



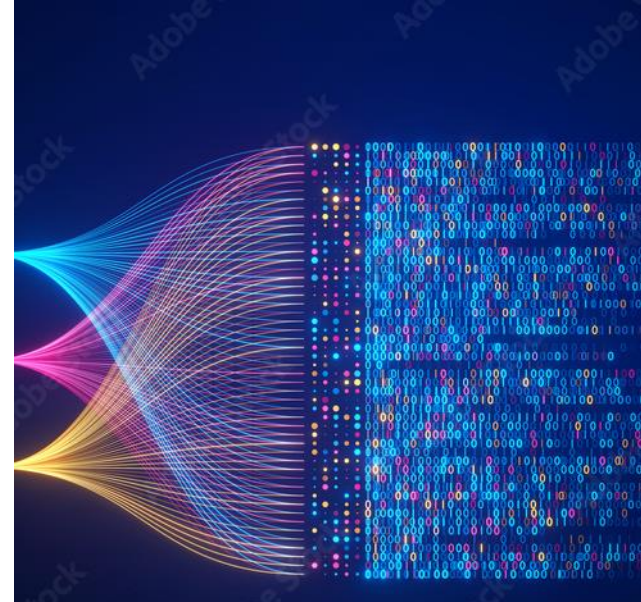
EU RTTI 5-Star Rating

Follow up Workshop
Hybrid Brussels/Online
12th March 2024



Task Force led by TISA

SLe



General Requirements for NAP
Functionality and Static + Dynamic Data

Requirements for
Road Works Data



Requirements for
Static Speed Limit Data

Requirements for
Road Closure Data



AGENDA

14.00 –
16.00

1. Introduction & Scope

S. Leonard TISA/TomTom

2. Recap NAP Functionality

S. Leonard TISA/TomTom

3. Recap Static/Dynamic Data Requirements

M. Unbehaun TISA

4. Updated Use Cases

- Speed Limits
- Planned/Unplanned Road Works
- Planned/Unplanned Road Closures

C. Kleine, HERE Technologies

D. Sterckx Vlaanderen MOW
& T. Mark de Laine Danish
Road Directorate

5. Outlook & Next Steps

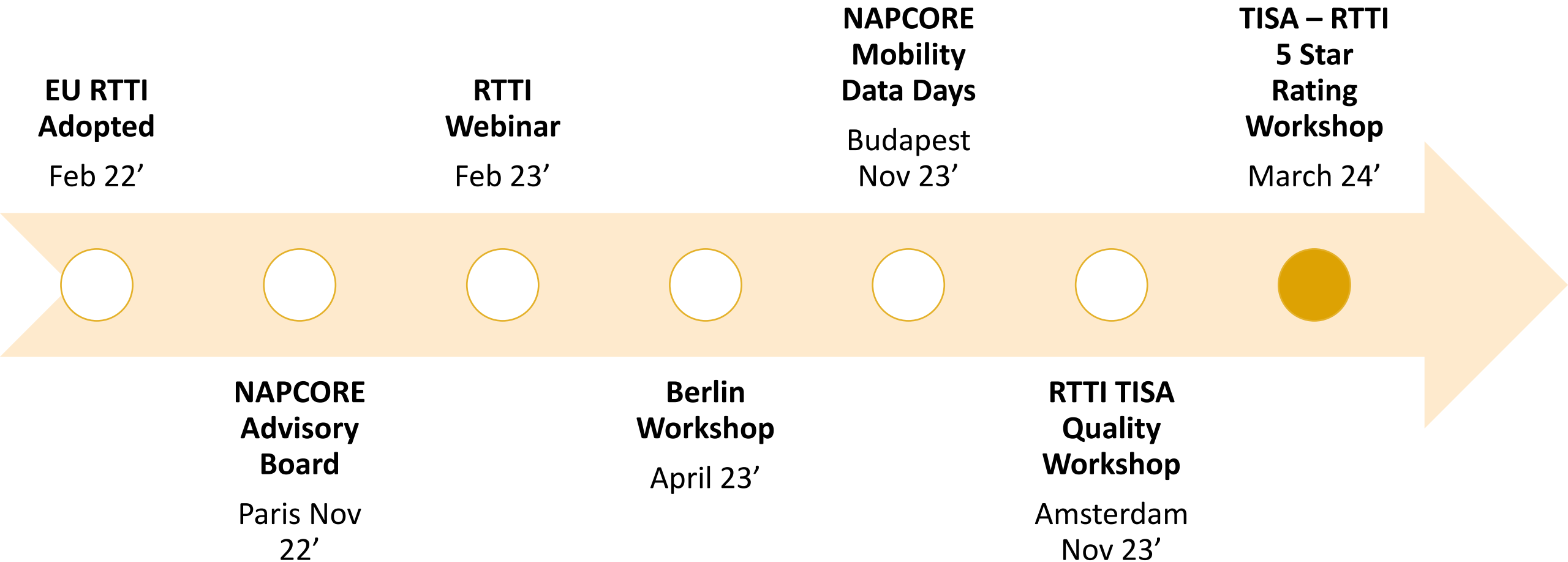
S. Leonard TISA/TomTom

House Rules

- Online participants - please stay muted throughout meeting.
- We'll stop and take questions at the **end of each chapter**, not in-between.
- We'll first answer questions in the meeting room in BXL and then see questions posted in the MS team chat.
- If question is unclear, we'll ask you to unmute and repeat orally.



