VEHICLE INTERACTION MATURITY FRAMEWORK SELF-ASSESSMENT

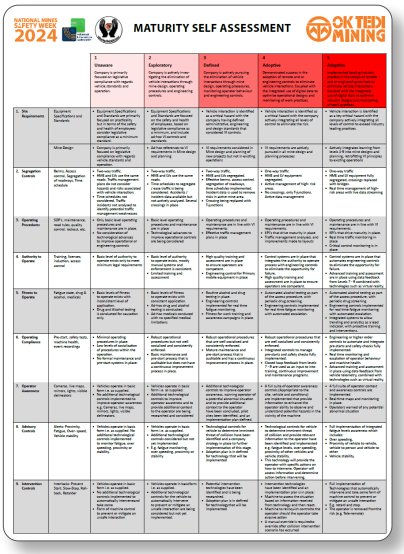
"How-To-Guide"

INTRODUCTION

This document is designed to give guidance on the self-assessment process to be used to determine an areas status on the Vehicle Interaction (VI) Maturity Framework. It should be noted that this self-assessment is intended to encompass vehicle interaction scenarios.

VEHICLE INTERACTION FRAMEWORK INTENT

Intent of the Maturity Model



The intent of the Maturity Model is to Map, Motivate and Measure the intended status and journey for Vehicle Interaction (VI) Maturity. In addition, it will drive conversation amongst teams and stakeholders to converge thinking, decision making and actions for the most effective use of existing controls and technology to reduce the incidence of unwanted vehicle interactions in mining.

Key intended outcome is to provide teams with a visual tool to assess vehicle interaction at their site.

Understanding of the true intent of the requirements of each of the Levels 1-9 is significant in determining the current and desired states of Vehicle Interaction (VI) Maturity at a location.

Level 1-6 – Operational Systems Controls

Underlying system of operations that may include utilizing technologies that enhance the existing control effectiveness. E.g. fatigue detection.

Level 7 – Operator Awareness

Technologies that provide information to enhance the operator ability to observe and understand potential hazards in the vicinity of the equipment.

- Ability to provide enhanced situational awareness
- Alerts the operator to a potential abnormal situation
- Provides context of the situation to the operator
  - Where is it?
  - What is it?
  - How far away is it?
  - What is its heading?
  - How fast is it going?
- Supports visual confirmation for the operator.

Level 8 – Advisory Controls

Technologies that provide alarms or instruction to enhance the operator ability to predict a potential unsafe interaction and the corrective action required

- Determines an imminent threat of collision
- Provides a specific instruction to the Operator to intervene (Act)
- Operator assesses the instruction in relation to other contributing factors then intervenes (Acts).

Level 9 – Intervention Controls

Technologies that automatically intervene and take some form of equipment control to prevent or mitigate an unsafe interaction

- Provides a specific instruction to the Machine to intervene (Act)
- Machine assesses the instruction in relation to other contributing factors then intervenes (Acts)
- Relinquish intervention control to the operator should they take evasive action
- Provides a manual over-ride to recover after a collision intervention scenario has occurred.

SELF ASSESSMENT GUIDELINES

The categories of the self-assessment ranges from Unaware to Adaptive

i. Unaware –The site has no awareness of vehicle interaction controls. Incidents are avoided through “luck” and not due to effective controls related to vehicle interaction.

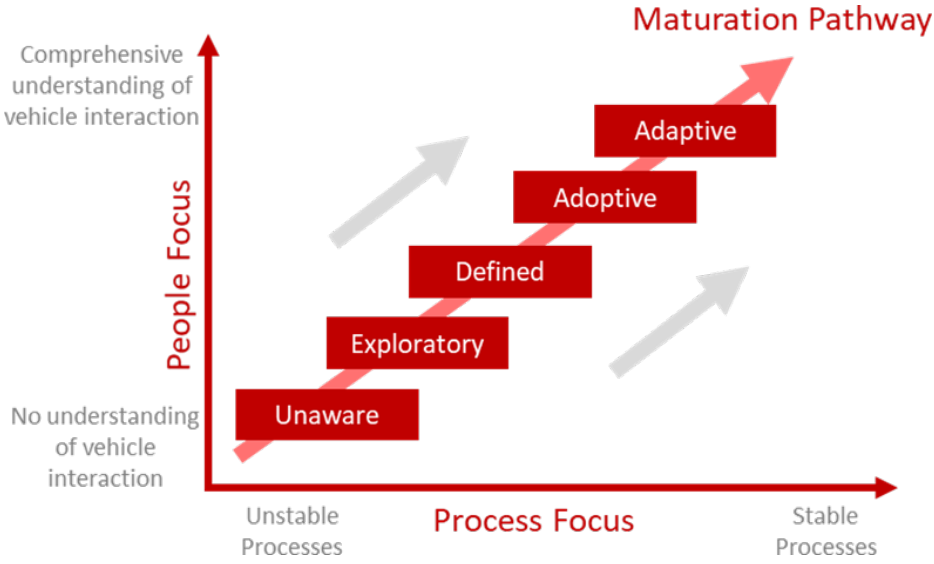
ii. Explanatory –The site has basic awareness of vehicle interaction related risks and controls. Time is spent on researching to gain more knowledge

iii. Defined –The site has awareness of vehicle interaction related risks, implementation of levels 1-6 controls and lower level technology implemented to support 1-6.

iv. Adoptive –The site has focused implementation of levels 1-6 controls and higher-level technology implemented to support / replace 1-6.

v. Adaptive – The site has technology integrated systems approach to levels 1-9 to reduce exposure to ALARP.

The 5-Stages in the Vehicle Interaction Maturation Pathway.



Maturity Framework

The maturity framework is based on the 9-step hierarchal model

- Levels 1-3 deals with Design Guidelines
  - Level 1 – Site Requirements
  - Level 2 – Segregation Controls
  - Level 3 – Operational Procedures

- Levels 4-6 deals with Operational Discipline Controls
  - Level 4 – Authority to Operate
  - Level 5 – Fitness to Operate
  - Level 6 – Operating Compliance

- Levels 7-9 deals with Vehicle Interaction Technology
  - Level 7 – Operator Awareness
  - Level 8 – Advisory Controls
  - Level 9 – Intervention Controls

Methodology

1. The maturity model should be classified from Levels 1-9, in that order
2. The requirements of each block should be completely understood to be considered. Should any of the requirements not be known, the compliance level of the block to the left should be used.
3. Once the exact stage (Unaware to Adaptive) have been classified for each of the 9 levels a line should be drawn to connect each measure point. This is called the “The Current Status”.
4. The site should determine the desired level of each of the 9 levels and a line should be drawn to connect each measure point. This can be done with a risk assessment. This is called the “The Desired State”
5. Plot the required actions for each level to move from current state to desired state and list as the action plan.