EU RTTI 5 Star Rating

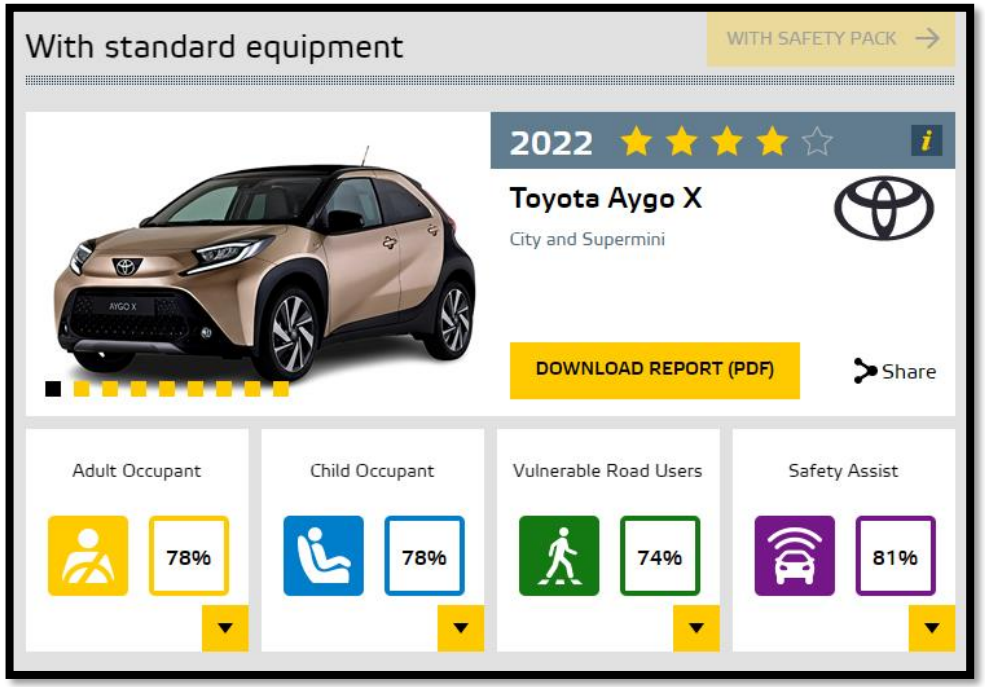
Draft Proposal from TISA RTTI Data Quality Workshop

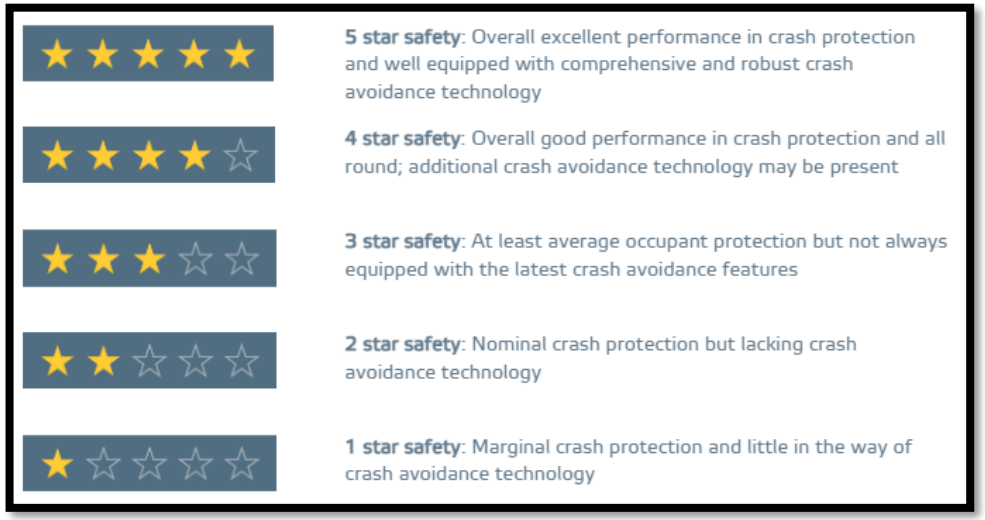
Amsterdam 27-28 Nov 2023

TISA
Traveller Information Services Association

Explanatory Slides

Inspired by EuroNCAP's 5 Star Vehicle Safety Rating as an SLA Alternative





Introducing the RTTI 5 Star Rating Scheme

Purpose:

1. Give road authorities and road operators a helpful, practical and easy-to-use tool to self-assess the quality level of their traffic data.
2. Understand what minimum quality level ITS Service Providers require to use public traffic data
   → this in turn should increase the use of traffic data from Road Authorities and Road Operators by ITS Service Providers
      → which in turn should provide road users with more accurate and complete traffic information that can help reduce congestion, travel times and emissions on Europe's road network

Content:

- **Part 1 - RTTI Data Useability**
  - NAP Functionality
  - Static Data (Traffic Regulation/Restriction & Infrastructure Data)
  - Dynamic Data (State of the Network & Real-Time Use of Network)
- **Part 2 - RTTI Data Processing**

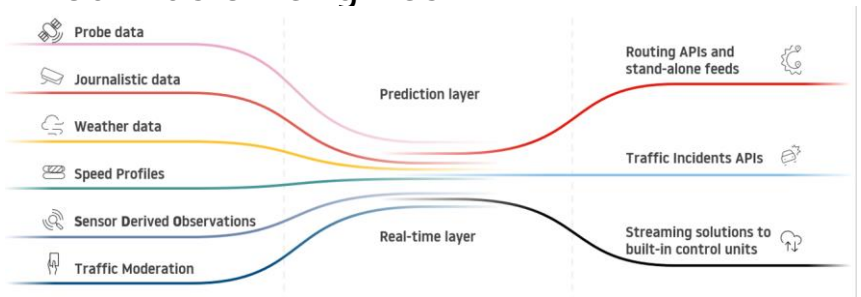
General framework and use case specific framework (i.e. speed limits, road works, road closures).

Commitment to Use SL, RW, RC Data

If the data is below the agreed minimum quality standard, there is no guarantee the data will be used by ITS Service Providers.

If the data meets the **commonly** agreed minimum quality standard or higher, ITS Service Providers will use the data:

- Subject to **company specific** product requirements
- Subject to validated quality score (w/o 3rd party assessment)
- Data is sourced via the National Access Point (NAP)
- Data is never published as is, always validated with other sources in our fusion engines.

