

## Quick Reference Guide

This *Quick Reference Guide* intent is to provide the EMESRT Vehicle Interaction (VI) community with guidance on how to navigate the VI Knowledge Hub and how resources can be located and accessed.

### Introduction

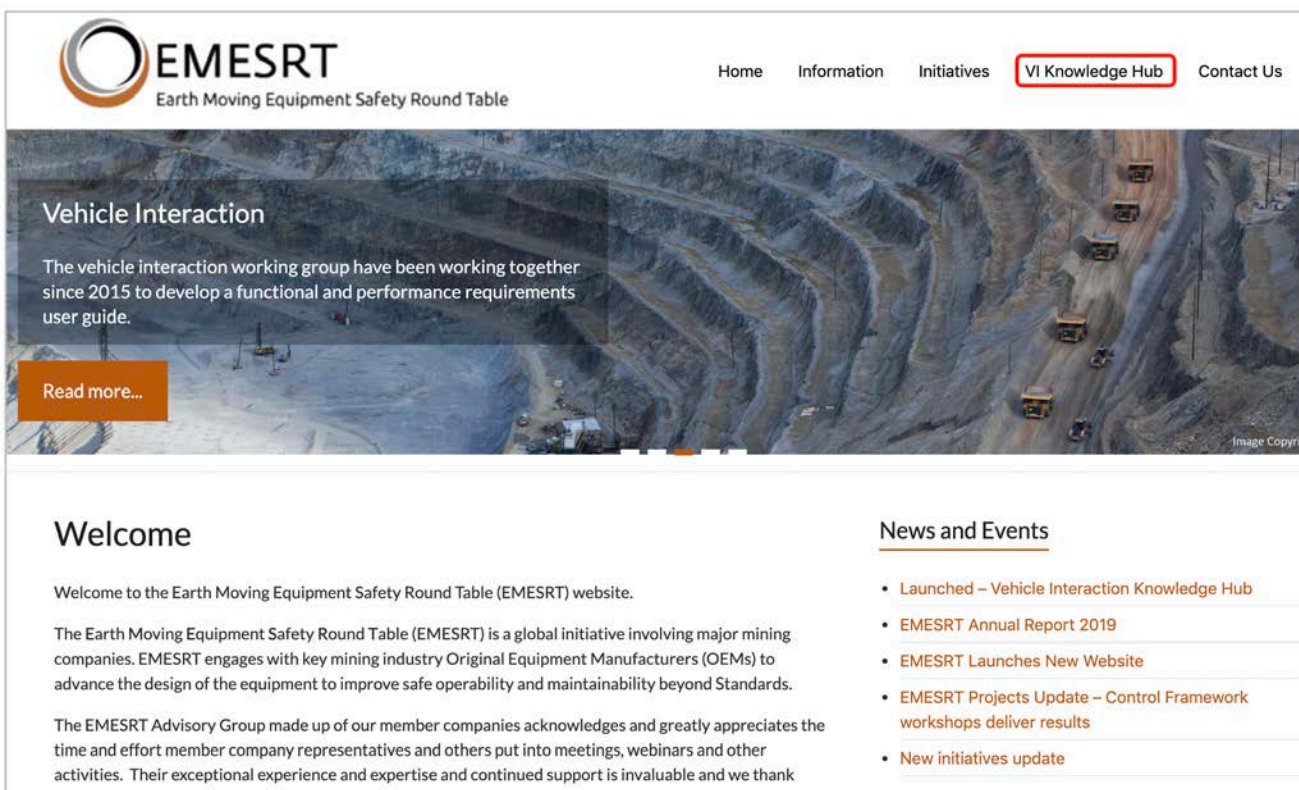
The VI Knowledge Hub contains a collection of curated online tools, case studies, reference information, links to relevant websites, PowerPoint presentations and other informative resources.

As well as the curated collection, the VI Knowledge Hub provides users with templates to assist in the planning and execution of improvement projects at operating sites. The VI Knowledge Hub will enable users to:

- Find information relevant to their operations
- Improve understanding of site vehicle interaction scenarios
- Systematically review current vehicle interaction controls
- Scope up and successfully deliver improvement projects

### Navigating the VI Knowledge Hub

1. Go to the EMESRT website [emesrt.org](https://emesrt.org)
2. Click on the VI Knowledge Hub link located in the top right navigating toolbar



The screenshot shows the EMESRT website header with the logo and navigation menu. The 'VI Knowledge Hub' link is highlighted with a red box. Below the header is a large banner image of a mining site with the text 'Vehicle Interaction' and a 'Read more...' button. To the right of the banner is a 'News and Events' section with a list of recent updates, including 'Launched – Vehicle Interaction Knowledge Hub'.

