RTCA, Inc.
1828 L Street, NW, Suite 805
Washington, DC 20036-5133 USA

# Operational Services and Environment Definition (OSED) for Aeronautical Information Services (AIS) and Meteorological (MET) Data Link Services

RTCA DO-308
December 6, 2007

Prepared by: SC-206

Copies of this document may be obtained from

RTCA, Inc.

Telephone: 202-833-9339
Facsimile: 202-833-9434
Internet: www.rtca.org

Please visit the RTCA Online Store for document pricing and ordering information.

## FOREWARD

The original report was prepared by RTCA Special Committee 206 (RTCA SC-206) and approved by the RTCA Program Management Committee (PMC) on December 6, 2007.

RTCA, Incorporated is a not-for-profit corporation formed to advance the art and science of aviation and aviation electronic systems for the benefit of the public. The organization functions as a Federal Advisory Committee and develops consensus-based recommendations on contemporary aviation issues. RTCA's objectives include but are not limited to:

- Coalescing aviation system user and provider technical requirements in a manner that helps government and industry meet their mutual objectives and responsibilities
- Analyzing and recommending solutions to the system technical issues that aviation faces as it continues to pursue increased safety, system capacity, and efficiency
- Developing consensus on the application of pertinent technology to fulfill user and provider requirements, including development of minimum operational performance standards for electronic systems and equipment that support aviation
- Assisting in developing the appropriate technical material upon which positions for the International Civil Aviation Organization and the International Telecommunication Union and other appropriate international organizations can be based

The organizations' recommendations are often used as the basis for government and private sector decisions as well as the foundation for many Federal Aviation Administration Technical Standard Orders.

Since RTCA is not an official agency of the United States Government, its recommendations may not be regarded as statements of official government policy unless so enunciated by the U.S. government organization or agency having statutory jurisdiction over any matters to which the recommendations relate.

This page intentionally left blank

## PREFACE

Within both the Next Generation Air Transportation System (NextGen) developed in the United States and the Single European Sky ATM Research (SESAR) initiative, it is acknowledged that Aeronautical Information Services (AIS) and Meteorological (MET) information are essential for the entire Air Traffic Management (ATM) system, and essential to its efficient operation. New means for AIS and MET services support collaborative decision making processes using efficient end-user applications to exploit the power of shared information.

In this framework, this document presents the AIS and MET data link services that are envisaged to be implemented within the next decade in both the USA and Europe. It is presented in an Operational Service and Environment Definition (OSED) form, which was developed based on the criteria set forth in RTCA DO-264 / EUROCAE ED-78A "Guidelines for Approval of the Provision and Use of Air Traffic Services Supported by Data Communications". The OSED describes the intended AIS and MET data link services and the assumptions about the environment in which they operate.

This document will be subsequently completed by Safety and Performance Requirements (SPR) and Interoperability Requirements (INTEROP) for these AIS and MET data link services. The SPR and INTEROP are necessary to provide adequate assurance that the elements of the relevant Communication, Navigation and Surveillance (CNS) and/or ATM system, when operating together, will perform their intended function in an acceptably safe manner for the operations defined in this OSED.

Achieving the goal of AIS and MET data link services will be evolutionary. This OSED is written to provide a foundation for comprehensive AIS/MET data link services to meet the emerging operational needs of ATM in its broadest sense. This is why this OSED may need updates in the future, in particular as a result of SPR and INTEROP developments. It is also recognized that in addition to this overarching document, more short-term and focused services encompassing some parts of AIS and MET are being developed.

In this document, the background and common functions and attributes of AIS and MET data link services are presented in the first five sections. The details for the data link services are then described in Section 6 for AIS and Section 7 for MET. Additional background and explanatory material are provided in the Appendices: Definition of Terms in Appendix A; References in Appendix B; Illustrative Examples in Appendix C; and Membership in Appendix D.

This page intentionally left blank

**TABLE OF CONTENTS**

## List of Tables



## List of Figures

# 1 INTRODUCTION

Air transport has evolved to become a key enabling component of the world economy. As the global economies expand, the demand for air transportation grows apace. Airspace and airport capacity must be increased to accommodate this demand. Since traditional methods of increasing capacity are near exhaustion, new and improved methods and concepts are needed to maximize the exploitation of existing capacity and to add capacity wherever possible. In order to release the latent capacity in the Air Traffic Management (ATM) system and to create new capacity, ATM is required to evolve and implement the means to provide the necessary capacity in a safe, timely, efficient and cost-effective way.

ATM will depend extensively on the provision of timely, relevant, accurate, and quality assured information that allows the ATM Community to make informed decisions. These decisions will need to be taken on an executive basis or in collaboration with others (Collaborative Decision Making - CDM). When shared on a system-wide basis and using advances in the corresponding technologies, information will allow the ATM community members to conduct their business and operations safely and efficiently. AIS/MET data link will enable the sharing of data between aircraft and ground. This will permit adequate contract negotiations of 4D trajectories as targeted by the SESAR and NextGen initiatives.

## 1.1 Background

The availability of timely, accurate and relevant aeronautical information in the cockpit is critical to the safe conduct of flight and forms the basis of aeronautical decision making. The ability to create a truly temporal aeronautical information environment is an essential component of the future ATM system. The data link of aeronautical information directly into the cockpit, irrespective of the aircraft's location, constitutes a notable advantage over current practices. It is assumed that this data will be continuously updated and maintained by ground-based systems and will be made available for use by the aviation community, on the ground, and in the air by all onboard data systems. The ultimate vision and goal of the aviation community is the real-time update of aeronautical data by data link.

The traditional product-centric provision of aeronautical information, in its most general sense however, has to be replaced by data-centric and service-oriented architecture systems. In such systems, the focus is on providing the information required by the aircraft and users in a timely and reliable manner, permanently or dynamically; and is less focused on the combinations in which the information is presented. The systems on the ground or onboard the aircraft are used to provide the information in combinations suited for a particular task, such as flight planning, flight management, navigation, separation assurance, CDM or any other strategic or tactical ATM activity. These changes in ATM concepts will enable enhanced capacity as well as increased safety in flight operations, and will become components of the future performance-based ATM system.

The data link of Aeronautical Information Services (AIS) and Aviation Meteorological (MET) information is one component of this system change. Derived from a network of databases on the ground and in the air, such data link service(s) will facilitate the creation of a common picture of the airspace situation for all pilots and controllers. Without current, up-to-date information onboard the aircraft that is accessible to the flight crew, it