Timeline – recap how did we get here



Introduction & Scope

How to combine and use input from Berlin workshop?

Key Aspects for Data Quality

3. Data Quality

1. **Service Level Agreement (SLA)**
 1. a commitment between the provider and customer on various aspects of the service (quality, availability, responsibilities)
 2. the most common component of an SLA is that the services should be provided to the customer as agreed upon in the SLA
 3. Very common tool in traffic business, could be useful in RTTI NAP context (see next slide)
2. **Location Referencing** – standardized/widely adopted method required
3. **Event and Validity Handling** – high level of detail required
4. **Content** – detail and context of data required
5. Description of accuracy, freshness, completeness, correctness – quality management
6. High requirements expected when we move from SD, ADAS Map to HD Map

Data Quality – Minimum Service Provider Requirements

General	Location Referencing	Event & Validity Handling	Content
Must have: <ul style="list-style-type: none"> • format: xml/json/DATEx II • feed: can be fetched once per minute • stable message id required if referring to the same event • if possible, event description/comments available 	Must have: <ul style="list-style-type: none"> • coordinate referencing system is stated: preferably WGS84 • lon/lat stretches/polylines or OpenLR • direction defined / bidirectional attribute • if possible, road names given (lane level specific for high road classes, updates available as close to real time for automation use cases) 	Must have – Event: <ul style="list-style-type: none"> • differentiation between full road closures and lane closures • vehicle specific closures (i.e., older petrol cars) • if possible, documentation around all valid event types • if possible, guided by Datex II standard or Alert-C event codes Must have - Validity <ul style="list-style-type: none"> • start/stop times available • if possible, schedules available (e.g. "Mon-Fri 22:00-06:00") 	Must have <ul style="list-style-type: none"> • Coverage: <ul style="list-style-type: none"> • which road classes are covered? • which areas are covered (urban, rural) • how many messages are active at the same time (or is the feed cluttered with old messages)? • how many short-term events are available (intermittent road closures, accidents) or are the events mostly scheduled? • if possible, how well does map matching onto our map work

Service Level Agreement (SLA) in TN-ITS GO

Parameter	Entry	Basic	Elite	Ultimate
Timeliness	3 Month	Month	Week	Day
Location Accuracy	>10m	<10m	<5m	<1m
Completeness	>80%	>90%	>95%	>99%
Correctness	>80%	>90%	>95%	>99%

TN-ITS GO, Deliverable 4.1 Evaluation

TN-ITS Service Levels	Basic (low)	Elite (medium)	Ultimate (high)
Support services			
Service Availability (over a period):	90%	96%	99,9%
Incident management – support hours	Office hours	Office hours	24x7
Incident management – Initial response time	1 day	4 hours	1 hour
Incident management – Target resolution time	Reasonable effort	1 day	4 hours

Table 2 - Service Quality Levels

Chicken or Egg Paradox

We learnt in Berlin that many road authorities and road operators know the quality of their traffic data could be improved but they don't want to make investments without the assurance ITS Service Providers will use the new and improved feeds.

What comes first, traffic data quality improvements or commitment to use traffic data?




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




With standard equipment WITH SAFETY PACK →

2022 ★★★★★ i

Toyota Aygo X
City and Supermini 

[DOWNLOAD REPORT \(PDF\)](#) [Share](#)



Category	Score
Adult Occupant	78%
Child Occupant	78%
Vulnerable Road Users	74%
Safety Assist	81%

★★★★★	5 star safety: Overall excellent performance in crash protection and well equipped with comprehensive and robust crash avoidance technology
★★★★☆	4 star safety: Overall good performance in crash protection and all round; additional crash avoidance technology may be present
★★★☆☆	3 star safety: At least average occupant protection but not always equipped with the latest crash avoidance features
★★☆☆☆	2 star safety: Nominal crash protection but lacking crash avoidance technology
★☆☆☆☆	1 star safety: Marginal crash protection and little in the way of crash avoidance technology

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



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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 (*to be further address in RTTI Task Force*)**

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



Commitment to Use SL, RW, RC Data



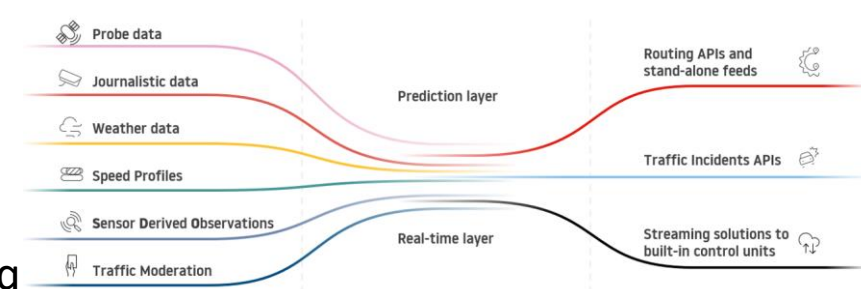
If the data is below the agreed minimum quality standard, there is no guarantee the data will be used by ITS Service Providers.

Minimum RTTI Level



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.



