



Special Issue on

**Urban Air Mobility and UAS Airspace Integration: Vision, Challenges,
and Enabling Avionics Technologies**

The integration of Unmanned Aircraft Systems (UAS) in all classes of airspace is an evolutionary step in air transport operations. As a result, new concepts have emerged for UAS Traffic Management (UTM) to support the foreseen traffic density growth and the need for safe Beyond Visual Line of Sight (BVLOS) operations. Closely linked with these developments, Urban/Advanced Air Mobility (UAM/AAM) has appeared as a new and disruptive dimension for aviation, potentially enabling mobility of goods and people at a different scale compared with current operations, while also emphasizing the need of seamless integration with the existing Air Traffic Management (ATM) framework. These UAS capabilities are reshaping the future of aviation, but they also challenge traditional paradigms, requiring significant advances both in technologies and regulations, while keeping strong links with public communities and the perception of societal benefits. As an example, a key role is played by the progress of Communications, Navigation and Surveillance (CNS) technologies, such as Sense-and-Avoid (SAA) and Global Navigation Satellite Systems (GNSS)-resilient navigation systems, and by the seamless integration of airborne and ground infrastructure within a cyber-aware context.

In view of the above challenges, the AESS Avionics Systems Panel intends to compile a Special Issue of the AESS Magazine that will cover the most recent research and innovation developments in the field of UAM/AAM and UAS airspace integration. This UAS Special Issue is broad in scope as it aims at providing a wide overview of the state of the art and development trends in the field, also addressing the main research gaps that are currently being tackled by industry and academia.

Key Topic Areas

- Evolution of CNS/ATM technologies for UAM/AAM and UAS airspace integration
- Avionics for autonomous systems and contingency management approaches
- Innovative sensors and sensor fusion for autonomous flight and UAM/AAM
- Satellite based augmentation of current CNS systems for improved safety
- Collision avoidance systems for UAS with interface to UTM/UAM/AAM
- Development of standards for UAM/AAM certification and regulatory framework evolution
- Methods of interoperable UAM/AAM and autonomous flight operations (e.g., ontologies)
- Human-robot interactions and human factors engineering in UAM/AAM
- Flight testing and technology demonstration activities and plans
- Societal, ethical, and public perception of UAM/AAM/UAS airspace Integration

For information on paper submission, prospective authors should visit <http://ieeaeess.org/maes/author-information>. Manuscripts should be submitted using the manuscript submission web site for IEEE Aerospace and Electronic Systems Magazine at <https://mc.manuscriptcentral.com/aesm> for peer review.

Important Dates

- Manuscript submission deadline: 15 November 2021
- First review completed: 31 December 2021
- Revised manuscript due: 28 February 2022
- Second review completed: 15 April 2022
- Final manuscript due: 15 May 2022

Guest Editors

- Prof. Giancarmine Fasano, University of Naples Federico II, Naples, Italy – g.fasano@unina.it
- Mr. Omar Garcia Crespillo, German Aerospace Center (DLR), omar.garciacrespillo@dlr.de
- Prof. Rob Sabatini, RMIT University, Melbourne, Australia - roberto.sabatini@rmit.edu.au
- Mr. Alope Roy, Honeywell, Columbia, MD, USA – aloke.roy@honeywell.com
- Mr. Ron Ogan, IEEE Aerospace & Electronic Systems Society, USA – rtogan@ieee.org