

C-ITS Quality Package

Web ITS Forum, 5th November 2021

EU EIP Quality: Activities & Products



- Quality Frameworks for Priority Actions of the EU ITS Directive



Quality package for safety related and real-time traffic information services

EIP+ 3.1 Testing and Validating of the Quality Recommendations and Results for Traffic Information from EIP

Version 1.07

10th November 2017



November 5, 2021

EU EIP Quality

EU EIP Quality: Stage Plan

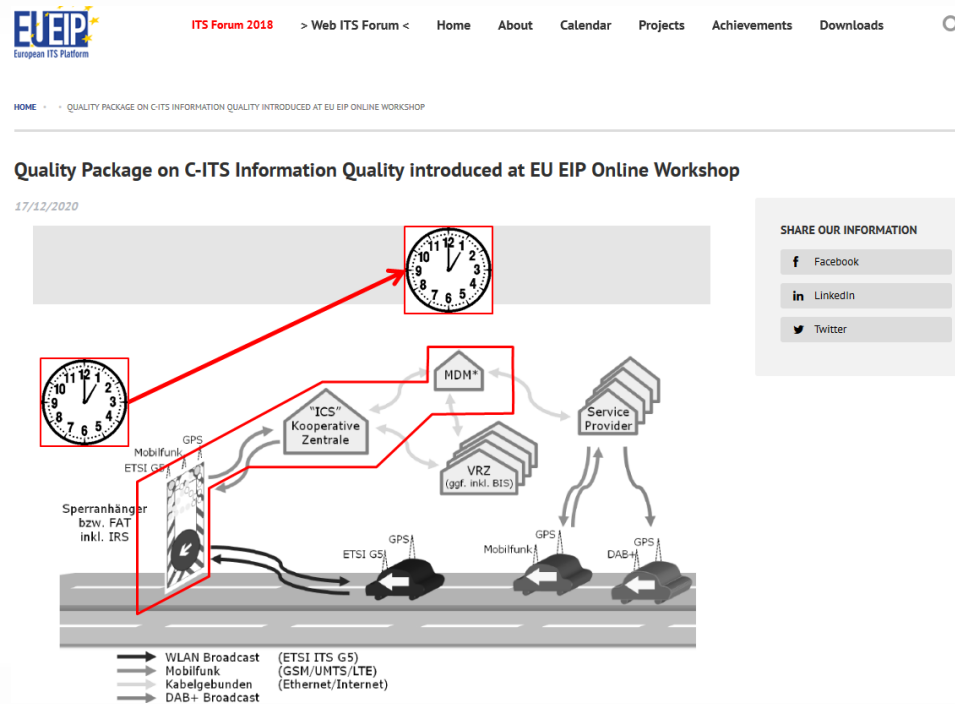


Priority Action	Domain EC (Del. Reg.)	Phase					
		Take stock	Propose	Test	Validate	Enhance	Optimise
C)	SRTI (886/2013)	✓	✓	✓	✓	✓	✓
B)	RTTI (2015/962)	✓	✓	✓	✓	✓	✓
A)	MMTIS (2017/1926)	✓	✓	✓	✓	✓	
E)	Truck Parking (885/2013)	✓	✓	✓	✓		
	C-ITS (n/a)	✓	✓	✓	✓		

C-ITS Quality Package: Status

- Quality Package published in December 2020:

<https://www.its-platform.eu/highlights/quality-package-c-its-information-quality-introduced-eu-eip-online-workshop>



C-ITS Quality Package: Status



- Legal frameworks
- Analyses of existing work (EIP+, Automated Driving)
- Analyses of C-ITS projects (C-Roads etc.)
- Scoping of C-ITS Quality
- Proposals for
 - C-ITS Quality Criteria
 - C-ITS Quality Requirements
 - C-ITS Quality Assessment Methods
- First Conclusions



