

CSIR TMM Digital Twin  
**Multi-disciplinary Technical Expert Project Meeting**

24 November 2022



# TMM Digital Twin: "Value Add"

"Visual Querying" &  
Analysis/Modelling Toolset

*"User/Client can engage with the data"*

**TMM Risk Elements**  
(Quantitative Capability)

**Interactive Tool to inform the Risk Assessment Process**



# TMM Digital Twin: Engagement Roadmap/Model

TMM Value Proposition



A



B



C



D



**A) Confluence/Linking - Information**  
(Level 1-Level 9)

**B) Risk Management - Key Risk Elements**  
(Level 1-Level 9 & Traffic Management Plan)

**C) Risk Event Detection & Analysis**  
(Conformance & Non-conformance Events)

**D) Risk Management – Future Planning**  
(Level 1-Level 9 & Traffic Management Plan)

# TMM Digital Twin: Engagement Roadmap

TMM Value Proposition



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**A) Confluence/Linking - Information**  
(Level 1-Level 9)



# TMM Digital Twin: A - Confluence / Linking Information

1. Site Requirements

2. Segregation Controls

3. Operating Procedures

4. Authority to Operate

5. Fitness to Operate

6. Operating Compliance

7. Operator Awareness

8. Advisory Controls

9. Intervention Controls



Timeframe



Timeframe



Timeframe

"Unified" Data Reference



# TMM Digital Twin: A - Confluence / Linking Information

The screenshot displays a web application interface titled "Real Dataset Overview". The main navigation bar includes "Real Dataset Details", "Traffic Management Plans" (which is the active tab), "TMP Plots", and "Plots".

Under the "Traffic Management Plans" tab, there is a list of plans:

- TMP 1** with 6 rules and a delete icon.
- TMP 2** with 1 rule and a delete icon.

Below the list are buttons for "Add TMP" and "Save TMPs".

To the right of the list is a map view showing an aerial satellite image of a road intersection. The map includes a vertical toolbar on the left with icons for map navigation (home, 30 speed limit, stop, pan, zoom in, zoom out, refresh) and a vertical toolbar on the right with icons for map navigation (home, 30 speed limit, stop, pan, zoom in, zoom out, refresh).

# TMM Digital Twin: Risk Management – Key Risk Elements

TMM Value Proposition



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**B) Risk Management - Key Risk Elements**  
(Level 1-Level 9 & Traffic Management Plan)