The VI Knowledge Hub Journey Model is the first step in identifying where you are in the process.

3. Hover your mouse on the first step **1. Why is this an industry issue?**
4. Click on the step one **Pop Up Summary**

A pop up will appear with a summary of what is contained in this step.

**EMESRT**  
Earth Moving Equipment Safety Round Table

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## Journey Model

Journey Model /

Welcome to the EMESRT Vehicle Interaction Knowledge Hub

*This release version has been reviewed by the EMESRT vehicle interaction working group (>150 people). The Knowledge Hub will continue to develop and we welcome all improvement feedback.*

The EMESRT Vision is a mining industry free of fatalities, injuries and occupational illnesses associated with operating and maintaining earth moving equipment. Since 2013, EMESRT has facilitated an industry-level vehicle interaction project with the goal of improving the reliability of vehicle interaction controls in mining.

This Knowledge Hub organises the outputs from this work and other useful information so they can be accessed and applied by a range of end users e.g. operating site personnel, Original Equipment Manufacturers (OEMs), Proximity Detection Systems providers and other stakeholders.

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This part of the Knowledge Hub uses the EMESRT Journey Model for navigation. If you hover your mouse above a step, you will see a summary and a click will take you to the resources that answer the step questions. Any additional comments or content would be welcomed – please reach out and contribute to the Knowledge Hub collection. Go to the contribution form via [this link](#).

Further, the final step in the Journey is to move into a project phase – which is presented as a Work Breakdown Structure (WBS) in more detail in the vehicle interaction control improvement project guidance via [this link](#).

**1 – Why is this an Industry issue**

**What is this about?**

Operating vehicles (mobile equipment) and driving present the highest mining industry fatality risk, at 30 to 40 per cent of all incident reports with just over half the fatalities being pedestrians. (International Council on Mines and Metals)

As illustrated by the incident reports, there are multiple incident types and causes, constant employee exposure, and catastrophic events can occur with little or no warning...

**2. Should we change?**  
Where are we at?  
What are the benefits?  
What are the challenges?  
What does good practice look like and what is possible?

**4. What do we change?**  
What is the plan, where do we begin and what is the next step?  
What tools are resources:  
• Do we already have?  
• Do we need?  
How do we involve our people?  
What is the role of technology?

A list of the resources available at this step will be displayed.

5. Click on the resource you are interested in, eg **Link to the EMESRT...**

# 1 – Why is this an Industry issue

## What is this about?

Operating vehicles (mobile equipment) and driving present the highest mining industry fatality risk, at 30 to 40 per cent of all incident reports with just over half the fatalities being pedestrians. (International Council on Mines and Metals - link provided below)

As illustrated by the incident reports, there are multiple incident types and causes, constant employee exposure, and catastrophic events can occur with little or no warning.

Opportunities to improve vehicle interaction controls are being considered across the mining industry - see links below.

This work includes improving design, operate and react controls including the use of technology to alert and advise operators (Level 8) and intervene independently of the operator (Level 9).

For more detailed information, please see EMESRT VI Performance Requirement-5A Vehicle Interaction Performance Requirements below.

## Is the issue relevant to us?

If your operations use mobile earth moving equipment and you are committed to maintaining and improving the reliability of interaction controls, then this resource can assist you.

The first step is to understand some key models and processes then apply them to identify process and technology improvement and innovation opportunities that are relevant for you.



**The EMESRT Nine Layer Control Effectiveness Model** IMPORTANT

Model Relevance

- A foundation concept
- Dynamic interdependence between control levels
- Control categories operate in different timeframes
- High dependence on real time human factor decision making
- To implement Level 8 and 9 controls well, you need to first understand your Level 1- 7 control baseline



**VI Maturity Framework** IMPORTANT

Understanding the types of activity your site/business will need to take to move an industry leading position can be gained by reviewing the thinking and work of others [More...]



**Link to the EMESRT Vehicle Interaction Control Improvement Project** IMPORTANT

The EMESRT Vision is a mining industry free of fatalities, injuries and occupational illnesses associated with operating and maintaining earth moving equipment. Since 2013, EMESRT has facilitated an industry-level vehicle interaction project with the goal of improving the reliability of vehicle interaction controls in mining.