C-ITS

Quality package

EU EIP SA 4.1: Determining Quality of European ITS Services



Version: 0.1

Date: February 21, 2020



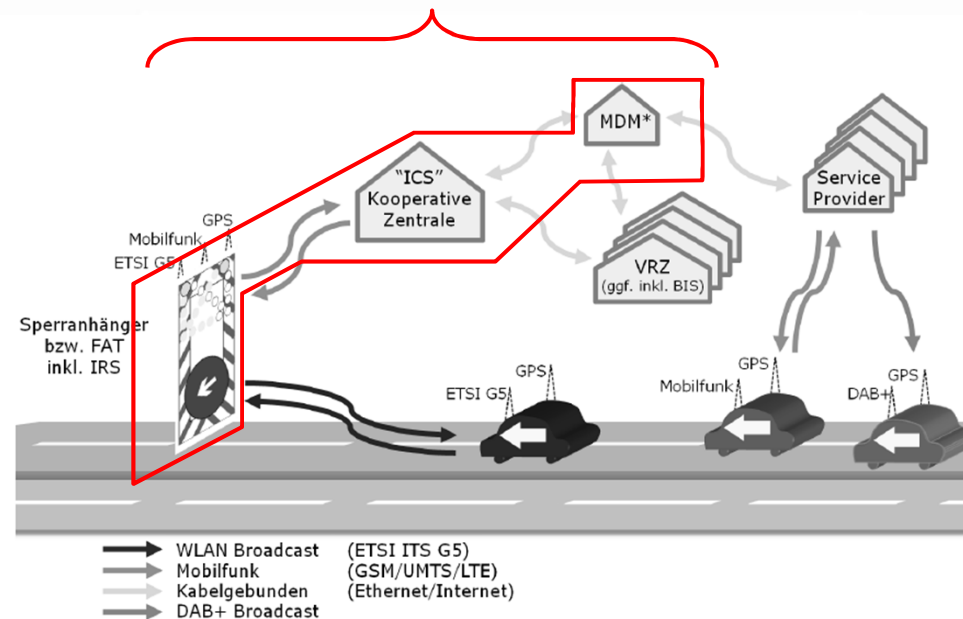
Co-financed by the European Union
Connecting Europe Facility

<http://www.its-platform.eu>

C-ITS Quality Definitions: „Zoom-in approach“

- Check individual **data use cases**
- Here: “warning trailer status data to NAP”

Data Use Case No. 1



C-ITS Quality Definitions: Quality Criteria



- Definition table

Name	Definition
Geographical coverage	Percentage of the road network and/or selection of road classes, where a stationary, connected C-ITS stations operate.
Availability	Average availability for all operating connected data senders, including the communication chain up to the data receiver.
Latency	Total time for communicating messages between a timestamp at a C-ITS sender and a timestamp at a C-ITS receiver.
Refreshment Rate	Time interval for refreshing / updating the status reports coming from a data sender.
Location accuracy	Confidence for the horizontal position accuracy of an event information with respect to the actual location.
Error Rate	Percentage of messages with erroneous information, as reported by a data sender, with respect to the reality.
Report Coverage	Percentage of connected working C-ITS data senders out of all connected C-ITS data senders.

C-ITS Quality Package Validation: Goal & Approach



- Outstanding Task
 - Task 3.3: Validation of quality proposals for selected V2I C-ITS services
- Overall goal:
 - Validate and improve the C-ITS Quality Package
 - Already done for recent Quality Packages (e.g., RTTI/SRTI)

C-ITS Quality Package Validation: Goal & Approach

- Approach
 - Collect structured feedback from stakeholders

“Are the quality definitions clear?”

C-ITS

Quality package

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“Do the quality levels fit well?”

“What have you learned from recent & ongoing C-ITS deployments?”

C-ITS Quality Package: Validation Outcome



- Responses received from:
 - RWS: RWW and IVS (InterCor project)
 - RWS: GLOSA (Talking Traffic)
 - RWS: comparison with Dutch Data Top 15
 - Danish Road Directorate: weather stations
 - Autobahn GmbH: RWW (C-ITS Corridor project)
 - Autobahn GmbH: RWW (C-Roads DE Urban Nodes)
 - DGT: RWW (DGT3.0 – Use Case Signal V-16)
 - (further responses from FR & FI pending)

C-ITS Quality Package: Validation Outcome



- Definition table (original)

Name	Definition
Geographical coverage	Percentage of the road network and/or selection of road classes, where stationary, connected C-ITS stations operate.
Availability	Average availability for all operating connected data senders, including the communication chain up to the data receiver.
Latency	Total time for communicating messages between a timestamp at a C-ITS sender and a timestamp at a C-ITS receiver.
Refreshment Rate	Time interval for refreshing / updating the status reports coming from a data sender.
Location accuracy	Confidence for the horizontal position accuracy of an event information with respect to the actual location.
Error Rate	Percentage of messages with erroneous information, as reported by a data sender, with respect to the reality.
Report Coverage	Percentage of connected working C-ITS data senders out of all connected C-ITS data senders.