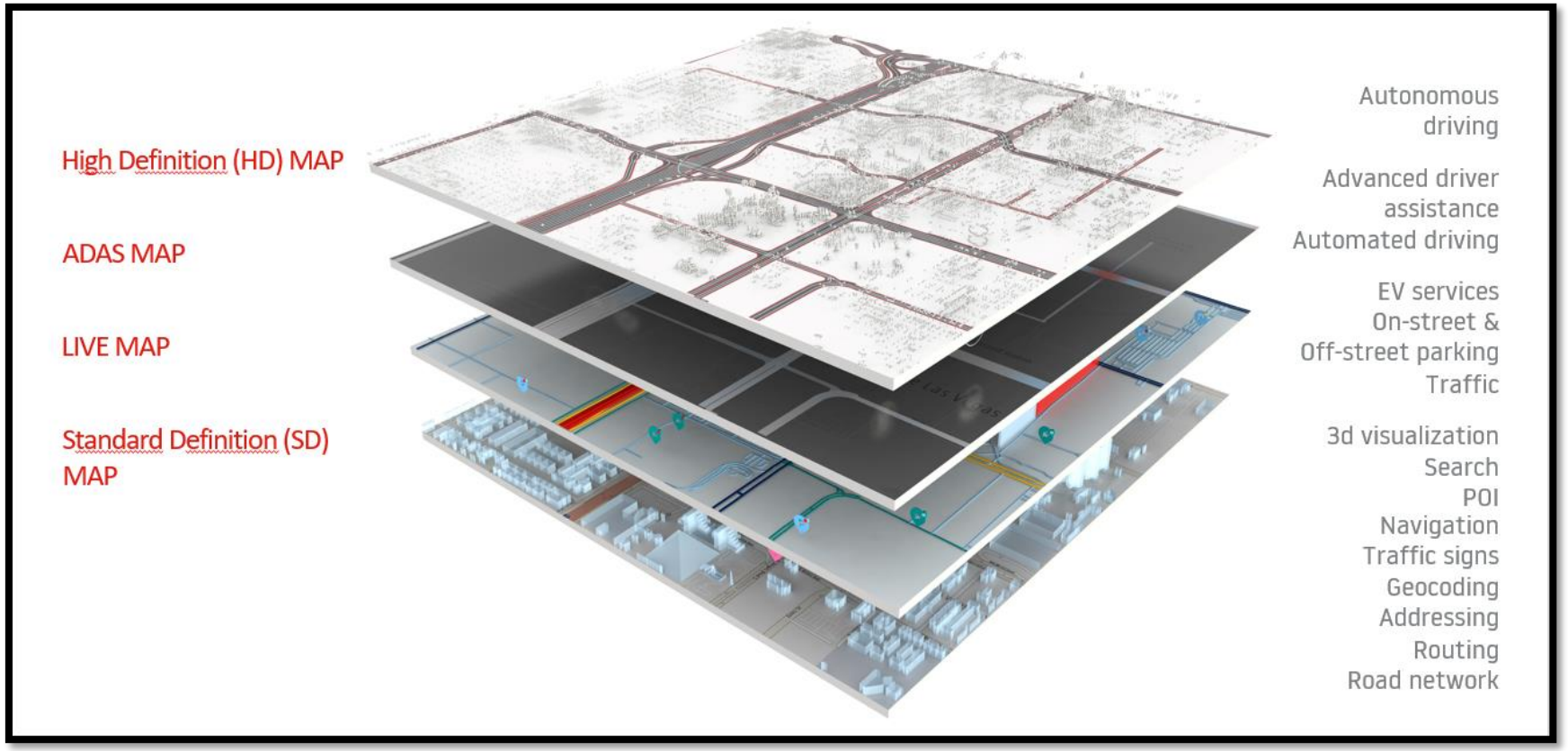


- If data quality degrades over time and goes below minimum quality standard, we may stop using it (giving feedback to data provider).

Scope of 5 Star Rating

Out of scope (for now)

Included in scope



RTTI 5 Star Rating Scheme – NAP Functionality

RTTI Data Useability Part 1a NAP Functionality					
Language	Local Language	Local Language	Local Language + English	Local Language + English	Local Language + English
Search	<15 Minutes Search Time	<10 Minutes Search Time	<5 Minutes Search Time	<3 Minutes Search Time	<1 Minute Search Time
Metadata and Harmonized Data Terminology	Use of Metadata Catalogue	Use of Metadata Catalogue	Use of DCAT-AP based Common Metadata Catalogue	Use of DCAT-AP based Common Metadata Catalogue	Use of DCAT-AP based Common Metadata Catalogue
Service Provider Registration Process	Performed by Service Provider	Performed by Service Provider	Performed by NAP on SP behalf based on Standardized Template (i.e. TISA)	Performed by NAP on SP behalf based on Standardized Template (i.e. TISA)	Performed by NAP on SP behalf based on Standardized Template (i.e. TISA)
Grouping/ Consolidation of Individual RTTI Data Feeds	OSM FRC 1+2 (Motorway + Trunk) Motorway = A restricted access major divided highway, normally with 2 or more running lanes plus emergency hard shoulder. Trunk = The most important roads in a country's system that aren't motorways.	OSM FRC 1-3 (Motorway+Trunk+Primary) Primary = The next most important roads in a country's system (often link larger towns.)	OSM FRC 1-4 (Motorway+Trunk+Primary+ Secondary) Secondary = The next most important roads in a country's system. (Often link towns.)	OSM FRC 1-5 (Motorway+Trunk+Primary+ Secondary+Tertiary) Tertiary = The next most important roads in a country's system. (Often link smaller towns and villages)	OSM FRC 1-6 (Motorway+Trunk+Primary+ Secondary+Tertiary+Residential) Residential = Roads which serve as an access to housing, without function of connecting settlements. Often lined with housing.

RTTI 5 Star Rating Scheme – Static Data 1/2

RTTI Data Useability Part 1b Static Data					
RTTI Data Terminology & Definition	Self-defined	Self-defined	According to official standard*	According to official standard*	According to official standard*
Data Format Used	Bespoke local format	Bespoke local format	TN-ITS/DATEX II (latest version)	TN-ITS/ DATEX II (latest version)	TN-ITS/ DATEX II (latest version)
Use of Standard	Bespoke profile used	Bespoke profile used	Unified use of standard (i.e. common EU profile)	Unified use of standard (i.e. common EU profile)	Unified use of standard (i.e. common EU profile)
Location Referencing			*Use Case Specific*		
Linear Referencing	Polylines	Polylines	Polylines	Polylines	Polylines
Direction Defined	Not referenced	Not referenced	Referenced	Referenced	Referenced

