Title: **High Integrity Positioning: Lessons from the Aviation Industry**

Authors: **Mark Ahlbrecht, Gary Wolanin, Kevin Vanderwerf, Jim McDonald, Mike Ibis, Curt Call**
Honeywell Aerospace (Coon Rapids, MN, USA)

Abstract

The International Marine Organization's (IMO) e-Navigation concept of an integrated onboard navigation system defines as a core element "high integrity electronic positioning". This positioning capability would demonstrate defined levels of accuracy, integrity and continuity appropriate to a safety critical system.

- High integrity positioning presents challenging issues to an integrated navigation system:
- Different operations require different levels of integrity.
- Integrity of the navigation solution can be difficult to quantify, especially in integrated systems.
- Integrity of the navigation solution may change over time.
- Navigation systems need to protect the integrity of the end solution from corruption in the presence of a failure.

The aviation industry has been using high integrity positioning and performing complex, safety critical operations for many years. Examination of the methods of handling high integrity positioning and operations in aviation could illuminate solutions for the marine industry.

This paper will share the methods and tactics from the aviation industry used to produce high integrity positioning and perform safety critical operations. The trade-off involved with navigation system accuracy, integrity, continuity and availability are discussed. Similarities, and potential synergies, between aviation navigation design and marine navigation are identified.

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