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GUIDANCE MATERIAL and CONSIDERATIONS for UNMANNED AIRCRAFT SYSTEMS

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FOREWORD

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- 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; and
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1 Introduction

It has been over 14 years between the first publication of this Guidance Material and the current revision. In that time, significant changes have occurred to the National Airspace System (NAS) of the United States and to the Civilian Aviation ecosystem around the world. Significant advances have also been made in the field of Unmanned Aircraft Systems (UAS), many of those advances were noted in the first edition of this document and made possible thanks to the work of several RTCA Special Committees. UAS and UAS-related technologies have become an integral part of the global aviation landscape. Building on the legacy of the past 20 years and looking forward to the next 20 years, this document aims to provide guidance for industry, regulators, researchers, and other members of the aviation community. There will be a day in the future where remote pilots will safely, securely, and efficiently operate aircraft all over the world, and will share the skies with aircraft flown by on/off-board pilots.

This guidance material is intended to educate the community and be used to facilitate future discussions on UAS standards. This document is not intended to be the basis for airworthiness certification and operational approval of UAS, a responsibility for civil UAS that lies with the Federal Aviation Administration (FAA) and other Civil Aviation Authorities (CAAs). The UAS manufacturers and operators will be responsible for meeting the airworthiness certification and operational approvals appropriate to the desired use of the UAS.

In any discussion of UAS, it is first imperative to make it clear that the regulatory approach to civilian aviation is not monolithic and has always drawn distinctions based on a number of intrinsic and extrinsic factors. Over the past 20 years, by virtue of the fact that there has not been human life aboard, UAS have brought these distinctions into a sharper contrast and accelerated a need to formalize the so called safety continuum, that has always been a guiding principle in aviation. UAS must operate safely, securely, efficiently, and compatibly with all aircraft operations in the airspace so that the overall safety of the airspace is not degraded. Secondly, it is important to note that the role of the Pilot has changed and evolved over time, and by locating the pilot off-board the aircraft, the work to integrate UAS into non-segregated airspace has always brought into focus this particular issue. The International Civilian Aviation Organization (ICAO), in its guidance document Manual on Remotely Piloted Aircraft Systems (RPAS) (Doc 10019) on UAS, has drawn a distinction between RPAS and UAS that would not have a Remote Pilot in Command (RPIC). While this distinction does not place requirements or limitations on an individual designated the RPIC, it establishes the foundational regulation that an individual be ultimately responsible for the safety of the flight of the aircraft under their command.

When the first version of this guidance material was released, there was little common understanding of UAS in the civilian aviation community. Since 2007, a significant amount of advancement has occurred, thus this guidance material aims to build on regulatory framework that has been established by ICAO and the FAA, the technical standards developed by RTCA and other Standards Development Organizations (SDOs), and the aspirations of a large, mature, and vibrant industry. It provides a framework for developing standards through RTCA Special Committee (SC) – 228 and other Special Committees. This document reflects the key ideas which should go into development of future Minimum Aviation System Performance Standards (MASPS) and Minimum Operational Performance Standards (MOPS), but it is not intended to limit or restrict future thinking.

Figure 1-1 notionally shows the relationships between the activities of RTCA, aviation regulators, and other SDOs. While often not formally related, the standards development