This guide has been developed to assist operating sites in the resources industry deliver successful projects that improve vehicle interaction controls. It is based on processes and approaches that have been applied at EMESRT member company operations to systematically improve vehicle interaction controls. This includes the operational integration of new technology VI controls. Expected users are site and divisional leaders with the business knowledge and experience to plan and deliver complex business improvement projects.

The selected resource will provide you with further information regarding your selection.

6. Click on the **VIEW RESOURCE** link

## Link to the EMESRT Vehicle Interaction Control Improvement Project Guide

VJourneyV2 / 4 - What do we change / Link to the EMESRT Vehicle Interaction Control Improvement Project Guide /



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To assist users with project scoping, planning and delivery, this resource is organised around a hierarchical Work Breakdown Structure (WBS), with six objectives. For each objective, the results required for success are listed. These are in turn linked to work packages that summarise the inputs necessary to deliver the results.

When all levels of the Work Breakdown Structure are combined, the objectives, results and work packages provide users with starting point information that can be adapted for site use.

### Conditions of Use

*This publication is written by practitioners for practitioners. While it acknowledges the extensive input of researchers, academics and other industry thought leaders, including referencing and applying their research and theory, it remains firmly based on approaches that have been successfully applied in mining operations.*

*This resource was prepared by EMESRT with the agreement of all content contributors. It is freely offered as part of an evolving good practice industry reference resource through EMESRT, and reflects the industry intent to collaborate and share information. As such it cannot be, nor is it intended to be, a prescriptive document. Instead it is expected that users will appropriately adapt the information, based on their specific circumstances and role.*

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[VIEW RESOURCE](#)

