RISSB
RAIL INDUSTRY SAFETY AND STANDARDS BOARD

Firmware, Software, and Configuration Management of Operational Rail Assets

Guideline

This Rail Industry Safety and Standards Board (RISSB) product has been developed using input from rail experts from across the Rail Industry. RISSB wishes to acknowledge the positive contribution of all subject matter experts and DG representatives who participated in the development of this product.

The RISSB Development Group for this Guideline consisted of representatives from the following organisations:

VLine	Metro Trains	TfNSW
John Holland Group	Yarra Trams	Dubai Metro
PTA	Cross River Rail Development Authority	Sydney Trains
Alstom	KPMG	Rail Safety Systems

Development of this Guideline was undertaken in accordance with RISSB's accredited processes. It was approved by the Development Group, endorsed by the Standing Committee, and approved for publication by the RISSB Board.

I commend this Guideline to the Australasian rail industry as it represents industry good practice and has been developed through a rigorous process.

Deb Spring
Exec. Chair / CEO
Rail Industry Safety and Standards Board

Notice to users

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RISSB welcomes suggestions for improvements and asks readers to notify us immediately of any apparent inaccuracies or ambiguities, please contact us via email at info@rissb.com.au or write to Rail Industry Safety and Standards Board, PO Box 518, Spring Hill, QLD 4004, Australia.

RISSB product can be found at: http://www.rissb.com.au/products/.

Document control

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1 Introduction

1.1 Introduction

Products utilised and operating within the operational rail environment are increasingly reliant on software, firmware and configuration for communications, command, and control (C3). The proliferation of such products, as well as the ever-increasing security threat posed by cyber threat actors, mean it is critical that the configurations (the physical and functional characteristics that define a product) are managed.

Configuration management (CM) is the discipline of identifying the configuration of a system at distinct points in time for the purpose of systematically controlling changes to the configuration and maintaining the integrity and traceability of the configuration throughout the system life cycle. [ISO/IEC/IEEE 24765:2010 Systems and Software Engineering—Vocabulary, ISO/ IEC/IEEE, 2010.]

CM establishes and protects the integrity of a product or product component throughout its lifespan, from determination of the intended users' needs and definition of product requirements through the processes of development, testing, and delivery of the product, as well as during its installation, operation, maintenance, and eventual retirement. In so doing, CM processes interface with all other processes involved in the product's life.

Software configuration management (SCM) and firmware configuration management (FCM) are supporting components of CM; while the concepts and principles of CM apply, there are however nuances in the implementation of SCM and FCM to that of (for example) hardware CM.

1.2 Aim and purpose

This guideline aims to contribute to a harmonised, uniform, and consistent approach for managing the safety and security of existing and future Australian and New Zealand railway network assets and systems.

The purpose of this guideline is to provide a reference for rail operators and maintainers on configuration management of firmware and software in the operational rail environment. The guideline aims to assist in developing CM plans and processes to satisfy high-level CM requirements across the product life cycle.

This guideline should assist rail operators and maintainers that are required to implement changes to base firmware, software and configuration of rail assets being introduced into or modified for operational service.