

Preface

The two volumes of this book were written in order to form a bridge between potential readers and current GMSC trends, system concepts and network architecture by using a very simple style with easily comprehensible many technical information, characteristics, graphicons, figures, illustrations, and mathematic equations.

The special part of GMSC for maritime, land, and aeronautical CNS applications are new techniques for modern transportation concerns and their fleets at sea, on land, and in the air for the enhancement of commercial and distress communications and tracking solutions. The modern GMSC infrastructures are greatly important for all transportation companies, their successful commerce, carriage and management of vessels, land vehicles, and aircraft. Finally, modern, innovative techniques and technology in GMSC are needed for newly developed mobile broadband and multimedia communications and for IT, CNS, and Global Navigation Satellite Systems (GNSS).

The Volume 2 of this book, nominated as “Applications,” consists of seven chapters on the following particular subjects:

Chapter 1: Inmarsat GEO GMSC System describes the Inmarsat system, Space Segment, ground segment, and standards for maritime, land, and aeronautical applications. In addition, this chapter is including Maritime System Architecture and Operations, Land System Architecture and Operations, and Aeronautical System Architecture and Operations, Maritime Emergency and Safety Service and Aeronautical Emergency and Safety Service with special contribution on Global Aeronautical Distress and Safety System (GADSS) developed by author of this book in 2000, 16 years before the ICAO proposal.

Chapter 2: Non-GEO GMSC Systems comments particularly upon modern big LEO systems, such as Globalstar and Iridium, Little LEO Orbcomm and Gonets Leosat GMSC Systems, and O3b Networks Global MEO GMSC System.

Chapter 3: Global Broadcasting Satellite System (GBSS) presents implementation of new DVB-RCS for maritime, land, and aeronautical CNS.

Chapter 4: Cospas-Sarsat GMSC System presents distress and safety satellite systems, emergency satellite beacons for all mobile applications via LEOSAR, MEOSAR, and GEOSAR subsystems.

Chapter 5: Global Mobile Satellite Distress System (GMSDS) is introducing new concept of integrated commercial and safety satellite CNS for maritime, land, and aeronautical applications.

Chapter 6: Global Satellite Augmentation Systems (GSAS) gives a retrospective of determination and navigation satellite systems in integration with CNS and introduces existing and new projected Regional Satellite Augmentation Systems (RSAS), such as European EGNOS, Japanese MSAT (MTSAS/JMA), US WAAS, Russian SDCM, Chinese SNAS, Indian GAGAN, and African ASAS. The new projected ASAS network by author of this book is very important for entire Africa and Middle East, better as proposed extension of EGNOS, for enhanced traffic control and management of ships, land vehicles, and aircraft, including to improve safety and security at sea, on the ground, and in the air.

Chapter 7: Stratospheric Communication Platforms (SCPs) are new wireless systems still under development, which will use constellations of stratospheric aircraft and airships equipped with transponders and large antenna systems to provide more cost-effective CNS systems for ships, land vehicles, and aircraft.

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