RTTI 5 Star Rating Scheme – Static Data 2/2

RTTI Data Useability					
Part 1b Static Data					
Update Cycle	*Use Case Specific – Time Based Measurement* Definition: the time interval for refreshing + updating published events/road attributes (~ reporting period) (EIP 2019)				
Timeliness Rate	*Use Case Specific – Time Based Measurement* Definition: the time between the occurrence of the event/relevant change and the acceptance of the event (entering system) (EIP 2019)				
Accuracy	*Use Case Specific – Distance Based Measurement* Definition: the absolute accuracy of the referenced location of the published event/road attribute with respect to the actual location (EIP 2019)				
Correctness	*Use Case Specific – % Based Measurement* Definition: 100% minus the % of published events/road attributes which are known to be NOT correct, concerning the actual occurrence of type/class (EIP 2019)				
Completeness	*Use Case Specific – % Based Measurement* Definition: % of the events which are known to be correctly detected and published by type/class, time and location (EIP 2019)				

RTTI 5 Star Rating Scheme – Dynamic Data

RTTI Data Useability					
Part 1c Dynamic Data					
All Static Data Elements	Difference with Dynamic Data – two different set of accuracy, correctness and completeness requirements for functional road classes groups: FRC1-4 and FRC5-6				
RTTI Event Message ID	Message IDs may change for same event	Message IDs may change for same event	Same specific message ID for same event (stable)	Same specific message ID for same event (stable)	Same specific message ID for same event (stable)
Secure API Access	Non-secured	Non-secured	Secured via https	Secured via https	Secured via https
Outdated Messages Deleted from Feed	*Use Case Specific – Time Based Measurement*				
Availability Short Term Events	*Use Case Specific – Content Availability Yes or No*				
Validity	*Use Case Specific – Start/stop or Schedule Available*				
Other	*Other Use Case Specific Parameters*				

RTTI 5 Star Rating Scheme – RTTI Data Use

Part 2 RTTI Data Use					
Feedback ITS SPs are using RTTI Data	To be discussed with MS in RTTI Task Force				
Speed Limit Data Processed in Fusion Engine	To be discussed with MS in RTTI Task Force				

***Speed Limit Data Processed in Fusion Engine means =** the maximum period of time before the RTTI data is processed in our fusion engine alongside other data sources. This does not refer to the maximum period of time that content derived from RTTI data is shown to end users (which is out of our control in non-branded products).

Draft Proposal – Minimum Data Quality Requirements from TISA RTTI Data Quality Workshop

Static Speed Limits

Planned Road Works and Unplanned Road Works

Planned Full Road Closure and Unplanned Full Road Closure

Disclaimer // Explanatory Note

- Article 5/6/7 Paragraph 2b of EU 2022/670 states that the RTTI data must be accessible following minimum quality requirements that Member States shall agree upon in cooperation with relevant stakeholders

- Minimum requirements are those listed as **3 STARS** in yellow box

    - As the workshop discussion only focused on requirements listed under this box further changes may be required for requirements set for other stars to ensure consistency.

- Topics highlighted in YELLOW need further refinement and/or clarification, namely:
    - Use case definitions
    - Using latest version of standard – from which moment the latest standard version is available would this come into effect?
    - Update cycle vs timeliness – can this be combined or need to be kept separate
    - Vehicle classification – need to integrate official terminology from Type Approval framework
    - Other ad hoc points

RTTI 5 Star Rating Scheme – Static Speed Limit

Static Data - Speed Limit	★☆☆☆☆	★★☆☆☆	★★★☆☆	★★★★☆	★★★★★
Terminology & Definition	Self-defined	Self-defined	According to EU ISA Regulation 'Applicable Speed Limit'	According to EU ISA Regulation 'Applicable Speed Limit'	According to EU ISA Regulation 'Applicable Speed Limit'
Data Format Used	Bespoke local format	Bespoke local format	DATEX II / TN-ITS (latest version used)	TN-ITS	TN-ITS
Use of Standard	Standard instructions only used as guide – ad hoc implementation used	Standard instructions only used as guide – ad hoc implementation used	Unified use of standard	Unified use of standard	Unified use of standard
Location Referencing	Basic GPS INSPIRE coordinates	Basic GPS INSPIRE coordinates	Preference for OpenLR over basic GPS INSPIRE coordinates	Preference for OpenLR over basic GPS INSPIRE coordinates	Preference for OpenLR over basic GPS INSPIRE coordinates
Linear Referencing	Polylines	Polylines	Polylines	Polylines	Polylines
Direction Defined FRC3-6	Not referenced	Not referenced	Referenced	Referenced	Referenced
Update Cycle?	Quarterly	Monthly	Weekly	Daily	Daily
Timeliness Rate	Max 3 months old	Max 1 month old	Max 1 week old	Max 1 day old	Data available before speed limit change – pre warning
FRC1-6 Accuracy Circular Error Probable (CEP)/Linear Travel Direction	<30m	<20m	<10m	<5m	<1m
FRC1-6 Correctness	>80%	>80%	>90%	>95%	>99%
FRC1-6 Completeness	>80%	>80%	>90%	>95%	>99%

