IEEE Transactions on Aerospace and Electronic Systems

Special Section on:

Information and Communication Technologies (ICT) for a New Space Vision

1. Scope and aims

The recent developments of global communications and networking brought to a rediscovery of space and satellite technologies. 5G and 6G are considering a renewed vision of a global, ubiquitous, and agile connectivity, where the deployment of the connection infrastructure is flexible and ad-hoc to answer to user requirements rather than to network requirements. By the way, the role of satellite technology should be completely (and dramatically) revised beyond the concept of "extra-terrestrial relay" as mentioned in the 1945 paper of A.C. Clarke.

Hand in hand with such developments, the big new space challenge of next decades will be the launch of new interplanetary manned missions, particularly with reference to Mars planet. In such a perspective, communications and networking will become "interplanetary", involving the necessity of providing connectivity on the Mars surface – for vehicles and humans – and, as well, efficient interconnection with the earth.

The question is: "Are we close to a second space technology revolution, similar to the first of '50s and '60s?" The first space revolution brought to the launch of artificial satellites for telecommunications and remote sensing and to the first man on the Moon. What will bring the second revolution, denominated "space 2.0"? For sure, to a new way of thinking space technology, bringing "intelligence" in the space, deploying reconfigurable space networks, interacting in seamless manner with terrestrial and non-terrestrial *"in-situ"* infrastructures. The progressive "softwarization" of space networks will be the core of such a revolution, together with new design philosophies, considering requirements of quality-of-service, but also energy efficiency and sustainability.

2. Topics of interest

This special issue aims at collecting scholarly papers addressing a wide range of innovative ICT technologies concerning a renewed vision of space communications, space information processing and networking. A list of topics is provided as follows, meaning such a list as indicative and not exclusive:

- Innovative software-based architectures for reconfigurable satellite payloads.
- High-throughput terabit satellite systems.

- Software Defined Networking (SDN) and network resource virtualization in future satellite and aerospace networks.
- Emerging technologies for future space networks.
- Seamless integration of satellite, aerial and terrestrial networks.
- Internet-of-Remote-Things and Internet-of-Space-Things.
- Integration of navigation and communications in the framework of New Space.
- New architectures and tools for interplanetary communications and networking.
- End-to-end system engineering applied to innovative space systems.
- Technologies for a sustainable space.
- New and emerging applications for earth monitoring and space exploration.

3. Paper submission and important dates

The submitted papers should be compliant with the editorial rules of IEEE Transactions on Aerospace and Electronic Systems (see information for authors at: https://taes.msubmit.net/cgi-bin/main.plex). The manuscript must be submitted via https://mc.manuscriptcentral.com/taes. ONLY FULL PAPER SUBMISSIONS will be accepted.

Submission dates and review process deadlines are given as follows:

- Opening submission date: October 1, 2021
- ~~Manuscript submission due: October 29, 2021~~
- Manuscript submission due: **November 19, 2021** (extended)
- First review round concluded on: January 17, 2022.
- Revised manuscript submission due: March 24, 2022.
- Second review round concluded on: May 3, 2022.
- Final manuscript due: May 30, 2022.

4. Section organizers

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