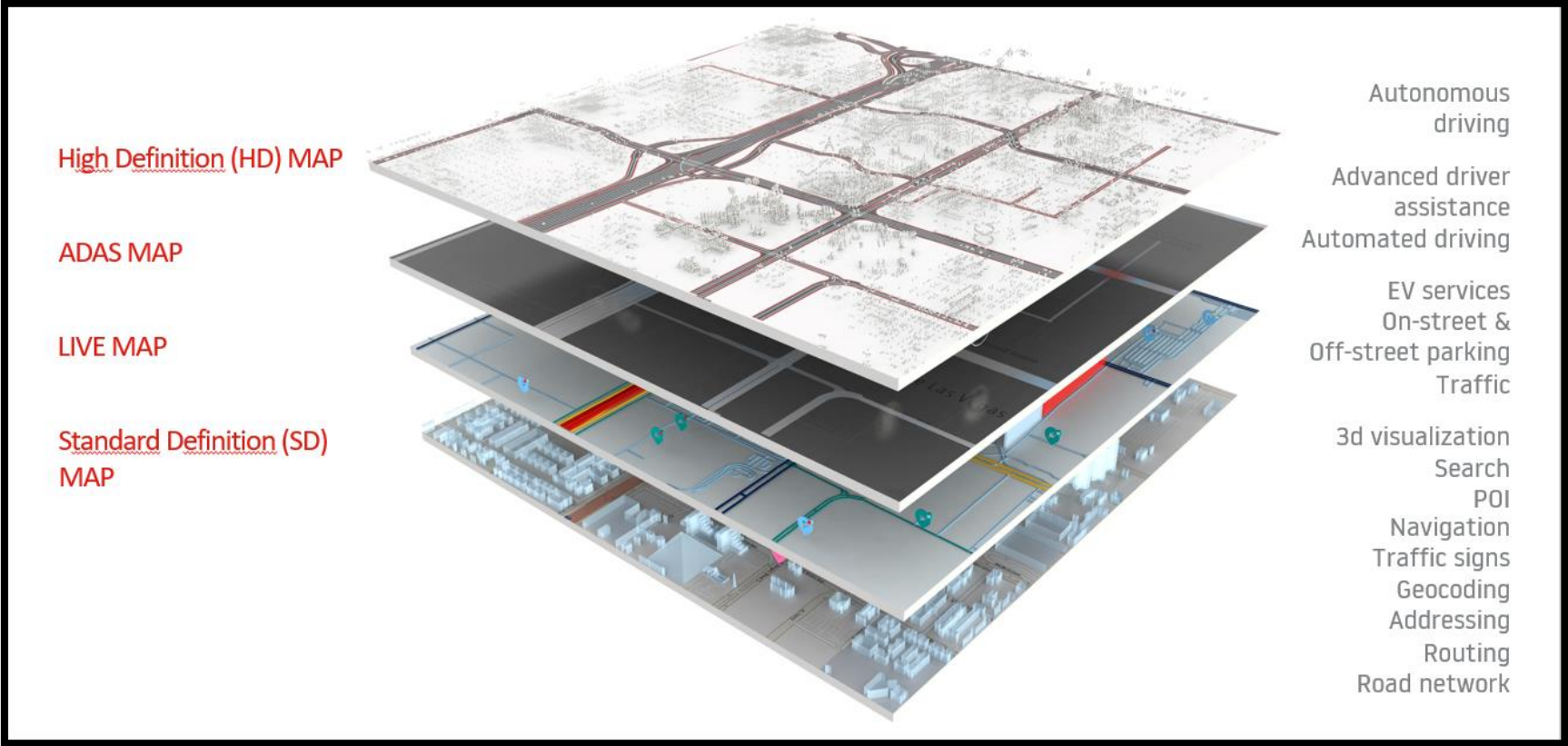
- If data q minimum quality standard, we may stop using it (giving feedback to data provider).

Scope of 5 Star Rating

Out of scope (for now)



Included in scope



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

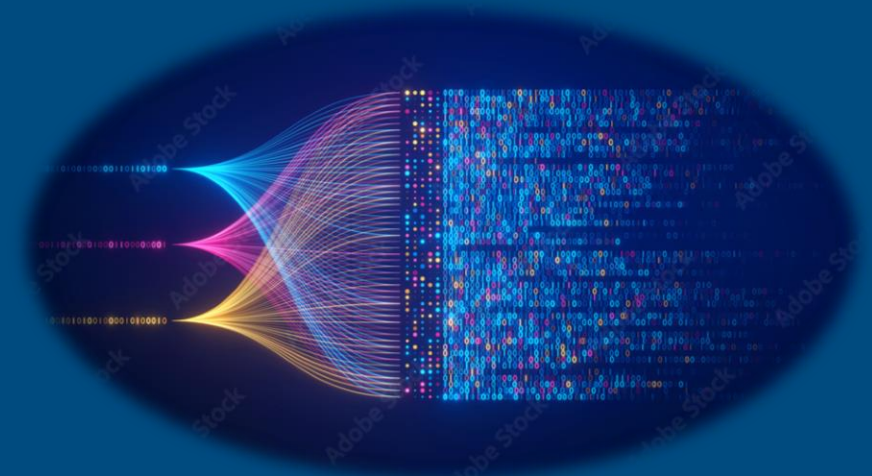
- As the Amsterdam workshop discussion only focused on requirements listed under the 3-star box further changes may be required for requirements set for 4 + 5 stars to ensure consistency.

