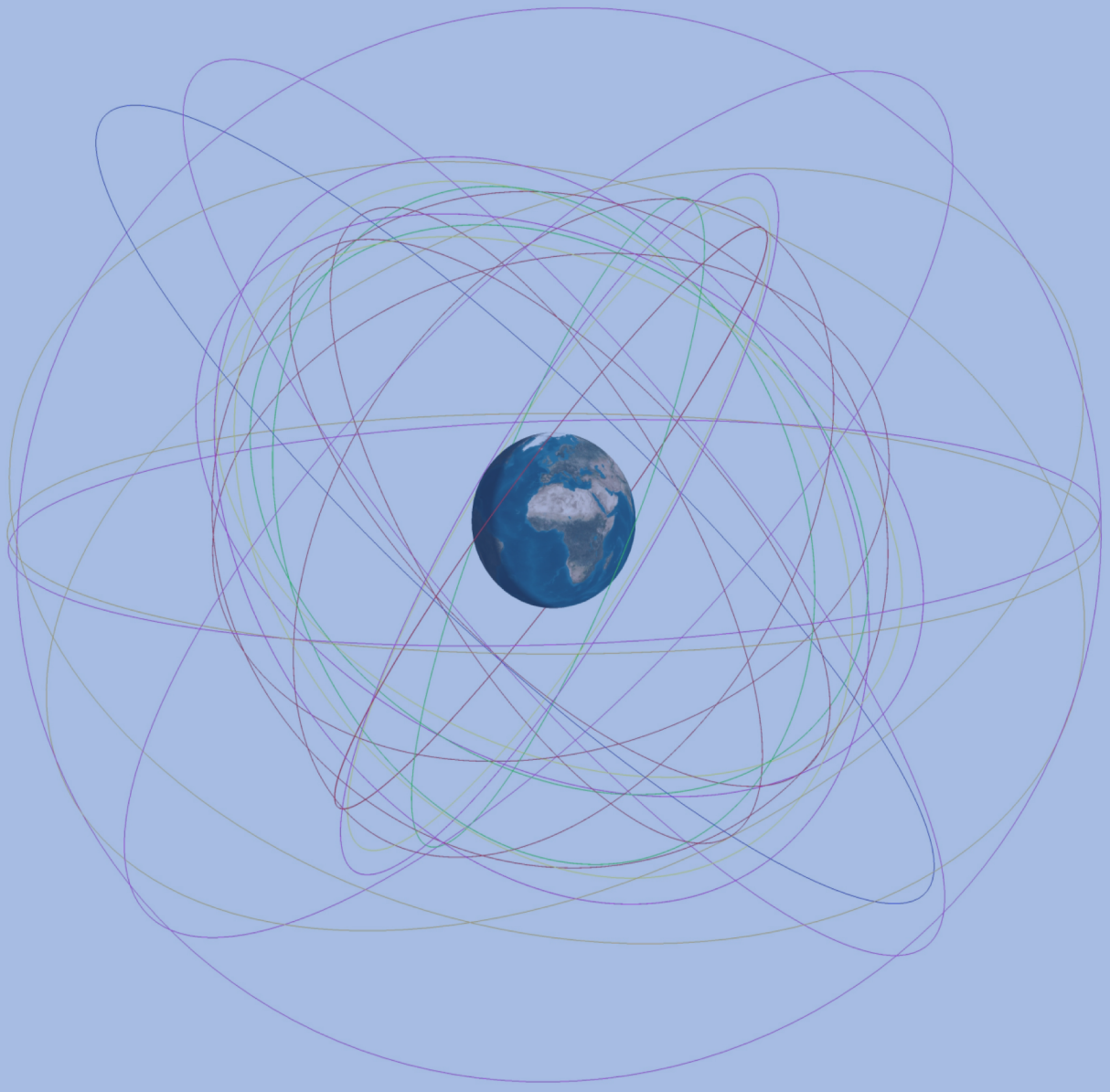
International Committee on
Global Navigation Satellite Systems

Guidelines for Developing Global and Regional Navigation Satellite Systems Performance Standards

(Version 1.0)



Introduction

This document outlines guidance for creating open service performance standards for Global and Regional Navigation Satellite Systems (GNSS/RNSS). It was developed by the International Committee on GNSS, Working Group S (Systems, Signals, and Services), Subgroup for Interoperability and Service Standards, Performance Standards team. It is intended to be used by ICG member service providers.

GNSS/RNSS Service Providers in the ICG have agreed each to provide a performance standard document describing the level of service of the GNSS/RNSS for its stage of operation. This service applies only to the signal in space and not to actual receiver, atmospheric, or local effects. The Standard will incorporate the parameters identified in this guidance document, although the document format, definitions, and textual content are at the discretion of the service provider.

In this document, the term “performance standard” is used. Some organizations may refer to it by other terms, such as a service standard, open service standard, or service definition document. For the purpose of this document these terms are considered synonymous.

Document Sections

At a minimum, the Performance Standard should contain sections for each of the following:

Purpose. Description of the purpose of the document, describing why it is being produced and what it intended to provide.

Scope. Description of the scope of the document and what it is intended to cover given the state of the existing GNSS/RNSS service. Examples are range accuracy and availability, positioning and timing accuracy and availability, and continuity.

Service Definition. Definition of the service that is being provided, such as open service or standard positioning service.

GNSS/RNSS System Overview. Description of the GNSS/RNSS system from a high-level view, its components and capabilities.

Service Characteristics and Minimum Usage Assumptions. Description of the characteristics of the signal in space service, including signal interface specification with reference to where this information can be found, performance characteristics (including signal health settings), and user equipment assumptions.

Key Terms and Definitions. Identification and definitions for the key terms and parameters used in the Standard.

References. Detailed references to any of the documents mentioned in the Standard.

Performance Standards & Service Definition.

The Performance Standard should describe the system service levels for the following parameters, grouped by categories. Parameters identified as [Key] are required to be included in the Standard. Those identified as [Optional] are recommendations for consideration, and may or may not be included. For each parameter, the Standard shall provide a definition that is unambiguous and testable.

Satellite domain

Slot Availability (maintenance of satellites to orbital slot parameters) [Optional]
Terrestrial Service Volume Coverage [Key]
Space Service Volume Coverage [Optional]

Range domain

Range Accuracy (all signals) [Key]
Range Accuracy (by Age of Data) [Optional]
Range Integrity [Optional]
Range Availability [Key]
Range Rate Accuracy [Optional]
Range Acceleration Accuracy [Optional]
Range Rate Integrity [Optional]
Range Acceleration Integrity [Optional]

Position domain

This section applies if position is provided as a service. This section requires a statement of receiver assumptions, such as elevation mask angle, ability to track all in view, single or dual frequency.

DOP Availability [Key]
Position Accuracy (Global Average & Worst Site)[Optional]
Position Availability [Key]

Time domain

Time transfer accuracy [Key]
UTC time dissemination accuracy [Key]

Continuity

Signal in Space Continuity [Optional]
Note: Continuity standard could be implemented after sufficient period for data collection following declaration of full operational capability of the system.

Other

Broadcast Polar Motion [Optional]
GNSS/RNSS Time Offset [Optional]
UT1-UTC Offset [Optional]
Carrier Phase Coherency [Optional]