C-ITS Quality Package: Validation Outcome



- Definition table (**revised**)

Name	Definition
Geographical coverage	Percentage of the road network and/or selection of road classes, where a stationary, connected C-ITS stations operate are installed .
Availability	Average availability for all operating connected data senders, including the communication chain up to the data receiver.
Latency	Total time for communicating messages between a timestamp at a C-ITS sender and a timestamp at a C-ITS receiver. May be rephrased to “the delay of sending a single message from the sender application to a receiving application”.
Refreshment Rate	Time interval for refreshing / updating the status reports coming from a data sender. Add note that this may be distinguished by “repetition rate” (how often a message is sent) and “update rate” (how often renewed).
Location accuracy	Confidence for the horizontal position accuracy of an event information with respect to the actual location. Add note that accuracy may differ by “relevance zones” as defined in InterCor.
Error Rate	Percentage of messages with erroneous information, as reported by a data sender, with respect to the reality. Add explanation about „erroneous“; refer to validity, as defined in InterCor.
Report Coverage	Percentage of connected working C-ITS data senders out of all connected C-ITS data senders.

No

C-ITS Quality Package: Validation Learnings

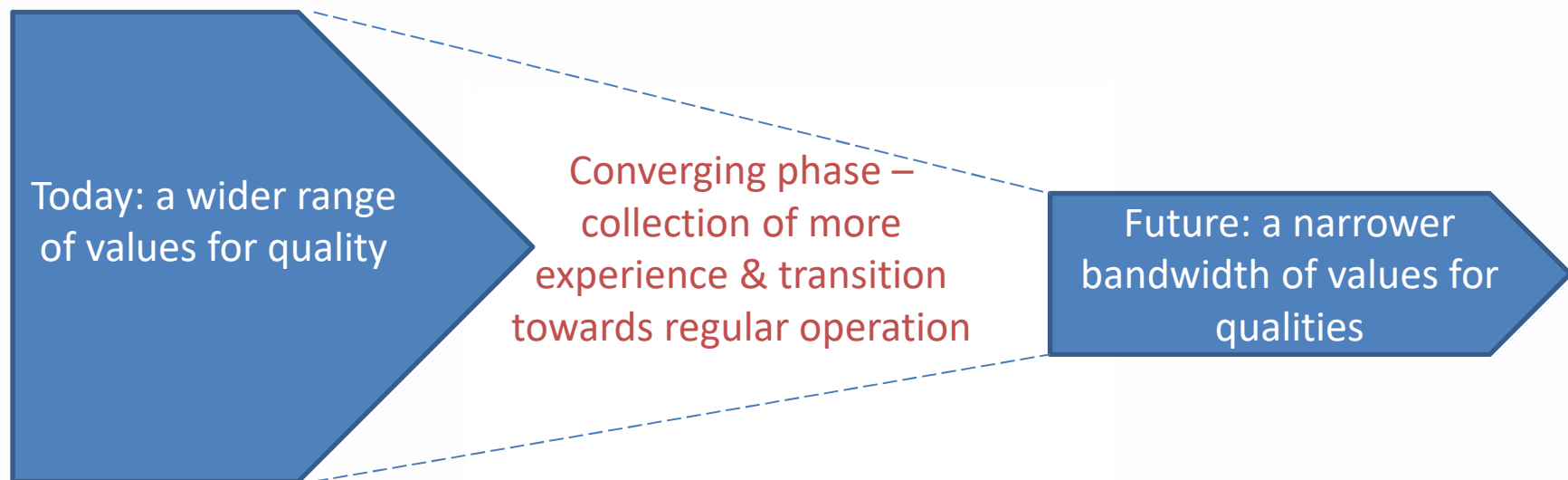


- Conclusions

- Variability of data categories and complexity of data flows -> generic description of C-ITS Quality quite challenging !
- Quality Package cannot (yet) serve as „tabular look-up“ with fixed quality values !

C-ITS Quality Package: Validation Learnings

- Conclusions



C-ITS Quality Package: Validation Learnings



- Recommendations
 - Each C-ITS project needs its own Quality Framework (based on EU EIP work)
 - Set up individual quality criteria; add quality aspects to development & evaluation phase; install person responsible for quality, ...
 - Align quality-related definitions with evaluation items and C-ITS data standards

C-ITS Quality Package: Validation Learnings

- Correlation evaluation items ↔ EU EIP Criteria



Milestone 13 - Pilot Evaluation Report

Communication
performance

Application
functionality and
performance

Name
Geographical coverage
Availability
Latency
Refreshment Rate
Location accuracy
Error Rate
Report Coverage

- Thank you!
- Questions?

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