- Text highlighted in **GREEN** shows completed clarification (work of TISA Task Force since November 2023)



Recap NAP Functionality

General Requirements



RTTI 5 Star Rating Scheme – NAP Functionality

RTTI Data Useability

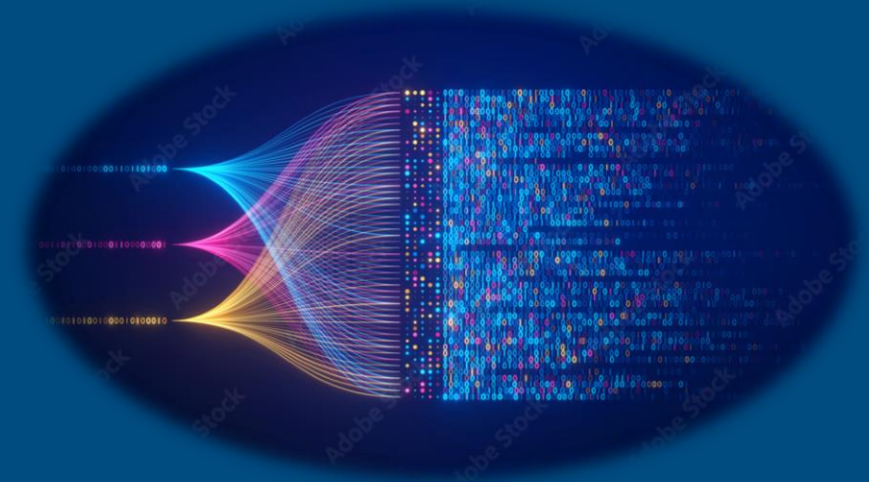
Part 1a NAP Functionality



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.

Recap Static & Dynamic Data

General Requirements



RTTI 5 Star Rating Scheme – Static Data

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 (version 2)	TN-ITS/ DATEX II (version 3)	TN-ITS/ DATEX II (version 3, compliant with the related reference profile)
Use of Standard	Bespoke profile used	Bespoke profile used	Unified use of standard (DATEX II EU reference profiles per data category)	Unified use of standard (DATEX II EU reference profiles per data category)	Unified use of standard (DATEX II EU reference profiles per data category)
Location Referencing			<i>Use Case Specific</i>		
Linear Referencing	Polylines	Polylines	Polylines	Polylines	Polylines
Direction Defined	Not referenced	Not referenced	Referenced	Referenced	Referenced

