Title: **Operational GNSS Integrity**

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Abstract

The paper discusses the concept of Operational GNSS Integrity as one of the key performance parameters of a GNSS solution. A main point is to make this discussion relevant for real-life operations and not restrict it to the scientific domain.

Operational GNSS Integrity is fundamentally a question about how GNSS data can be trusted. Neither the question nor the answer is a straight forward matter. To emphasis this out the Navigation Performance Pyramid defining the relation between accuracy, integrity, continuity and availability, is presented.

Since the methodology related to the Navigation Performance Pyramid has its origin in aviation, an overview of performance requirements from the CAT I precision approach in aviation operations, is presented. The CAT I horizontal accuracy requirement defined by ICAO is just 16 m, 95% CEP with a respective Alarm Level of 40 m.

A discussion about the many operational differences between a CAT I precision approach and the variety of different maritime and offshore operations, is given. Despite the stringent and safety oriented regime of aviation there are many constraints making the use of GNSS easier in aviation than in a maritime environment.

The paper also discusses the challenge of utilizing results from scientific oriented work for improved GNSS integrity into real operational usefulness. One limitation is the perceptional challenge of relating to a concept of integrity, another is the difficulty of defining integrity in an operational context.

The last chapter of the paper gives an introduction of Stanford Plots as a way to visualize the concept of GNSS integrity and presents a starting point of a discussion about relevant Alarm Limits for different maritime and offshore operations.

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