# TMM Digital Twin: Risk Management – Key Risk Elements



Placement of the  
**Stop Violation Zone**

Placement of the  
**Speed Zone**

**Virtual berm**  
Zone placement



# TMM Digital Twin: Risk Event Detection & Analysis

TMM Value Proposition



A



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C

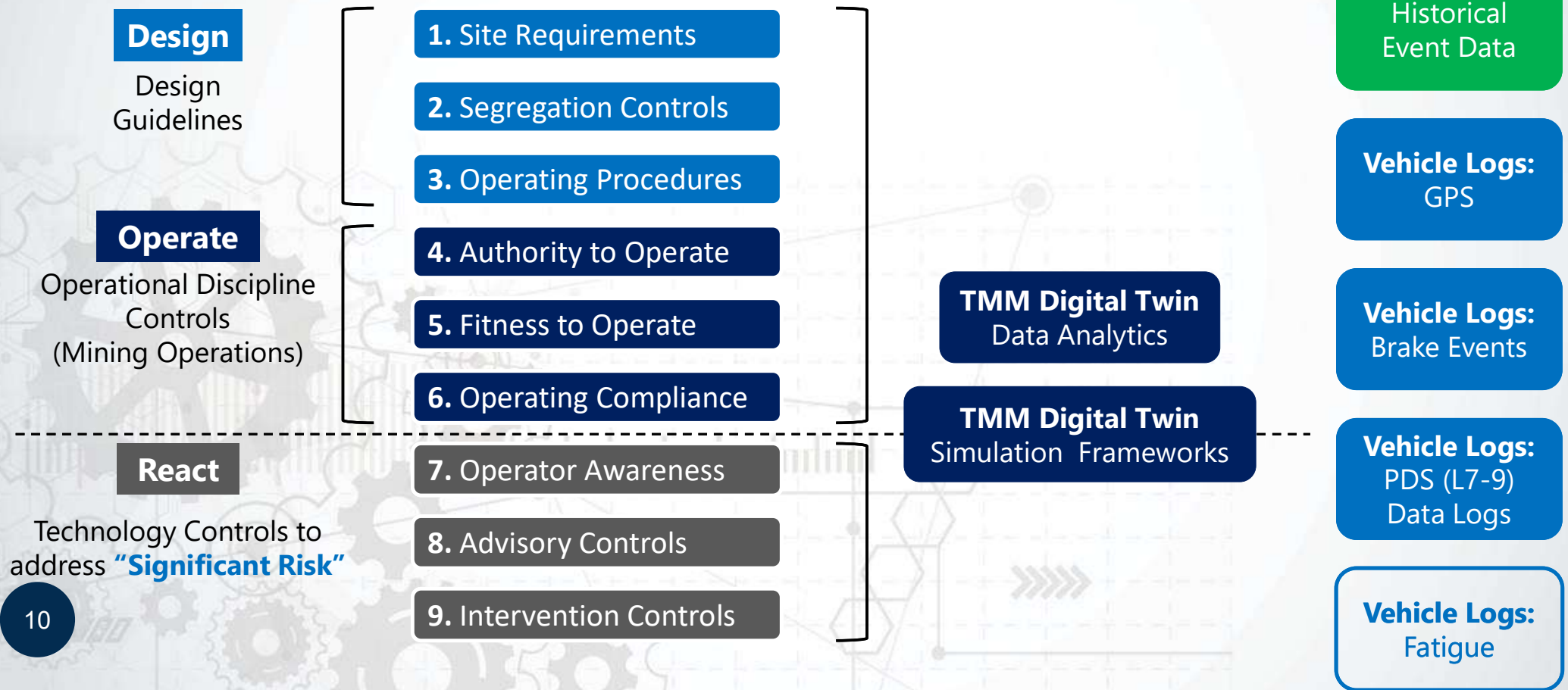


D

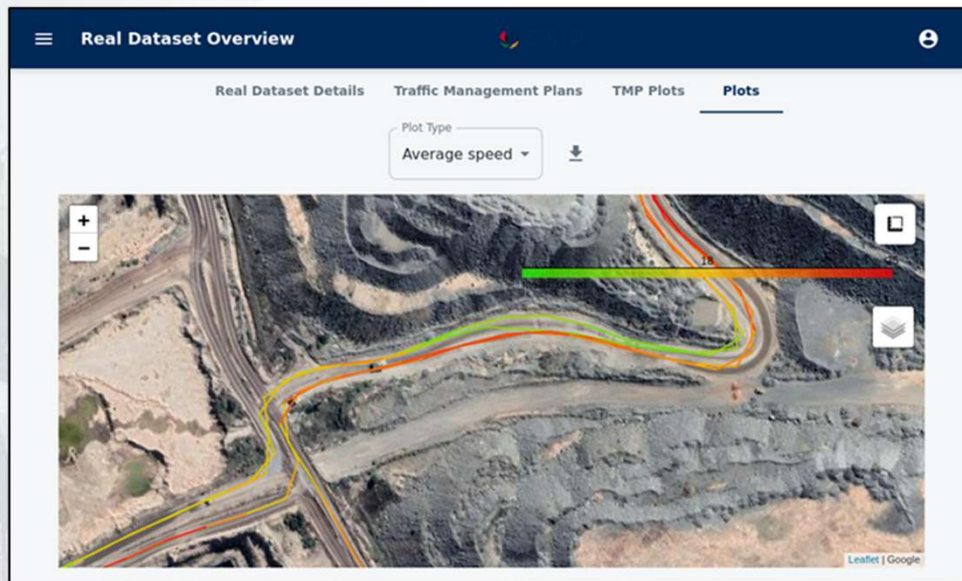


