

# Key insights for the successful implementation of proximity detection & collision avoidance technology for reducing vehicle interaction risk, a surface technology provider perspective

C Hoffmann

Principal Consultant, Wabtec Digital Mine Technology, Fountaindale NSW 2258.

Email: [craig.hoffman@wabtec.com](mailto:craig.hoffman@wabtec.com)

Keywords: Proximity Detection, Collision Avoidance, Vehicle Interaction, EMESRT, ICMM

## ABSTRACT

Given that each year, 30-40% of mining industry deaths are attributable to failures of vehicle interaction controls (EMESRT, 2023), the mining industry is now armed with a growing body of knowledge from EMESRT & ICMM global vehicle interaction initiatives over the past years, that enables mining companies, technology providers and OEM's to work together to develop and implement more effective controls.

Leveraging 20 years of experience as a global technology provider of Proximity Detection System (PDS) and Collision Avoidance System (CAS) solutions for surface mining operations, Wabtec shares key insights for ensuring the effective selection, implementation and integration of these technologies into existing mine site controls and mining operations for effectively reducing vehicle interaction risk enabling mines to drive towards 'zero-harm' objectives.

Topics covered include: Alignment with industry best practice for controlling vehicle interaction risk by EMESRT (Earth Moving Equipment Safety Round Table) and ICMM (International Council on Mining and Metals), importance of the maturity of EMESRT levels 1 – 6 vehicle interaction control framework, managing expectations that PDS/CAS is a 'silver bullet', alignment with industry functional and performance requirements, Proximity Detection versus Collision Avoidance, sensor performance & fusion & limitations, rules and intelligence critical to mitigating nuisance alarms during normal operations, system health monitoring and reporting, human factors engineering and operator acceptance, implementation program, installation standards and quality control, change management program, training programs for operators / installers / maintainers, reporting and data analytics with actionable insights, criticality-based maintenance, life-cycle support.

Insights will also be provided on the challenges moving from EMESRT levels 7 (operator awareness) & 8 (advisory controls) to level 9 (intervention controls) as it's a journey not an out-of-box solution, the growing demand for coexistence of CAS and Autonomous Haulage Solutions (AHS), functional safety (elephant in-the-room), value added systems integration and the applicability of new emerging technologies.