3GPP TSG-RAN5 Meeting #101
Chicago, USA, Nov13-17th

R5-236571

Discussion – Software Implementation of NR Applicability

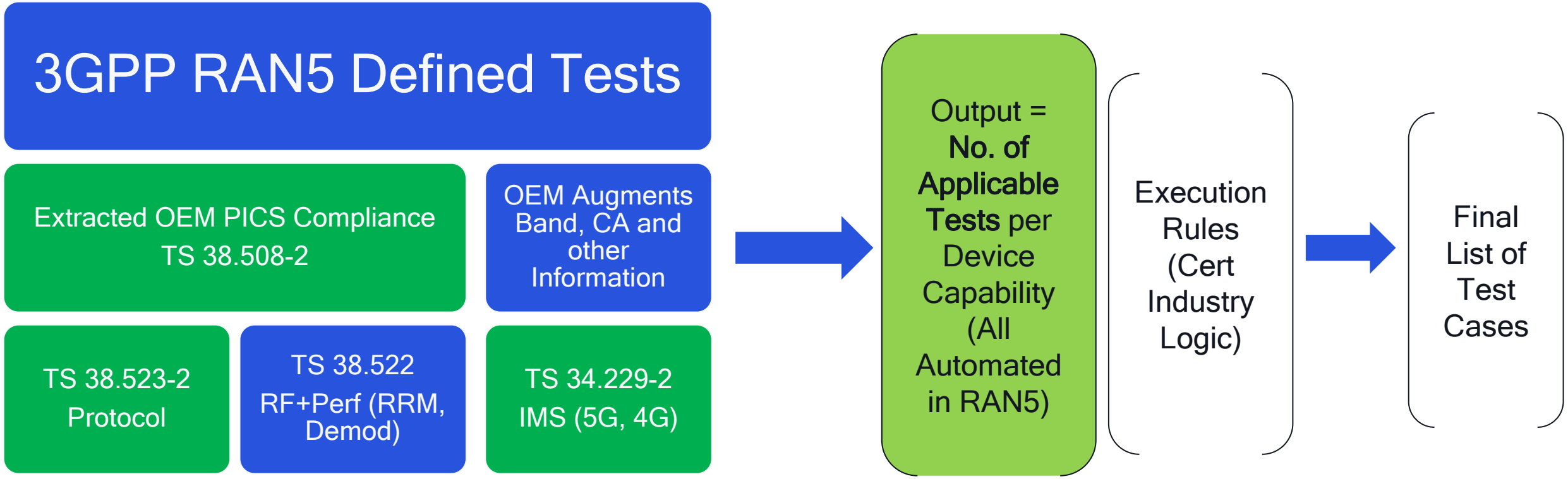
Specifications -SIG - Conclusions and Next Steps

Qualcomm

Updates, Agenda for Discussion

- Recap of Overall Scope
  - High level SW Architecture of Qualcomm Prototype Design (Proposal-1)
  - Introduction of Pseudo Code for below functions:
    - Extraction of PICS in Machine Readable Format from relevant Spec (Ex-TS 38.508-2, 36.523-2, 34.229-2)
    - Extraction of “Conditions” from Applicability Specs (Ex-TS 38.523-2, TS 34.229-2)
    - User Input of DUT PICS Support
    - Final Output of the SW – List of Applicable Tests
- Next Steps of Prototype to Mainline in RAN5

Background – Overall Industry value



Updates:

- Based on proposal in R5-233200 and outcome in RAN5#99, a separate exploder has been created - 3GPP_TSG_RAN_WG5_APPLICABILITY
- Green items above now have Prototype SW Implementation

Proposal-1 – SW implementation of SIG Applicability Specs

Identify Relevant PICS, (ex. from TS 38.508-2) for the DUT → Feed These to Condition Set (C) in TS 38.523-2 or TS 34.229-2 → TTCN/Non-TTCN Implementation of TS 38.523-2 or TS 34.229-2 = Output = **No. of Applicable Tests** for Band Under Test

PICS	PICS Def	TRUE/FALSE
pc_5GCN	UE Supporting 5GS	TRUE
pc_as_ReflectiveQoS	Support of reflective QoS	TRUE