**C) Risk Event Detection & Analysis**  
(Conformance & Non-conformance Events)

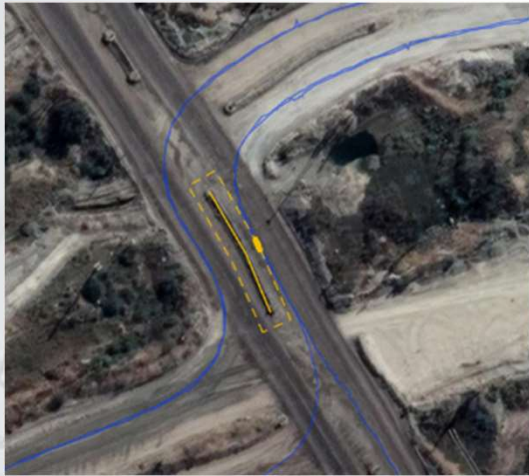
# TMM Digital Twin: Risk Event Detection & Analysis



# TMM Digital Twin: Risk Event Detection & Analysis



# TMM Digital Twin: Risk Event Detection & Analysis



**Distance Violation**  
(Non-Conformance Event)



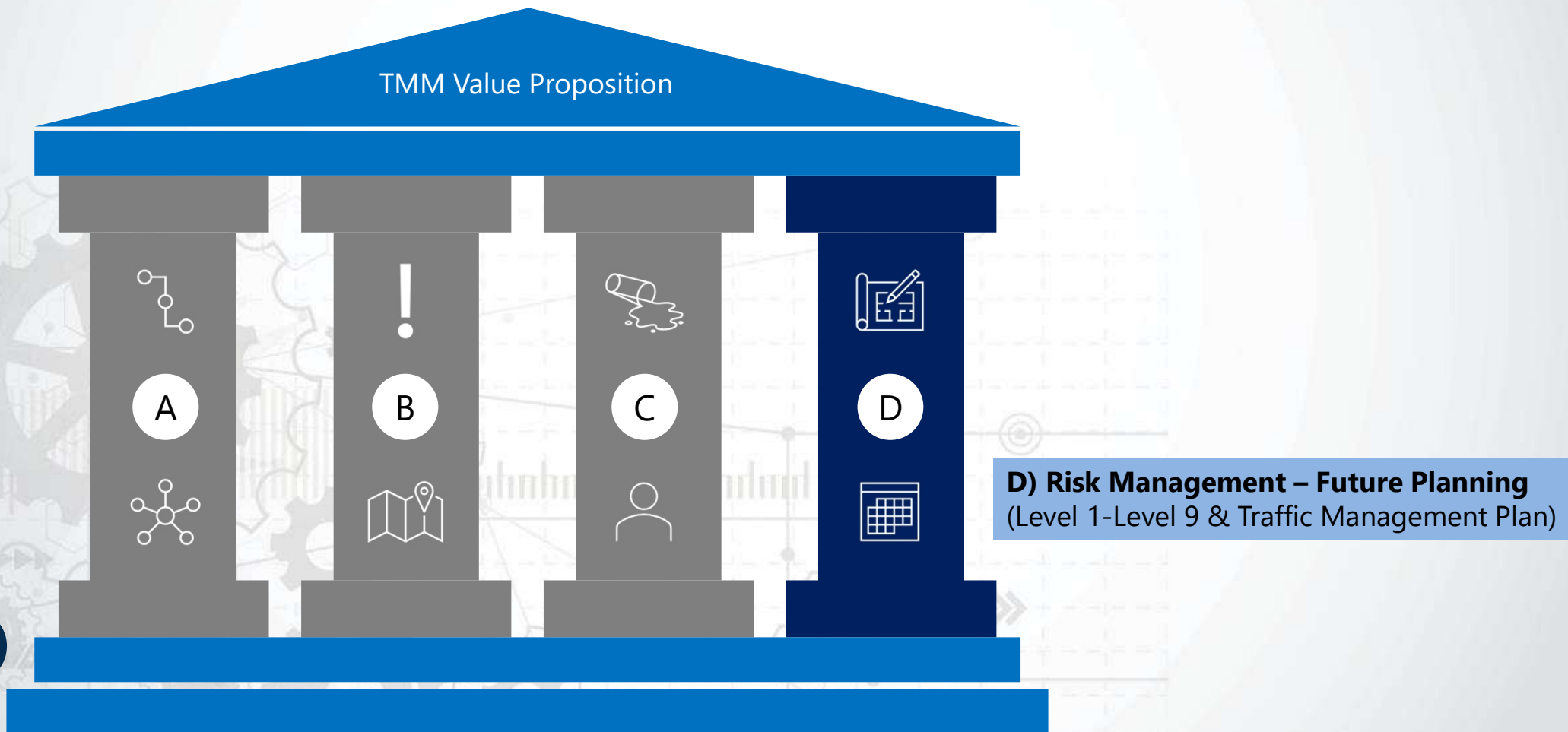
**Speed Violation**  
(Non-Conformance Event)



