sup> – 6<sup>th</sup>, 2017

# Call for Papers

### Background and Focus

The aerospace market has undergone rapid changes within the last 15 years. Due to technological progress in consumer electronics satellite design has evolved from the purely use of customized hardware solutions towards the utilization of commercial off-the-shelf electronics, potentially leading to higher cost efficiency and an increased system performance. The dawn of the CubeSats and upcoming Mega-Constellations of miniaturized satellites are currently fueling the progress, attracting venture capital in a never seen before ratio. Mega-Constellations of satellites for a diverse range of applications have become reality with the successful funding of OneWeb, with a total investment of \$500 Million. 2015 has been the year with the single most venture capital investments in spaceflight.

While using COTS electronics, such missions require an increased level of dependability in all subsystems to enable their use within critical missions and for such with prolonged lifetime requirements. However, miniaturized satellites are plagued by low dependability, and require failure tolerance and reliability-enhancing measures to be implemented. Furthermore, on board computers of such spacecraft need to take into account specific boundary conditions which can differ significantly from those of standard computing systems. These comprise environmental factors like launch loads or radiations robustness but also limitations regarding power consumption, mass or costs.

The workshop will discuss existing and novel approaches for computer architectures in space, targeting an audience from computer architects to space engineers working on miniaturized as well as traditional larger scale satellites. Synergies to existing terrestrial applications as well as computing architectures of constellations and swarms of satellites are a focus of the workshop, being firmly embedded in the main conference. The ARCS conferences series has over 30 years of tradition reporting leading edge research in computer architecture and operating systems.

### Topics

Contributions on the topic of “Architecture of spaceflight on board computers“ are of particular interest but not limited to:

- Dependable spacecraft and payload computer architectures
- Mitigation of radiation induced errors
- Flight results and lessons learned
- Modified COTS solutions
- Fault detection and Fault mitigation
- Fault tolerance techniques and strategies in space environments.
- Computer architectures in spaceflight
- Computing on Nano- and Femtosatellites
- Constellations and Swarms
- Cloud Computing in Space
- Testing and test results

### Information for Authors

**Accepted papers will be published by VDE and IEEEExplore.**

The workshop will focus on research presentations as well as brainstorming sessions. Therefore, two kinds of contributions are welcome:

- research papers documenting results of scientific investigations and
- position papers proposing strategies or discussing open problems.

### Deadlines:

Submission: **January 15, 2016** (extended abstracts (3-4 pages) or full papers, PDF)  
to: <http://easychair.org/conferences/?conf=compspace17>  
Notification: **January 31, 2017**  
Camera-ready: **February 13, 2017** (max. 13 pages); will appear in ARCS 2017 Workshop Proceedings.  
Workshop: **April 3-4, 2017**

CompSpace’17 Workshop site: <http://wwi10.lrr.in.tum.de/~trinitic/CompSpace17>

Further information about ARCS 2017: <http://arcs2017.itec.kit.edu/>

### Workshop Chairs

M. Langer, S. Rückerl, and C. Trinitis, TU Munich, DE

**Program Committee: TBD**