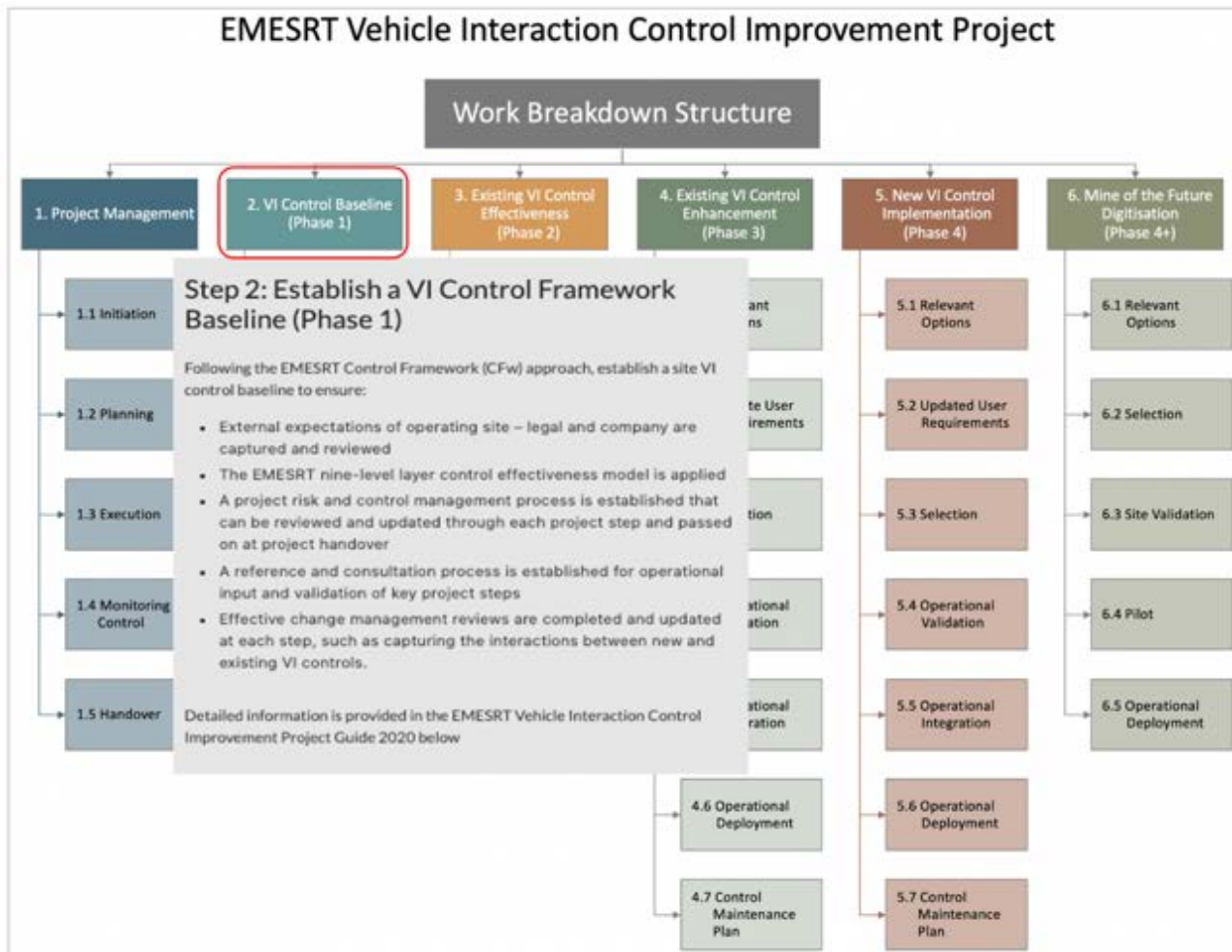
Last Updated: 08/10/2020 11:28:48am

The Work Breakdown Structure provides you with information and available templates to assist you in the planning and execution of improvement projects at operating sites.

7. Hover your mouse over **WBS 2. VI Control Baseline (Phase 1)**

A pop up will appear with a summary of what is contained in this WBS phase.

8. Click on the **Step 2 Pop Up Summary**



A list of the resources available at this phase will be displayed.

9. Click on the resource you are interested in, eg **2.1.3 Sector Resources**

## Step 2: Establish a VI Control Framework Baseline (Phase 1)

Following the EMESRT Control Framework (CFw) approach, establish a site VI control baseline to ensure:

- External expectations of operating site – legal and company are captured and reviewed
- The EMESRT nine-level layer control effectiveness model is applied
- A project risk and control management process is established that can be reviewed and updated through each project step and passed on at project handover
- A reference and consultation process is established for operational input and validation of key project steps
- Effective change management reviews are completed and updated at each step, such as capturing the interactions between new and existing VI controls.

Detailed information is provided in the EMESRT Vehicle Interaction Control Improvement Project Guide 2020 below



### EMESRT Vehicle Interaction Control Improvement Guide


**IMPORTANT**

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### 2.1.1 General Legislative Requirements

A thorough review of General Legislative Requirements should include all relevant vehicle interaction control information sourced from acts, regulations, codes of practice and guidelines relevant to the operating jurisdiction.



### 2.1.2 Company Standards

A thorough review of company standards for all relevant vehicle interaction control information should be undertaken. Company resources can include Operating Standards, Fatal Hazard Protocols, sections of audits, etc.




### 2.1.3 Sector Resources

The output from this work package is the outcome from a thorough review of Sector Resources for Vehicle Interaction Control improvement resources.



### 2.1.4 Site Requirements

A thorough review of site required should include all relevant vehicle interaction control information sourced from operating procedures and task instructions, training materials, incident reviews, mobile equipment specifications, etc.



### 2.2 Site Baseline

**The Results and Work Packages in this section assist operating sites to prepare Vehicle Interaction Control Baseline**

The Site VI Control Baseline is prepared by applying the EMESRT Control Framework (CFw).

The Control Framework approach is a methodology that is aligned with Failure Modes and Effects Analysis, Human Factors and the ICMM Critical Control Methodology. It considers required business outcomes and then maps in the real-world inputs required to achieve them with a focus on answering 'what has to be in place for work to go right?'

The selected resource will provide you with further information regarding your selection.

10. Click on the **VIEW RESOURCE** link

## 2.1.3 Sector Resources

VIWBS / [Journey Model](#) / 2.1.3 Sector Resources /



The Work Packages in this section assist operating sites to prepare a Vehicle Interaction Control Baseline. The output from this work package is the outcome from a thorough review of Sector Resources for Vehicle Interaction Control improvement resources. Capture general and specific requirements in a table that can be used to build the site Version 1 VI Control Framework (CFw).

[VIEW RESOURCE](#)

Last Updated: 21/12/2020 09:42:17am

The selected resource will provide you with a template that you can download to assist in the planning and execution of improvement projects at operating sites.