RTTI 5 Star Rating Scheme – Static Speed Limit

Static Data - Speed Limit	★☆☆☆☆	★★☆☆☆	★★★☆☆	★★★★☆	★★★★★
Vehicle Classification	M1	M1 + N1	M1-3 and N1-3		M1-3 and N1-3 Officially classify Fuel Specific Vehicles i.e. EV Officially classify bikes
Speed limit type	Implicit and Explicit	Implicit and Explicit	Implicit and Explicit	Implicit and Explicit	Implicit + Explicit + Conditional

RTTI 5 Star Rating Scheme – Planned Road Works 1/2

Dynamic Data - Road Works	★☆☆☆☆	★★☆☆☆	★★★☆☆	★★★★☆	★★★★★
Terminology & Definition	Self-defined	Self-defined	Harmonized Definition Required (TISA to Propose Definition)	Harmonized Definition Required (Can TISA Help?)	Harmonized Definition Required (Can TISA Help?)
Data Format Used	Bespoke local format or DATEX II	Bespoke local format or DATEX II	Only DATEX II (latest version)	Only DATEX II (latest version)	Only DATEX II (latest version)
Use of Standard	Standard instructions only used as guide – ad hoc implementation used	Standard instructions only used as guide – ad hoc implementation used	Unified use of standard (i.e. common EU profile) when ready	Unified use of standard (i.e. common EU profile) when ready	Unified use of standard (i.e. common EU profile) when ready
Location Referencing	Basic GPS INSPIRE coordinates	Basic GPS INSPIRE coordinates	Strong preference for inclusion of OpenLR over TMC	Strong preference for OpenLR over TMC	Only OpenLR
Linear Referencing	Polylines	Polylines	Polylines	Polylines	Polylines
Direction Defined FRC3-6	Not referenced	Not referenced	Referenced	Referenced	Referenced
Update Cycle?	Weekly	Every 3 days	Daily	Max 6 Hours	Hourly
Timeliness Rate	Max 1 week	Max 3 days	Max 24 hours	Max 6 Hours	Max 1 hour
FRC1-4					
Accuracy	<1km	<500m	<250m	<100m	<50m
Correctness	>70%	>75%	>80%	>85%	>90%
Completeness	>70%	>75%	>80%	>85%	>90%
FRC5-6					
Accuracy	<200m	<100m	<50m	<25m	<10m
Correctness	>60%	>65%	>70%	>75%	>80%
Completeness	>60%	>65%	>70%	>75%	>80%

RTTI 5 Star Rating Scheme – Planned Road Works 2/2

Dynamic Data - Road Works	★☆☆☆☆	★★☆☆☆	★★★☆☆	★★★★☆	★★★★★
RTTI Event Message ID	Message IDs may change for same event	Message IDs may change for same event	Same specific event ID for same event (stable)	Same specific event ID for same event (stable)	Same specific event ID for same event (stable)
Secure API Access	Non-secured	Non-secured	Secured	Secured via https	Secured via https
Outdated Messages Deleted from Feed	Max 4 Weeks	Max 3 Weeks	Max 2 Weeks	Max 1 Week	Max 24 Hours
Availability Short Term Events	Scheduled road works only	Scheduled road works only	Scheduled road works	Scheduled road works	Scheduled road works
Road Type	Generic road works only	Generic road works only	Lane level including narrow lanes	Lane level including narrow lanes	Lane level including narrow lanes
Validity	Start/stop times available	Start/stop times available	Schedules available (e.g. Mon-Fri 22:00 – 06:00)	Schedules available (e.g. Mon-Fri 22:00 – 06:00)	Schedules available (e.g. Mon-Fri 22:00 – 06:00)
Lane level attribute					Cause
Impacted modalities			At least vehicles preferably more modalities bikes		