RTTI 5 Star Rating Scheme – Definitions

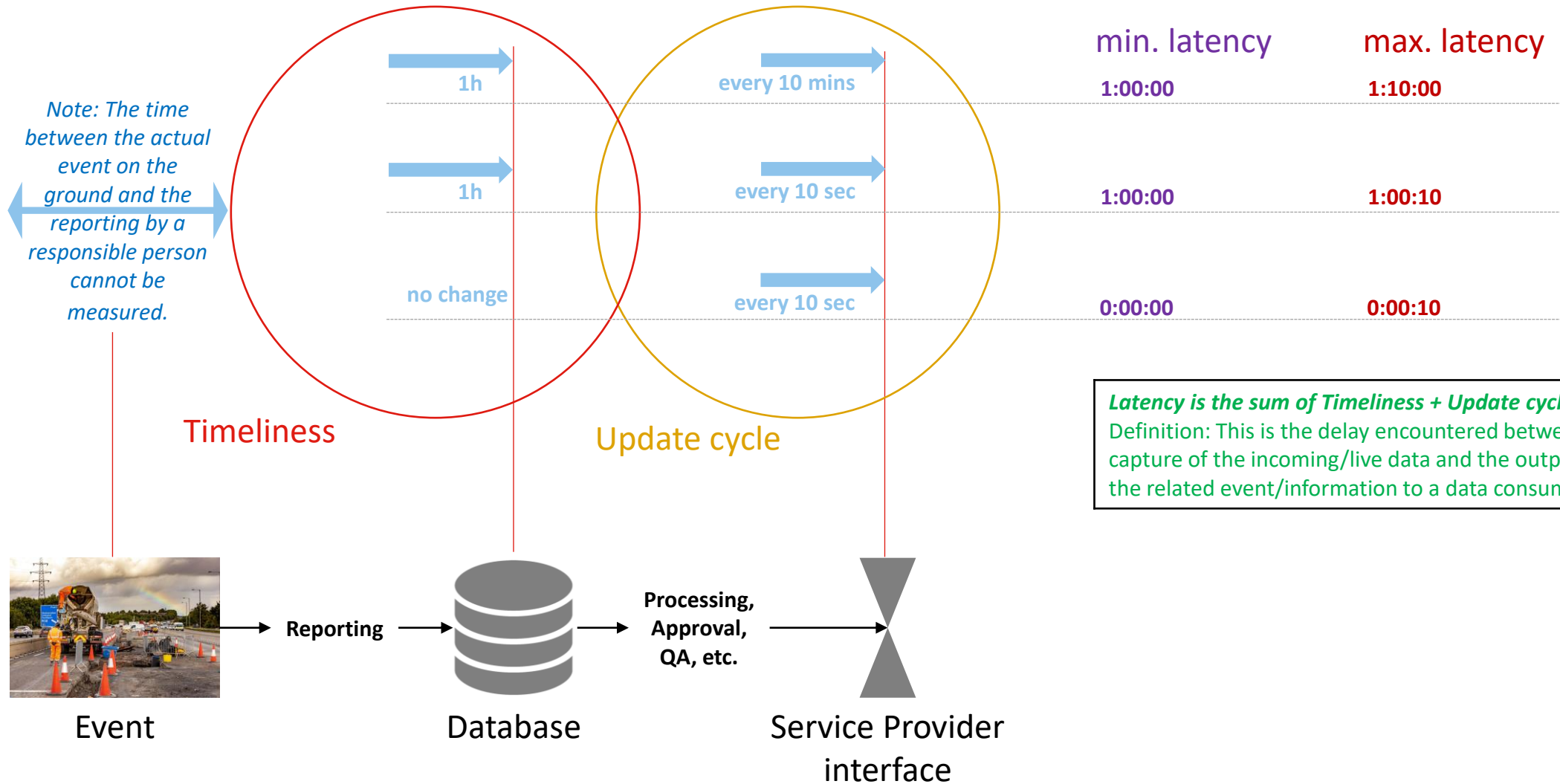
RTTI Data Useability

Part 1b Static Data



Update Cycle	<p style="text-align: center;"><i>Use Case Specific – Time Based Measurement</i></p> <p>Definition: the time interval for refreshing + updating published events/road attributes (~ reporting period) (EIP 2019) process of periodically refreshing, modifying and publishing data so that it is accessible by 3rd parties</p>
Timeliness Rate	<p style="text-align: center;"><i>Use Case Specific – Time Based Measurement</i></p> <p>Definition: the time between the occurrence of the event/relevant change and the acceptance of the event (entering system) (EIP 2019) degree to which data or information is up-to-date and accessible in a database (e.g. at the Road Operator)</p>
Accuracy	<p style="text-align: center;"><i>Use Case Specific – Distance Based Measurement</i></p> <p>Definition: the absolute accuracy of the referenced location of the published event/road attribute with respect to the actual location (EIP 2019)</p>
Correctness	<p style="text-align: center;"><i>Use Case Specific – % Based Measurement</i></p> <p>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)</p>
Completeness	<p style="text-align: center;"><i>Use Case Specific – % Based Measurement</i></p> <p>Definition: % of the events which are known to be correctly detected and published by type/class, time and location (EIP 2019)</p>

Examples on update cycle vs. timeliness



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)
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Secure API Access	Non-secured	Non-secured	Secured via https	Secured via https	Secured via https
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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*

Use Cases

Static Speed Limits



Road Works



Road Closures



Requirements for Static Speed Limit Data


























Use Cases



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 (Datex Part 14) (version widely used)	DATEx II / TN-ITS (Datex Part 14) (version widely used)	DATEx II / TN-ITS (Datex Part 14) (version widely used)
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	Max 3 months old	Max 1 month old	Max 1 week old	Max 1 day old	Max 1 day old
Pre-announcement	None	None	> 1 day ahead	> 1 week ahead	> 1 week ahead
FRC1-6 Accuracy Circular Error Probable (CEP) / Linear Travel Direction	<30m	<20m	<10m	<5m	<1m

RTTI 5 Star Rating Scheme – Static Speed Limit

Static Data - Speed Limit	    	    	    	    	    
FRC1-6 Correctness	>80%	>80%	>90%	>95%	>99%
FRC1-6 Completeness	>80%	>80%	>90%	>95%	>99%
Vehicle Classification	M1	M1 + N1 + N2	M1-3 and N1-3	M1-3 and N1-3	M1-3 and N1-3 Official speed limit for alternatively powered vehicles i.e. EV and unclassified e-bikes / cargo bikes / pedelecs
Speed limit type (as per definition in the ISA regulation, including road sign catalog)	Implicit and Explicit	Implicit and Explicit	Implicit and Explicit	Implicit and Explicit	Implicit + Explicit + Conditional