**Stop Violation**  
(Non-Conformance Event)



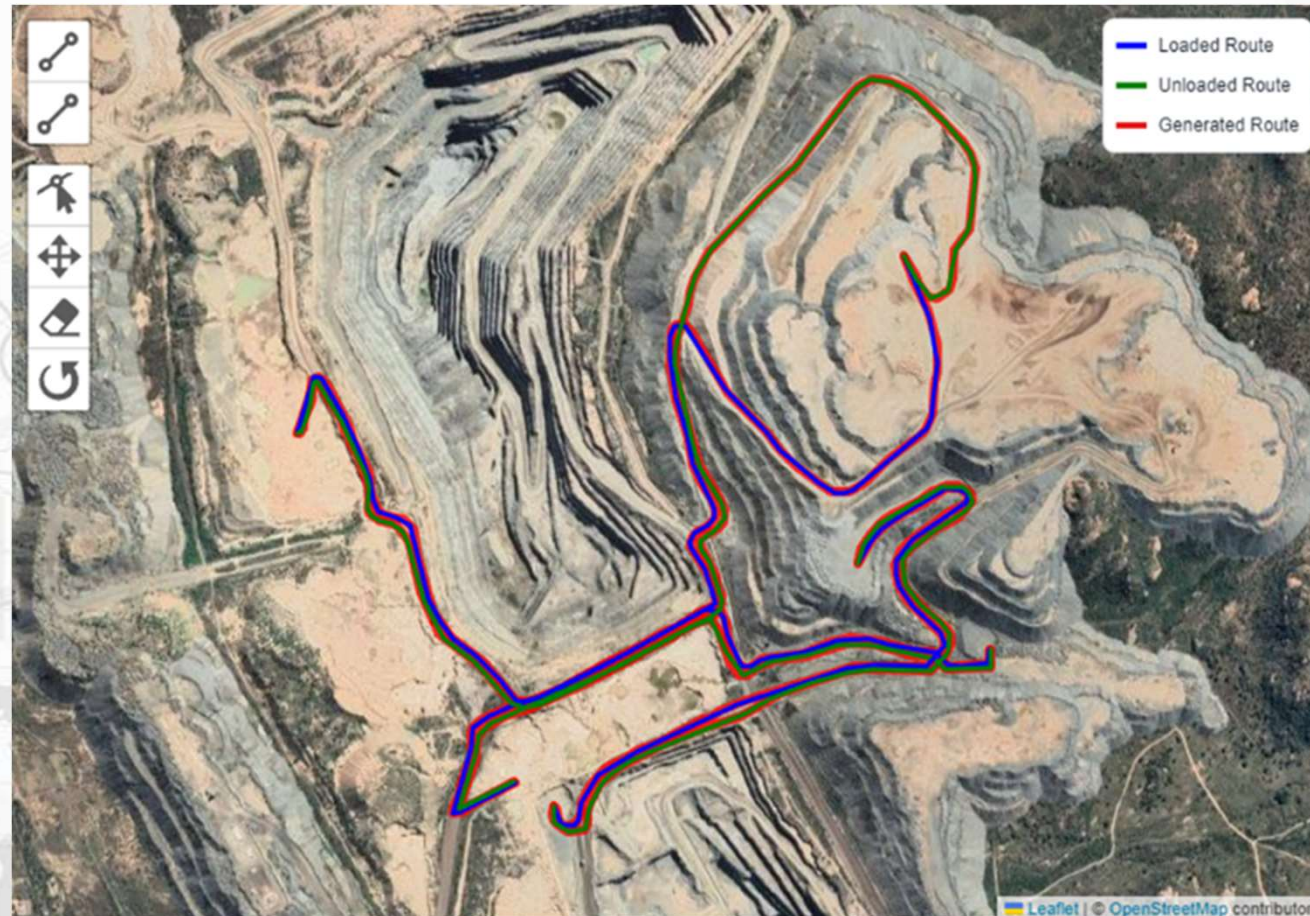
# TMM Digital Twin: Risk Management – Future Planning



