

**Title:**           **Software Management for a Critical Real-Time Product**

**Author:**       Ivar-André F. Ihle, *Rolls Royce Marine AS*

### **Abstract**

Software is an essential component of the Dynamic Positioning product. The software management process plays an important part during all parts of the product lifecycle process. When the software program is critical for the vessel safety and placed on a vessel that can operate anywhere in the world, the software management process must account for more than the usual computer application. Some classification society notations (DNV-GL's Integrated Software Dependent Systems and American Bureau of Shipping's Integrated Software Quality Management) address integrated software systems. The Marine Technical Society Dynamic Positioning Committee addresses software management in the TECHOP paper on Software testing.

This paper aims to encourage a discussion in the community on this topic by showing how practical software management challenges are managed for the Rolls-Royce Icon Dynamic Positioning System.

The software management process encompass software requirement analysis, system design, software coding standards and methods, software development, software environment, software testing, system deployment, bug handling and –fixing, security and privacy, and quality assurance. In the paper we aim to share our practices and experiences with software management in general. We will discuss the special challenges that arise with the installation and maintenance of a safety critical control system onboard a floating vessel. The different steps of software testing, bug handling and fixing in different stages of the product lifecycle will receive particular attention.

Cases and experiences from the Icon Dynamic Positioning system will be used to exemplify and highlight what we believe to be key elements of software management. We hope that others find it interesting and share their experiences in the future to further encourage the discussion of business' best-practice.