RTTI 5 Star Rating Scheme – Unplanned Road Works 1/2

Dynamic Data - Road Works	★☆☆☆☆	★★☆☆☆	★★★☆☆	★★★★☆	★★★★★
Terminology & Definition	Self-defined	Self-defined	Harmonized Definition Required (TISA to Propose Definition)	Harmonized Definition Required (Can TISA Help?)	Harmonized Definition Required (Can TISA Help?)
Data Format Used	Bespoke local format or DATEX II	Bespoke local format or DATEX II	Only DATEX II (latest version)	Only DATEX II (latest version)	Only DATEX II (latest version)
Use of Standard	Standard instructions only used as guide – ad hoc implementation used	Standard instructions only used as guide – ad hoc implementation used	Unified use of standard (i.e. common EU profile) when ready	Unified use of standard (i.e. common EU profile) when ready	Unified use of standard (i.e. common EU profile) when ready
Location Referencing	Basic GPS INSPIRE coordinates	Basic GPS INSPIRE coordinates	Strong preference for OpenLR over TMC	Strong preference for OpenLR over TMC	Only OpenLR
Linear Referencing	Polylines	Polylines	Polylines	Polylines	Polylines
Direction Defined FRC3-6	Not referenced	Not referenced	Referenced	Referenced	Referenced
Update Cycle?	Every 3 days	Daily	Every 10 Minutes	Every 5 minutes	Every 1 Minute
Timeliness Rate	Max 3 days	Max 24 hours	Max 10 minutes	Max 5 minutes	Max 1 minute
FRC1-4					
Accuracy	<1km	<500m	<250m	<100m	<50m
Correctness	>70%	>75%	>80%	>85%	>90%
Completeness	>70%	>75%	>80%	>85%	>90%

RTTI 5 Star Rating Scheme – Unplanned Road Works 2/2

Dynamic Data - Road Works	★☆☆☆☆	★★☆☆☆	★★★☆☆	★★★★☆	★★★★★
RTTI Event Message ID	Message IDs may change for same event	Message IDs may change for same event	Same specific message ID for same event (stable)	Same specific message ID for same event (stable)	Same specific message ID for same event (stable)
Secure API Access	Non-secured	Non-secured	Secured via https	Secured via https	Secured via https
Outdated Messages Deleted from Feed	Max 4 Weeks	Max 3 Weeks	Max 2 Weeks	Max 1 Week	Max 24 Hours
Availability Short Term Events	Scheduled road works only	Scheduled road works only	Scheduled and unplanned road works	Scheduled and unplanned road works	Scheduled and unplanned road works
Road Type	Generic road works only	Generic road works only	Lane level including narrow lanes	Lane level specific	Lane level specific
Validity	Start/stop times available	Start/stop times available	Schedules available (e.g. Mon-Fri 22:00 – 06:00)	Schedules available (e.g. Mon-Fri 22:00 – 06:00)	Schedules available (e.g. Mon-Fri 22:00 – 06:00)
Other?					

RTTI 5 Star Rating Scheme – Planned Full Road Closure 1/2

Dynamic Data - Road Closure	★☆☆☆☆	★★☆☆☆	★★★☆☆	★★★★☆	★★★★★
Terminology & Definition	Self-defined	Self-defined	Harmonized Definition Required (TISA to Propose Definition)	Harmonized Definition Required (Can TISA Help?)	Harmonized Definition Required (Can TISA Help?)
Data Format Used	Bespoke local format or DATEX II	Bespoke local format or DATEX II	Only DATEX II (latest version)	Only DATEX II (latest version)	Only DATEX II (latest version)
Use of Standard	Standard instructions only used as guide – ad hoc implementation used	Standard instructions only used as guide – ad hoc implementation used	Unified use of standard (i.e. common EU profile) when ready	Unified use of standard (i.e. common EU profile) when ready	Unified use of standard (i.e. common EU profile) when ready
Location Referencing	Basic GPS INSPIRE coordinates	Basic GPS INSPIRE coordinates	Strong preference for OpenLR over TMC	Strong preference for OpenLR over TMC	Only OpenLR
Linear Referencing	Polylines	Polylines	Polylines	Polylines	Polylines
Direction Defined FRC3-6	Not referenced	Not referenced	Referenced	Referenced	Referenced
Update Cycle?	Every 3 days	Daily	Twice Daily	Every 3 Hours	Every 5-60 Minutes
Timeliness Rate	Max 3 days	Max 24 hours	Max 12 hours	Max 3 Hours	Max 5-60 Minutes
FRC1-4					
Accuracy	<250m	<100m	<50m	<25m	<10m
Correctness	>80%	>85%	>90%	>95%	>99%
Completeness	>80%	>85%	>90%	>95%	>99%
FRC5-6					
Accuracy	<50m	<20m	<10m	<5m	<1m
Correctness	>70%	>75%	>80%	>85%	>90%
Completeness	>70%	>75%	>80%	>85%	>90%