# TMM Digital Twin: Risk Management – Future Planning



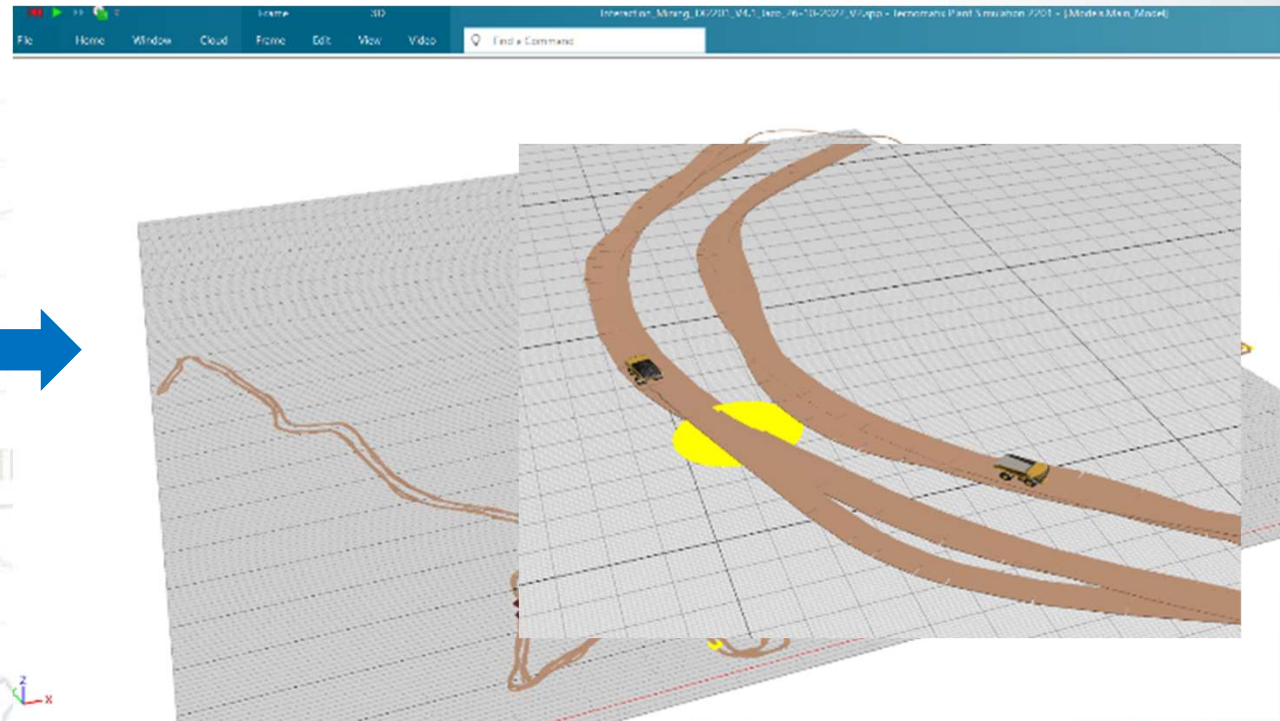
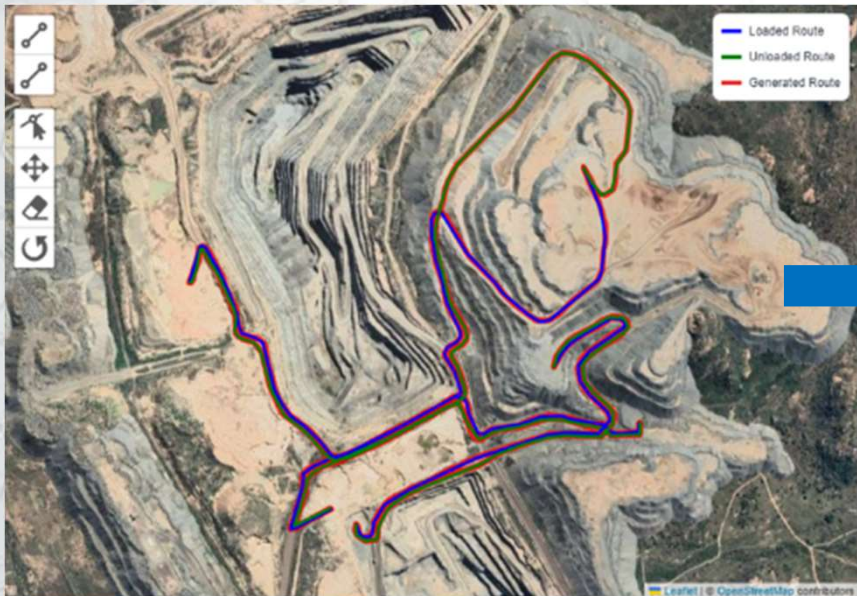
# TMM Digital Twin: Risk Management – Future Planning