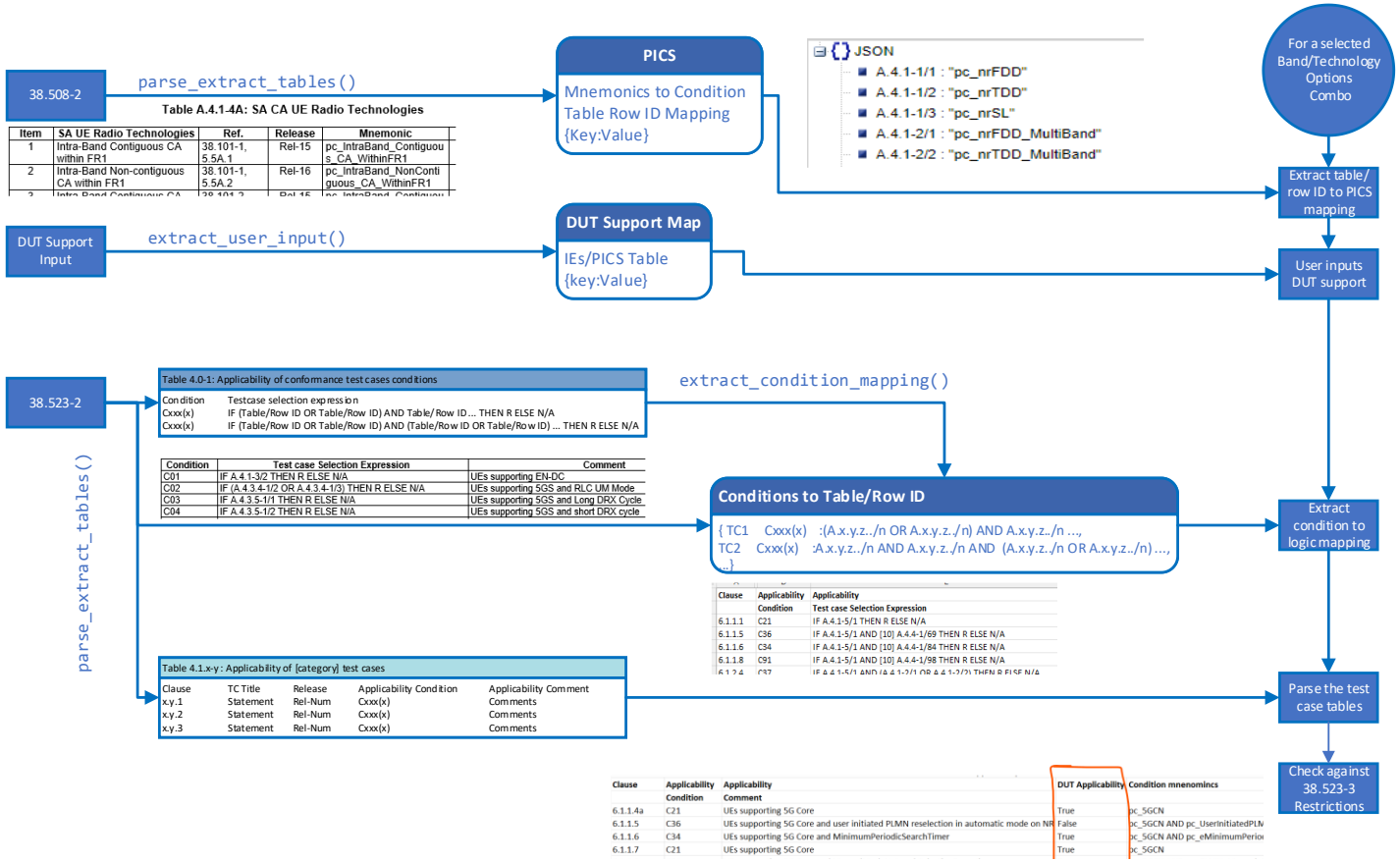
C21A	IF A.4.1-5/1 AND A.4.3.7-1/4 THEN R ELSE N/A	UEs supporting 5G Core and reflective QoS

7.1.4.1	SDAP Data Transfer and PDU Header Handling UL/DL	Rel-15	C21A	UEs supporting 5G Core and reflective QoS

Test Case Selected
Test Case 7.1.4.1

- Test Case selection is currently limited to validating the tests prior to execution for the PICS support
- With Proposal-1, a new SW entity will generate the list of applicable tests. This new SW entity can be standalone or can also be used a plug-in for outside solutions (For ex – Test equipment vendor SW using RAN5 API's)

Ex- Data Flow: Specification Extraction



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Psuedo Code for Documentation and Implementation

```
Extract PICS
For table in tables (from 38.508-2)
    For row in rows
        Extract Mnemonics
            Create Key-Value Map(TableID+ItemNum, Mnemonics)


Extract Condition Set (C)
For table in tables (from 38.523-2)
    For row in rows
        Extract Conditions
            Create Key-Value Map(Condition, Test case selection expression)

Generate TC Support List
    For test in test cases (from 38.523-1)
        Extract Condition from Map and Extract relevant PICS from Map
            Evaluate Condition-Applicability based on User Input
                Generate applicable TC list
```

Next Steps – Study/Prototype Phase to Mainline in RAN5

- Qualcomm has prototyped the code outlined and after numerous tests it is producing desired output

- We propose to move this project to mainline RAN5 deliverables
  - MCC TF160 to develop and maintain SW (in parts and whole)
  - Psuedo code to be documented in PRD18 with inputs from all companies
  - Funding – Qualcomm to provide initial funding of 1MM in fiscal 2024
  - Reference Code – If approved, Qualcomm will also provide python Code/Source code for the prototype
  - SW shall be provided with no obligations for companies to use.

- PRD18 to be used for all documentation of this project
  - Psuedo Code Implementation, Functions etc
  - Formatting Rules

References:-

- RAN5#100: R5-234320 Progress on Proposal-1 : SW Implementation of NR Applicability Specs, **Qualcomm**

- RAN5#99: R5-233200 SW Implementation of RAN5 Applicability, **Qualcomm**