RTTI 5 Star Rating Scheme – Planned Full Road Closure 2/2

Dynamic Data - Road Closure					
RTTI Event Message ID	Message IDs may change for same event	Message IDs may change for same event	Same specific message ID for same event (stable)	Same specific message ID for same event (stable)	Same specific message ID for same event (stable)
Secure API Access	Non-secured	Non-secured	Secured via https	Secured via https	Secured via https
Outdated Messages Deleted from Feed	Max 4 Weeks	Max 3 Weeks	Max 2 Weeks	Max 1 Week	Max 24 Hours
Validity	Start/stop times available	Start/stop times available	Schedules available (e.g. Mon-Fri 22:00 – 06:00)	Schedules available (e.g. Mon-Fri 22:00 – 06:00)	Schedules available (e.g. Mon-Fri 22:00 – 06:00)
Vehicle Type Classification	No detail on applicable vehicle type	No detail on applicable vehicle type	Vehicle type specific (e.g only applicable for HDV)	Vehicle type specific (e.g only applicable for HDV)	Vehicle type specific (e.g. only applicable for HDV)
Other?					

RTTI 5 Star Rating Scheme – Unplanned Full Road Closure 1/2

Dynamic Data - Road Closure	★☆☆☆☆	★★☆☆☆	★★★☆☆	★★★★☆	★★★★★
Terminology & Definition	Self-defined	Self-defined	Harmonized Definition Required (TISA to Propose Definition)	Harmonized Definition Required (Can TISA Help?)	Harmonized Definition Required (Can TISA Help?)
Data Format Used	Bespoke local format or DATEX II	Bespoke local format or DATEX II	Only DATEX II (latest version)	Only DATEX II (latest version)	Only DATEX II (latest version)
Use of Standard	Standard instructions only used as guide – ad hoc implementation used	Standard instructions only used as guide – ad hoc implementation used	Unified use of standard (i.e. common EU profile) when ready	Unified use of standard (i.e. common EU profile) when ready	Unified use of standard (i.e. common EU profile) when ready
Location Referencing	Basic GPS INSPIRE coordinates	Basic GPS INSPIRE coordinates	Strong preference for OpenLR over TMC	Strong preference for OpenLR over TMC	Only OpenLR
Linear Referencing	Polylines	Polylines	Polylines	Polylines	Polylines
Direction Defined FRC3-6	Not referenced	Not referenced	Referenced	Referenced	Referenced
Update Cycle?	Every 3 days	Daily	Every 10 Minutes	Every 5 minutes	Every 1 Minute
Timeliness Rate	Max 3 days	Max 24 hours	Max 10 minutes	Max 5 minutes	Max 1 minute
FRC1-4					
Accuracy	<250m	<100m	<50m	<25m	<10m
Correctness	>80%	>85%	>90%	>95%	>99%
Completeness	>80%	>85%	>90%	>95%	>99%
FRC5-6					
Accuracy	<50m	<20m	<10m	<5m	<1m
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Completeness	>70%	>75%	>80%	>85%	>90%

RTTI 5 Star Rating Scheme – Unplanned Full Road Closure 2/2

Dynamic Data - Road Closure	★☆☆☆☆	★★☆☆☆	★★★☆☆	★★★★☆	★★★★★
RTTI Event Message ID	Message IDs may change for same event	Message IDs may change for same event	Same specific message ID for same event (stable)	Same specific message ID for same event (stable)	Same specific message ID for same event (stable)
Secure API Access	Non-secured	Non-secured	Secured via https	Secured via https	Secured via https
Outdated Messages Deleted from Feed	Max 4 Weeks	Max 3 Weeks	Max 2 Weeks	Max 1 Week	Max 24 Hours
Vehicle Type Classification	No detail on applicable vehicle type	No detail on applicable vehicle type	Vehicle type specific (i.e. only applicable for HDV)	Vehicle type specific (i.e. only applicable for HDV)	Vehicle type specific (i.e. only applicable for HDV)
Cause Type					

Next Steps – 5 Star Rating

1. Bi-weekly online meetings with core group (TISA and selected non-TISA members) to address highlighted yellow points.
    - Calls to start in Jan 2024
    - Agree who is part of core group before Christmas
    - Working slides for core group to be available on NextCloud
    - Full workshop slides to be available on public TISA website and confluence

2. Host half day workshop straight after TISA Committee meetings in March 2024 to present latest updates and consensus building (make open to TISA and non-TISA members)