# TMM Digital Twin: Risk Management – Future Planning

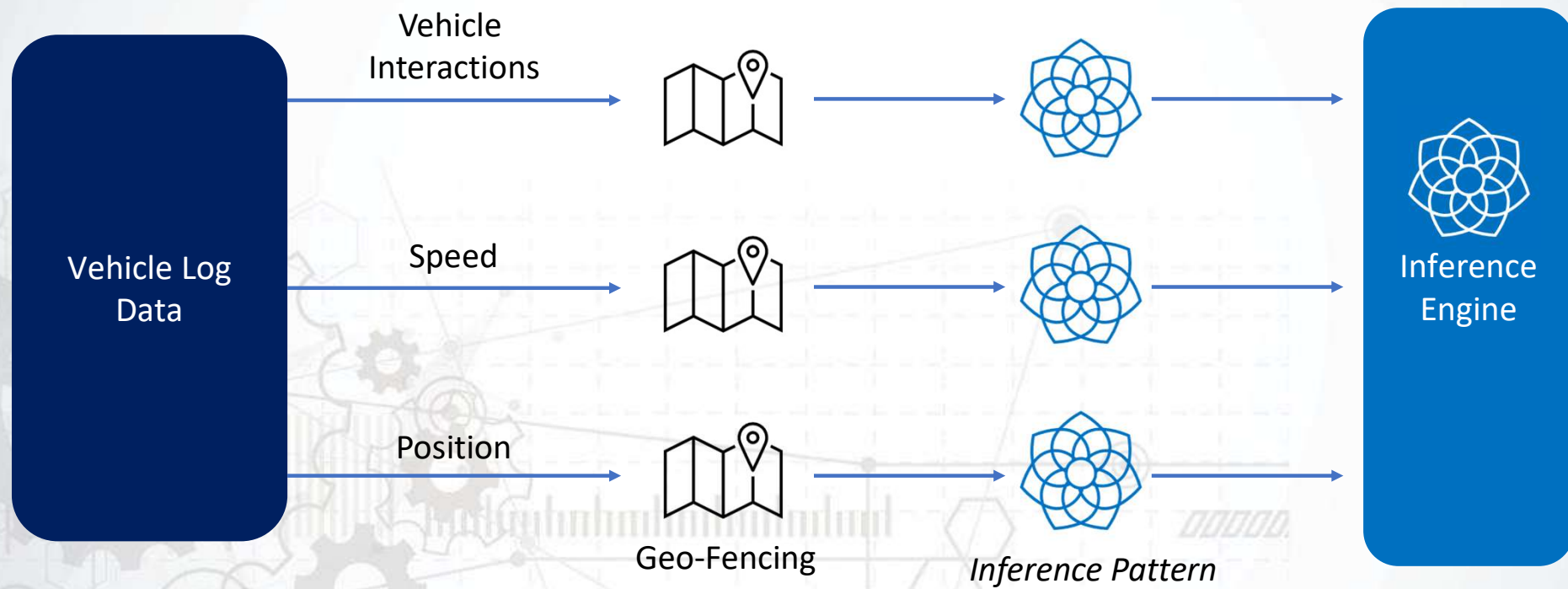
TMM Digital Twin  
Data Analytics

TMM Digital Twin  
Simulation Frameworks





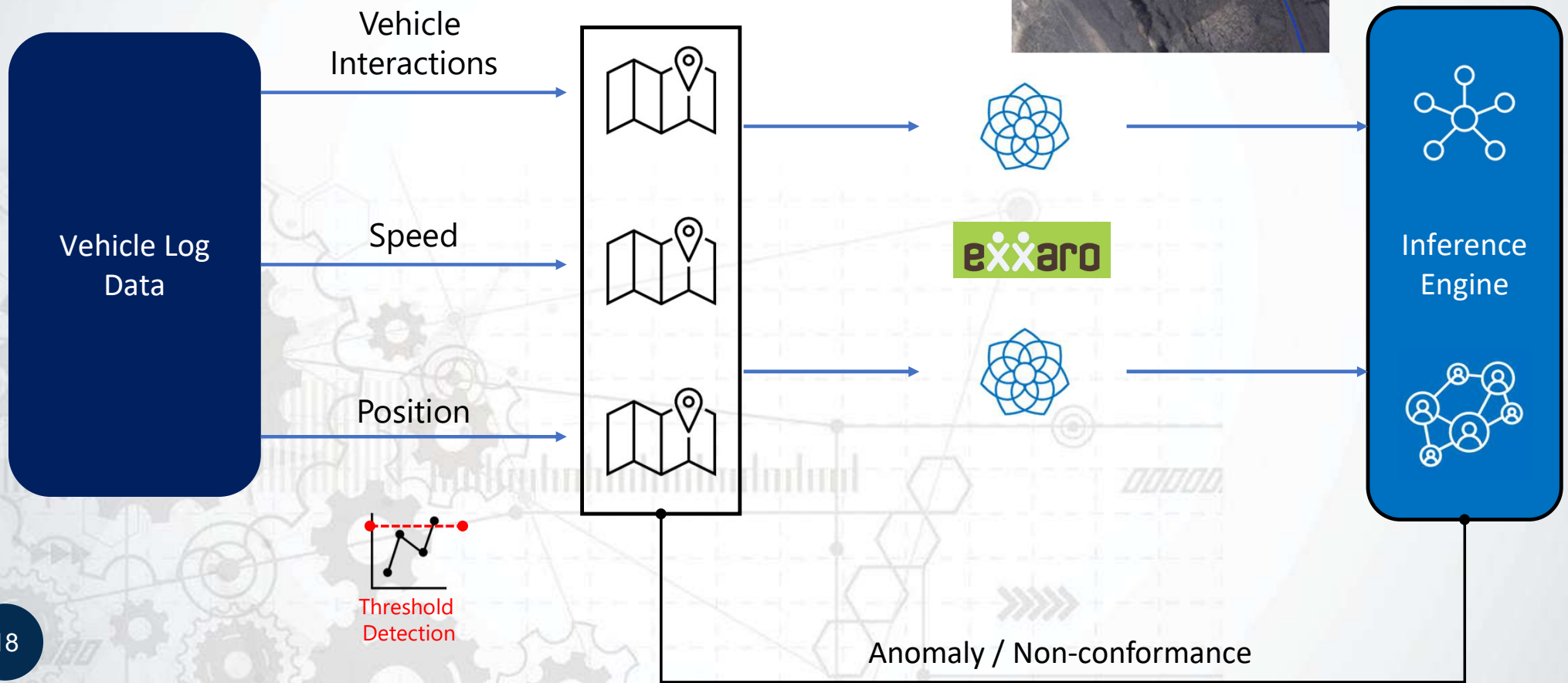
# TMM Digital Twin: Risk Management



Anomaly / Non-conformance behavior CREATE A "PATTERN"  
Pattern FLAGS AN ERROR CONDITION



# TMM Digital Twin: Risk Management



# TMM Digital Twin: Engagement Roadmap

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**END**