Static Speed Limits

Accuracy Requirements

Problem

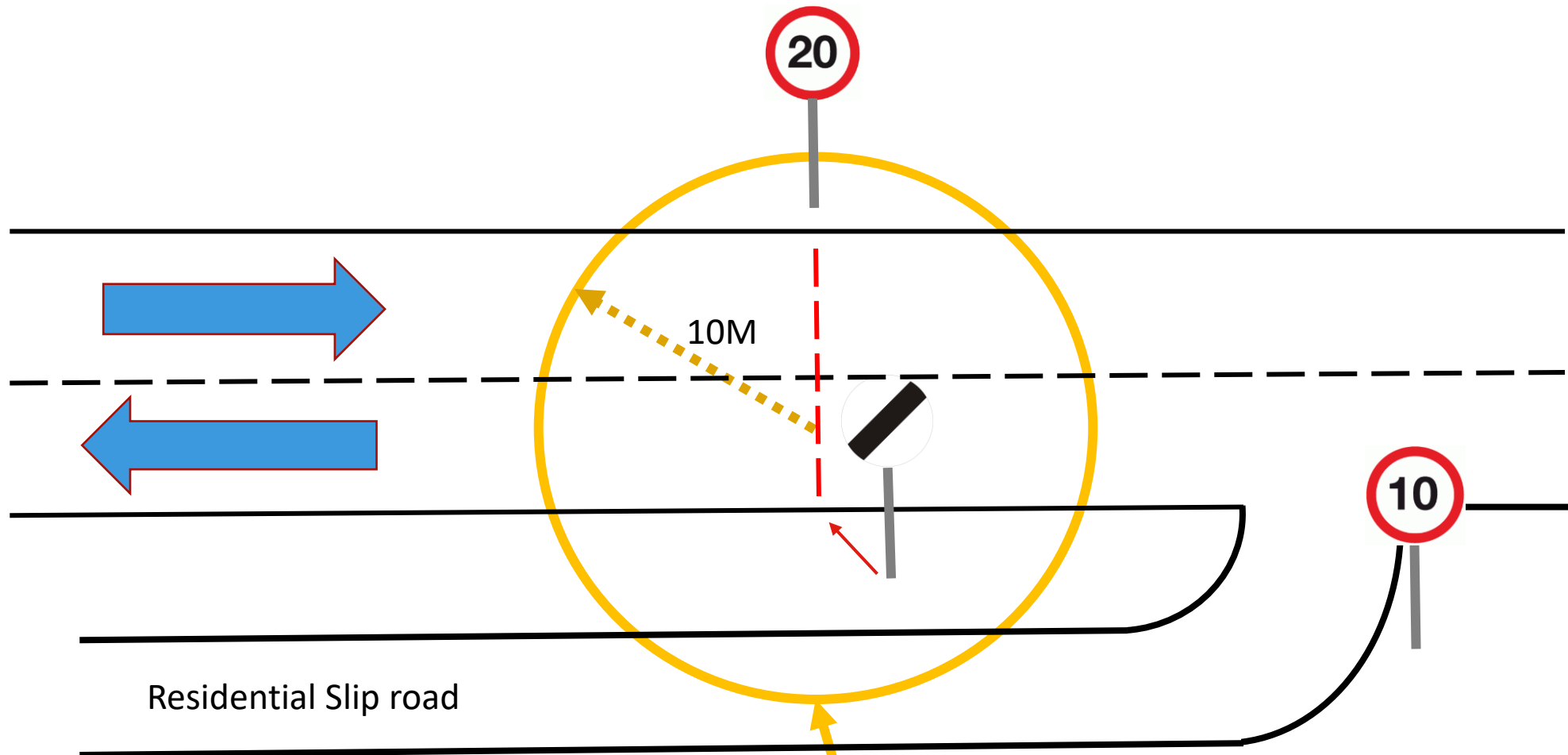
- **Issues of inaccurate locations for static speed limits**
- **Missing signs (Notification)**
- **Inconsistent databases between NRA's**
- **Fundamental to support ISA**
 - Technically
 - Legally

Fix

- **RTTI Star Rating aims to define the accuracy requirements**

Issue

- **Previous Workshop raised the issue of how to define accuracy of Static Speed Limits from a Spatial PoV**
- **Suggesting 10M CEP (Circular Error Probable) for a 3 Star rating**
 - In GPS terms - The radius of a circle centered on the true value that contains 50% of the actual GPS measurements