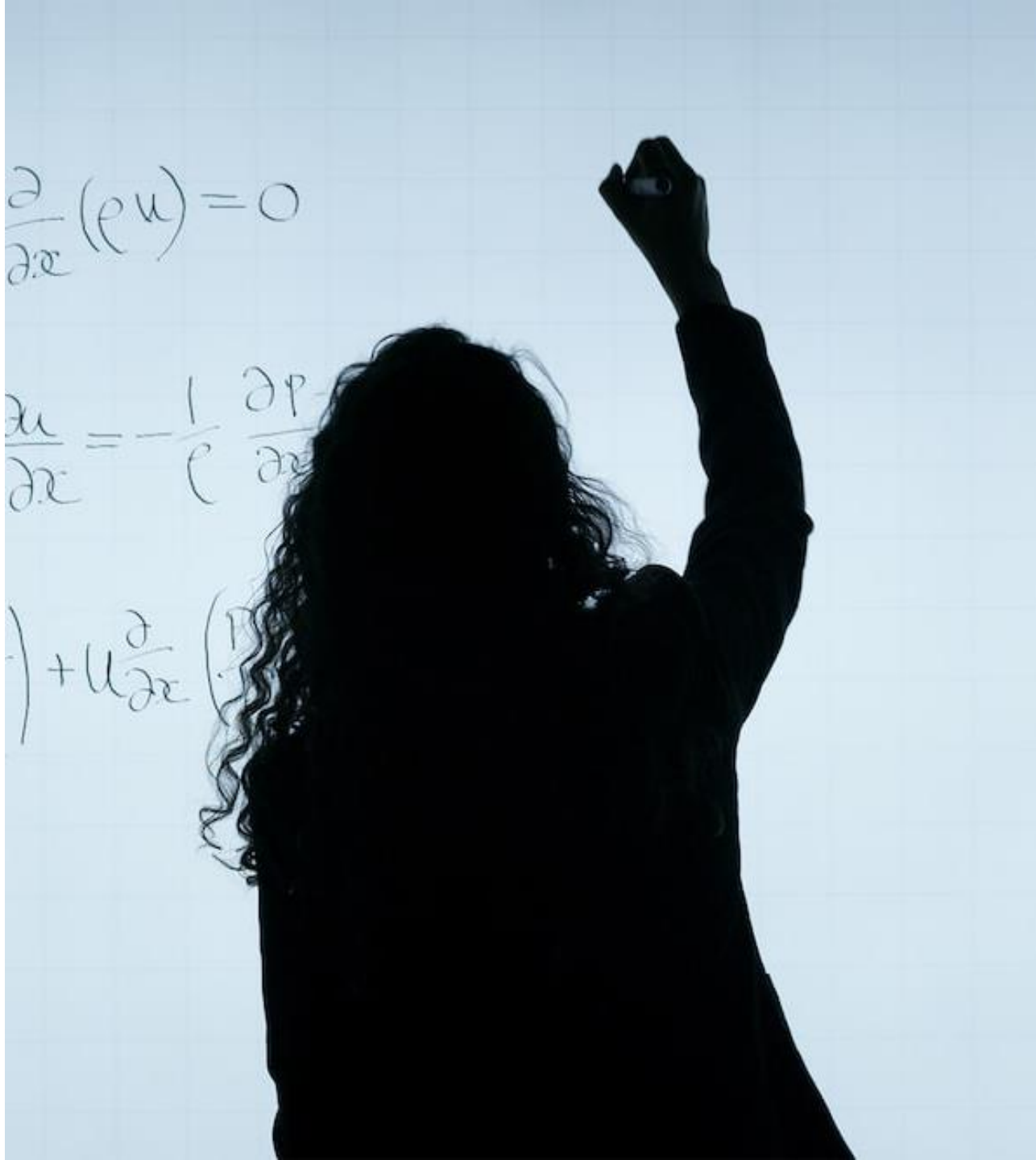
Other Points for TISA to Further Investigate

Calculating Use Case Minimum Quality Level Score?

Minimum Quality is 3/5 at parameter level but do we need to calculate an overall score?

Will RO/RA be 3/5 for every single parameter? Unlikely

Some parameters are more important than others – how to reflect?



How often should the quality assessment be performed?

i.e. will the RO/RA rating expire?

How will rating thresholds increase overtime with technology advancements?

What is the incentive for RO/RA to have 5-star rating vs meeting minimum requirements?

What happens if ITS Service Providers acquire/process SL/RW/RC data through an aggregator and not directly through the road operator or authority?

How does the 5 star rating apply?