AEROSPACE COMMUNICATIONS AND NETWORKING IN THE NEXT TWO DECADES: CURRENT TRENDS AND FUTURE PERSPECTIVES

Edited by C. Sacchi, A. Jamalipour, and M. Ruggieri

1840 1945-2010: 65 Years of Satellite History From Early Visions to Latest Missions
By B. G. Evans, P. T. Thompson, G. E. Corova, A. Vanelli-Coralli, and E. A. Cordova
[Invited Paper] This paper presents an overview of the history and present state of satellite communications and broadcasting and it provides a look at future satellite communications.

1855 EHF for Satellite Communications: The New Broadband Frontier
By P. C. Cimino, T. Rossi, A. Yahalom, Y. Pinhasi, J. Farvarzani, and C. Sacchi
[Invited Paper] The current state of research and technology in EHF satellite communications are discussed in this paper along with related future perspectives, applications, and services.

1882 Satellite Radiolocation From GPS to GNSS and Beyond:
Novel Technologies and Applications for Civil Mass Market
By G. Fernández-Prades, L. L. Prett, and E. Palletti
[Invited Paper] The current and forthcoming GNSS and associated technologies are discussed from a mass market perspective; hints are given about the future role of digital signal processing and the software-defined radio.

1905 The Future of Satellite TV: The Wide Range of Applications of the DVB-S2 Standard and Perspectives
By V. Mignone, M. A. Vázquez-Castro, and T. Stockhammer
[Invited Paper] Perspectives of digital TV and HDTV broadcasting are discussed in this paper, as are ongoing and future standardization activities and satellite hybrid Internet Protocol TV.

1922 Aerospace Communications for Emergency Applications
By M. Berioli, A. Molinaro, S. Morosi, and S. Scalise
[Invited Paper] Recent advancements and trends in the use of aerospace communications for emergency rescue applications are discussed, as are integration of aerospace facilities with terrestrial backbones and networks.

1939 The Role of High-Altitude Platforms (HAPs) in the Global Wireless Connectivity
By A. Mohamed, A. Mohamed, F.-N. Pavlidou, and M. Moharrac
[Invited Paper] The role of HAPs in providing global connectivity for future telecommunications systems and services is discussed in this paper.

By E. Alaghi and C. Gür
[Invited Paper] Energy efficiency and satellite networking are reviewed in this paper, ranging from protocols for airborne satellite systems to mobile end-user terminals, and also the prospect of greener infrastructural systems.

On the Cover: This month our cover depicts the Earth surrounded by orbiting communications satellites as we take a look at Aerospace Communications and Networking in the Next Two Decades: Current Trends and Future Perspectives.
SPECIAL ISSUE: Aerospace Communications and Networking in the Next Two Decades: Current Trends and Future Perspectives

By C. Cai, H. Crickshank, S. Farrell, and M. Marchese
INVITED PAPER: Applications of DTN for future satellite networks are discussed in this paper, as well as the relationship between DTN and quality of service (QoS).

1998 Load Balancing and QoS Provisioning Based on Congestion Prediction for GEO/LEO Hybrid Satellite Networks
By H. Nishiyama, D. Koide, N. Kato, and N. Kadowaki
INVITED PAPER: This paper describes a novel load balancing and quality of service provisioning scheme for real-time and non-real-time traffic, based on a new congestion prediction scheme.

2008 Design of Flower Constellations for Telecommunication Services
By D. Mortari, M. De Sanctis, and M. Lucente
INVITED PAPER: Design and optimization of systems for maximizing global coverage and network connectivity via intersatellite links and improving their performance are discussed in this paper.

2020 Deep-Space Optical Communications: Future Perspectives and Applications
By H. Hemmati, A. Biswas, and I. B. Djordjevic
INVITED PAPER: Current technologies available for deep-space optical data transmission and networking are discussed in this paper, as well as ongoing experiments, future perspectives, and applications.

2040 Future E-Enabled Aircraft Communications and Security: The Next 20 Years and Beyond
By K. Sampigethaya, R. Poovendran, S. Shety, T. Davis, and C. Royalty
INVITED PAPER: This paper shows how the envisioned e-enabled aircraft play a central role in streamlining system modernization efforts, challenges, emerging solutions, and open problems are highlighted.

2056 Reliability Options for Data Communications in the Future Deep-Space Missions
By T. Deola, E. Paulin, C. Liva, and G. P. Calzolari
INVITED PAPER: Reliability options that are available for application in deep-space missions are surveyed in this paper.