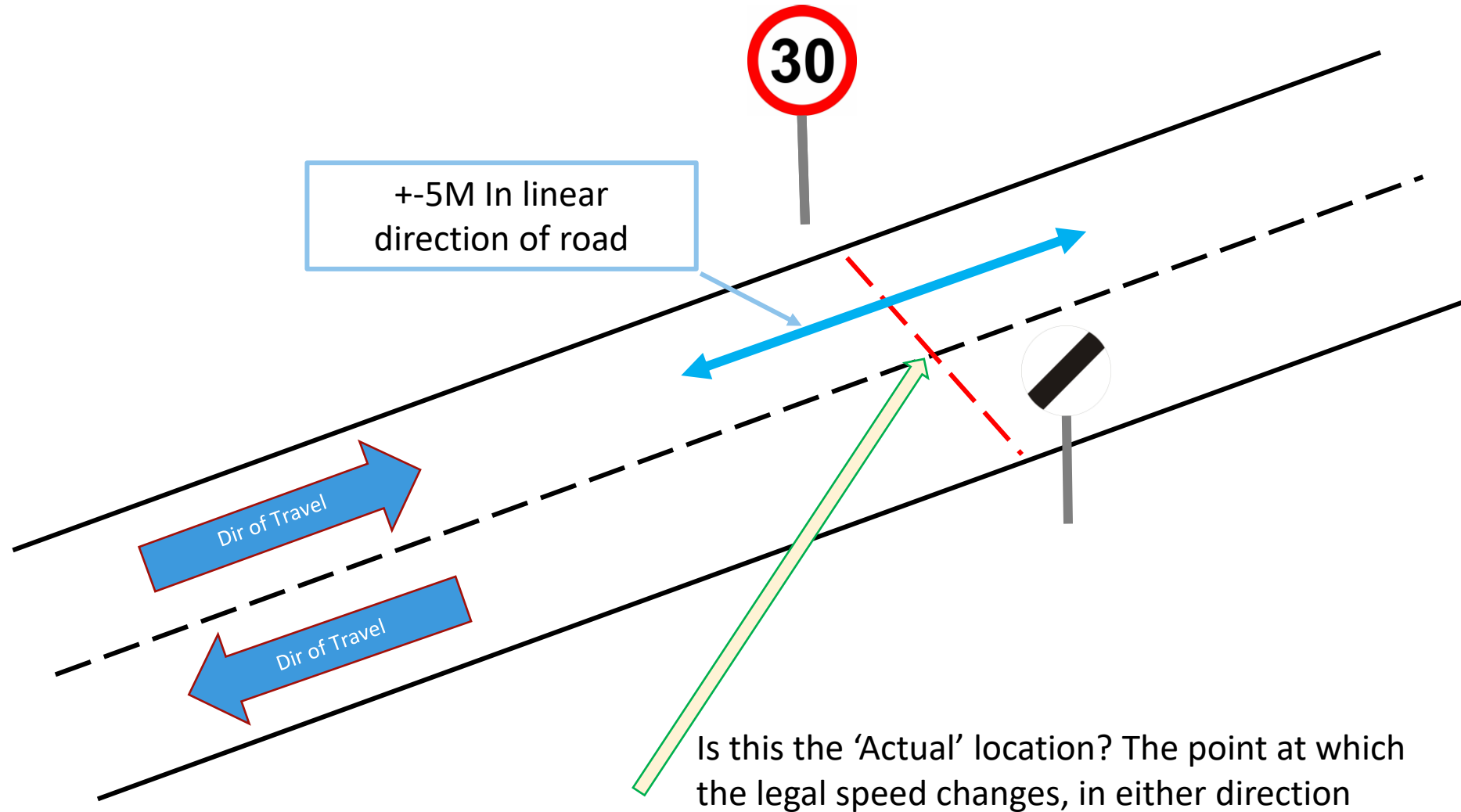
Residential Slip road

10M CEP from intended location places incorrect speed limit on parallel residential road

Static Speed Limits

Accuracy Requirements

Roads – by their very nature are linear in section - a link between to points/nodes



RTTI 5 Star Rating Scheme – Definitions

Definition for the 5-star rating	1 st proposal	Comments
Planned road closure	Refers to a <u>scheduled</u> temporary shutdown of the entire road (all lanes in one direction) or section of a road for specific reasons, such as large public events. This closure is typically announced in advance to allow motorists and pedestrians to plan alternative routes and minimize disruption to their travel plans.	Road closures are directional. Vehicles cannot travel on that road in a given direction.
Unplanned road closure	Occurs when a road or section of a road is <u>unexpectedly</u> shut down without prior notice due to unforeseen events, such as sudden infrastructure failures. These closures can disrupt traffic flow (can be mode-specific), causing delays.	
Planned roadworks	Refer to <u>scheduled</u> maintenance, construction, or repair activities carried out on roads or sections of roads. These activities are typically prearranged and announced in advance by local authorities or road operators to minimize disruption to traffic flow and provide motorists with alternative routes.	Roadworks only affect individual lanes (but never all lanes) such that travel in a given direction is still possible.
Unplanned roadworks	Are maintenance, repair, or construction activities that are undertaken <u>unexpectedly</u> and without prior scheduling. These works are often initiated in response to urgent issues such as road damage or infrastructure failures that require immediate attention.	If roadworks affect all lanes in a given direction, such that travel in that direction is no longer possible, it becomes a road closure.

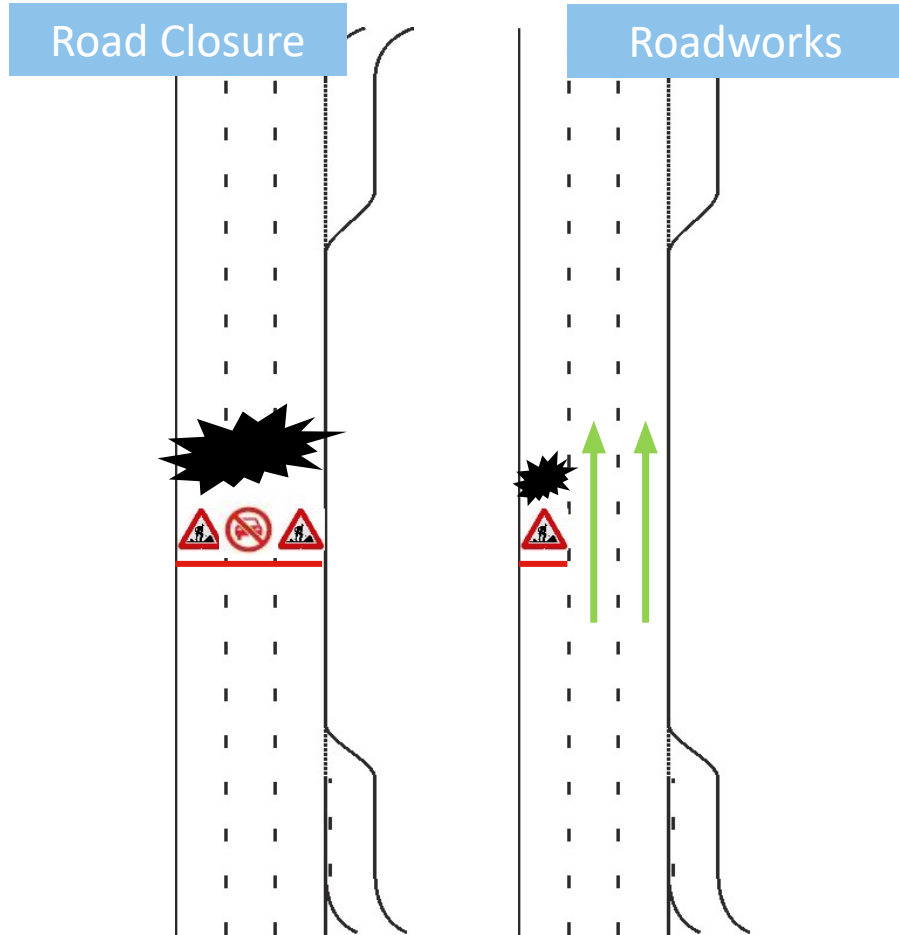
Clarification:

- Unexpected = not likely to happen
- *as opposed to: expected = highly likely to happen*

Example – Roadworks vs. Road Closure

Road Closure = Road is impassable in the direction of travel

Roadworks = at least one lane is available in the direction of travel




- Road closures are directional. Vehicles cannot travel on that road in a given direction.
- Roadworks only affect individual lanes (but never all lanes) such that travel in a given direction is still possible.
 - If roadworks affect all lanes in a given direction, such that travel in that direction is no longer possible, it becomes a road closure.