## VEHICLE INTERACTION CONTROL IMPROVEMENT WORK PACKAGE SUMMARY

<b>WBS Reference:</b>	2. Vehicle Interaction (VI) Control Baseline 2.1. External Expectations
<b>Work Package:</b>	2.1.3 Sector Resources
<b>Package Owner:</b>	Project manager
<b>Owner Organisation:</b>	Your company
<b>Participants:</b>	Project manager, project team, site and divisional HSE personnel, selected operations personnel
<b>Capability required:</b>	Knowledge of company requirements and industry good practice for MEI controls. Involvement with sector and industry initiatives and programmes. Understanding how company requirements line with relevant legislative requirements (general and specific).
<b>Description:</b>	<p>The output from this work package is the outcome from a thorough review of Sector Resources for Vehicle Interaction Control improvement resources.</p> <p>Capture general and specific requirements in a table that can be used to build the site Version 1 VI Control Framework (CFw).</p>
<b>Completion State:</b>	<p>A table of requirements based on systematic review and mapping of general and specific vehicle interaction legislation, company standards and sector resources.</p> <p>The information in the table of requirements is signed off by project team and operations personnel and information incorporated into the Control Framework Version 1.</p> <p>Specific information is included or referenced in the Control Framework build template at the business input level, usually in the specification cell.</p>
<b>Case study:</b>	
<b>References:</b>	See below.

Title: 2.1.3 Sector Resources	Effective date: 07 Oct. 20	Version: 1.0	Page 1 of 2
Published: 7/10/2020	Review period:	Status: Draft	

Navigating through the VI Knowledge Hub is made easy via breadcrumbs. You will always know what layer of the Hub you are visiting. By clicking the **Blue Text**, you will be taken to the previous layer visited.



## 2.1.3 Sector Resources

VIWBS / Journey Model / 2.1.3 Sector Resources /



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[VIEW RESOURCE](#)

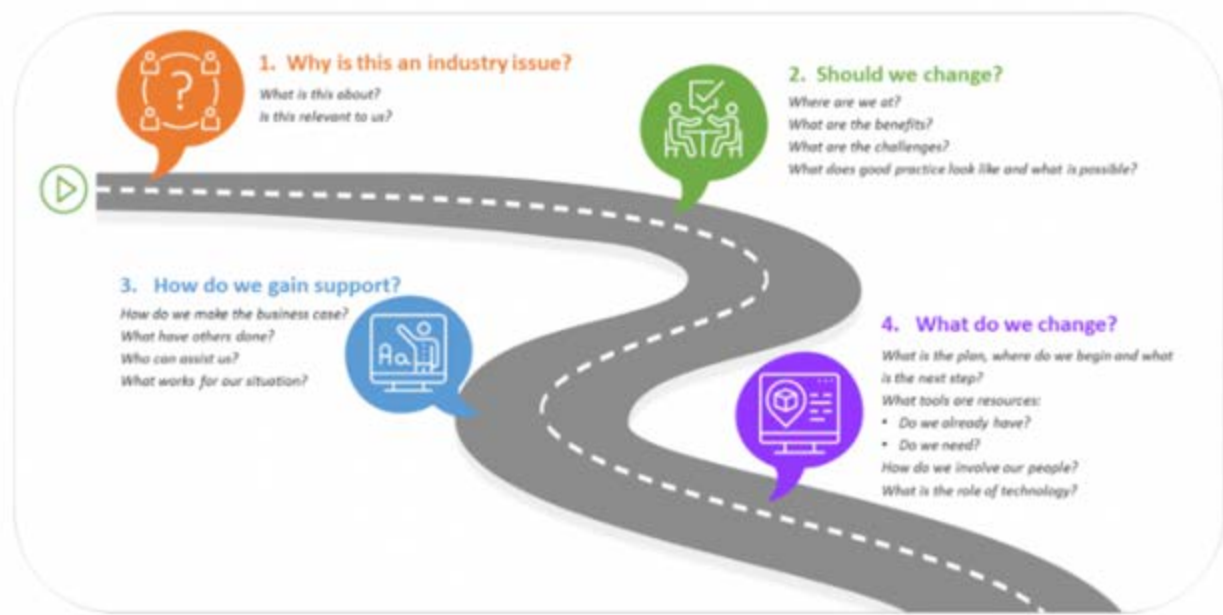
Last Updated: 21/12/2020 09:42:17am

The **Work Breakdown Structure** can also be accessed via the front page of the **VI Knowledge Hub Journey Model**.

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The EMESRT Advisory Group encourages the industry to contribute to the collection via [VI Knowledge Hub Contribution Form](#) if a suitable resource is available and does not breach any intellectual property or copyright issues.

For information on the EMESRT VI Knowledge Hub or for support please send an email to [enquiries@emesrt.org](mailto:enquiries@emesrt.org).