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Data Catalogues for Automated Driving Systems

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Catalogues in WP.29

- WP.29 has worked for years on a catalogue
 - ▶ The Database for the Exchange of Type Approval Documentation (DETA) is a catalogue
 - ▶ The DETA effort has good lessons for WP.29 to take into account in the consideration of any new WP.29 effort about a catalogue
- WP.29 groups have interest in possible new catalogues
 - ▶ An organized method is needed for the exploration of possible new catalogues
 - ▶ Catalogue creation is a major IT undertaking
 - ▶ Both user and IT expertise should be part of any expert group on possible WP.29 catalogues

Requested decision

- This presentation does not suggest that WP.29 do any catalogue
 - This presentation is suggesting that WP.29 start creating the ToR for an effort to analyze if discussed new catalogues be done or not
- Once a ToR is approved, then the decision can be made to study doing one or more possible catalogues

Back UP

Possible Catalogue - Scenarios

- The VMAD and FRAV draft documents envisage a central Scenario Catalogue
 - ▶ Although time and scope for VMAD and FRAV did not allow for creation of the Scenario Catalogue, there has been broad support by contracting parties and industry to create the Scenario Catalogue
- There has not been time and expertise to determine how the Scenario Catalogue will be created, maintained, operated, used, paid for, etc.
- There will be many relevant scenarios for the Scenario Catalogue
- The Scenario Catalogue will evolve over time
 - ▶ Information from ISMR might identify new scenarios that should be added to the Scenario Catalogue
 - ▶ New functionalities and new ODDs might identify new scenarios that should be added to the Scenario Catalogue

Possible Catalogue - Traffic-Rules

- FRAV material specifies that ADS products must follow the traffic rules
- The draft DCAS regulation specifies that the dynamic driving task (DDT) must follow the traffic rules but the draft DCAS regulation allows driver override when it might be appropriate, such as when the driver believes that the DDT settings from the traffic rules
 - ▶ Are incorrect due to the DCAS product not having the correct understanding of the traffic rules for the circumstances
 - ▶ Might impede traffic flow
 - ▶ Might result in crashes by not conforming to local observance of the traffic rules

Possible Catalogue - Traffic-Rules (2)

- Uncertainty in vehicle software development about the traffic rules is a potential issue for ADS product rollout
 - ▶ Inaccuracies in speed limits have occurred with ISA in Europe
- WP.29 is creating regulations that require DCAS and ADS products follow the traffic rules which are local
- It seems logical that WP.29 is responsible to make sure that what it requires in regulations is technically practical
 - ▶ There are often discussions about maximum braking, turning, etc. to make sure that regulations under development are practical
- The entities in any Traffic-Rule Catalogue must be entered and maintained by the local authorities for their jurisdiction
 - ▶ Such a catalogue will only contain rules that are not on signs
 - ▶ WP.29 would not be responsible for the accuracy of content entered

Observations

- The amount of time necessary to create and maintain catalogue entries is often mis-estimated until a design is done
 - ▶ Creating a scenario entry might only take hours but there are many scenarios relevant to ADS products
 - ▶ Creating all of the traffic-rules entries for a jurisdiction might take less than a person-month's effort by a knowledge person if the catalogue computer system has a good set of defaults and options
- The effort and cost needed for a Scenario Catalogue and a Traffic-Rules Catalogue for rules that are not on traffic signs can only be determined by analysis by experts

Approach to Creating New WP.29 Catalogues

- The creation, maintenance, and operation of a data catalogue is a common IT computer system activity
- The usual steps include
 - ▶ 1. Define the need
 - ▶ 2. Define the content of a catalogue element
 - ▶ 3. Define the structure of the way that catalogue elements are created and maintained through computer system input devices
 - ▶ 4. Define how the content of the catalogue will be accessed and used
 - ▶ 5. Estimate the development cost of the IT system and the cost of the people doing the element entry
 - ▶ 6. Determine the computer system operation and its cost
- These steps should be completed before a decision is made whether to proceed with a catalogue

What to Do

- For any possible new WP.29 catalogue, a group of user and IT experts should be created to carry out the steps necessary to properly decide
 - ▶ Should the new WP.29 catalogue be created
 - ▶ How will the catalogue be paid for
 - ▶ How will catalogue entries be created and updated
 - ▶ How will the catalogue be operated
 - ▶ How will catalogue entries be accessed and used
 - ▶ What will be the governance, including stakeholders, rights, responsibilities, etc.

Possible Timing

- WP.29 task interested stakeholders to create a draft ToR for an expert group on possible WP.29 catalogues by June 2024
 - ▶ This is the only decision
- For general information, the following is the best possible timing
 - ▶ After adoption of the ToR, WP.29 task GRVA to carry out the items in the ToR for possible WP.29 catalogues which cannot start earlier than June 2024
 - ▶ The material for WP.29 determination on what to do with possible catalogues can be available no earlier than the end of 2025
 - ▶ With this schedule, a new catalogue cannot be operational before 2028 and likely later
- Starting to try to draft a ToR now will lead to five year if ever thing goes perfectly

Suggestions

- Some WP.29 participants believe that there is need for scenarios for validating ADS products
- Some WP.29 participants believe that accurate and complete knowledge of traffic rules in all jurisdictions for ADS products is not available
- Although what should be done for scenarios and traffic rules is not known, there is enough knowledge of the need for WP.29 to start figuring out what to do in an organized fashion
- As the UN specialized agency for information and communication technologies, ITU has the knowledge, position, and willingness to participate in an expert group with WP.29 to explore the technology and cost for a Scenario Catalogue and a Traffic-Rules Catalogue for rules that are not on traffic signs
- Once the effort on catalogue determination is under way, WP.1 can be asked if it wants to provide experts on traffic rules