Requirements for Road Works Data

Use Case



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

										
Dynamic Data - Road Works										
Terminology & Definition	Self-defined		Self-defined		Harmonized Definition Required (TISA proposed Definition)		Harmonized Definition Required (TISA proposed Definition)		Harmonized Definition Required (TISA proposed Definition)	
Data Format Used	Bespoke local format or DATEX II		Bespoke local format or DATEX II		Only DATEX II (version 2)		Only DATEX II (version 3)		Only DATEX II (version 3)	
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 (DATEX II EU reference profiles per data category)		Unified use of standard (DATEX II EU reference profiles per data category)		Unified use of standard (DATEX II EU reference profiles per data category)	
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	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	not available	not available	which lane is closed	which lane is closed, lane-width reduction (narrow/full), lane-level speed limit changes	which lane is closed, lane-width reduction (actual width), lane-level speed limit changes
Vehicle Classification	M1	M1 + N1 + N2	M1-M3, N1-N3	M1-M3, N1-N3 also for alternatively powered vehicles i.e. EV and unclassified e-bikes / cargo bikes / pedelecs	M1-M3, N1-N3 also for alternatively powered vehicles i.e. EV and unclassified e-bikes / cargo bikes / pedelecs

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

Dynamic Data - Road Works

	    	    	    	    	    
Terminology & Definition	Self-defined	Self-defined	Harmonized Definition Required (TISA propose Definition)	Harmonized Definition Required (TISA proposed Definition)	Harmonized Definition Required (TISA proposed Definition)
Data Format Used	Bespoke local format or DATEX II	Bespoke local format or DATEX II	Only DATEX II (version 2)	Only DATEX II (version 3)	Only DATEX II (version 3, compliant with the related reference profile)
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 (DATEX II EU reference profiles per data category)	Unified use of standard (DATEX II EU reference profiles per data category)	Unified use of standard (DATEX II EU reference profiles per data category)
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	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**

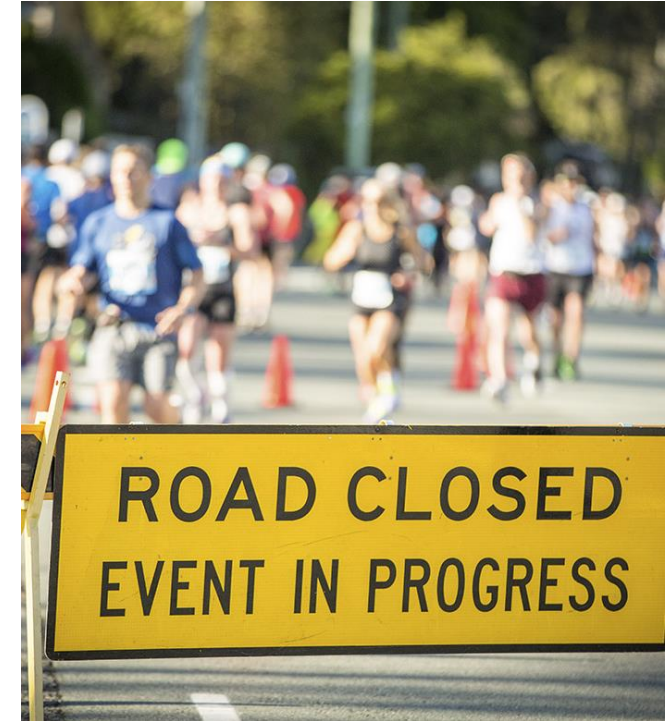
Dynamic Data - Road Works



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)

Requirements for Road Closure Data






Use Case

















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 proposed 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 (version 2)	Only DATEX II (version 3)	Only DATEX II (version 3, compliant with the related reference profile)
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 (DATEX II EU reference profiles per data category)	Unified use of standard (DATEX II EU reference profiles per data category)	Unified use of standard (DATEX II EU reference profiles per data category)
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	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)

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 (version 2)	Only DATEX II (version 3)	Only DATEX II (version 3, compliant with the related reference profile)
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 (DATEX II EU reference profiles per data category)	Unified use of standard (DATEX II EU reference profiles per data category)	Unified use of standard (DATEX II EU reference profiles per data category)
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	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
Correctness	>70%	>75%	>80%	>85%	>90%
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	no explanation provided	no explanation provided	explanation provided	explanation provided	explanation provided

Outlook & Next Steps



Next Steps



Endorsement of Minimum Quality Requirements for 3 Defined Use Cases by MS

How? Via NAPCORE? Via MS RTTI Expert Group? Via RTTI Task Force?



Practical Assessment Methodology and Execution - Support and Services
(Guidelines and Quality Accreditation)



Quality Requirements for More Use Cases?

How to Decide? New Workshop?



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?

$$\frac{\partial}{\partial x} (p u) = 0$$

$$\frac{\partial u}{\partial x} = -\frac{1}{c} \frac{\partial p}{\partial x}$$

$$) + u \frac{\partial}{\partial x} (p)$$





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?

