From Behaviour-Driven Development (BDD) Scenarios to Formally Verifiable Behavioural Models via Dynamic Condition Response Graphs

Extended Abstract

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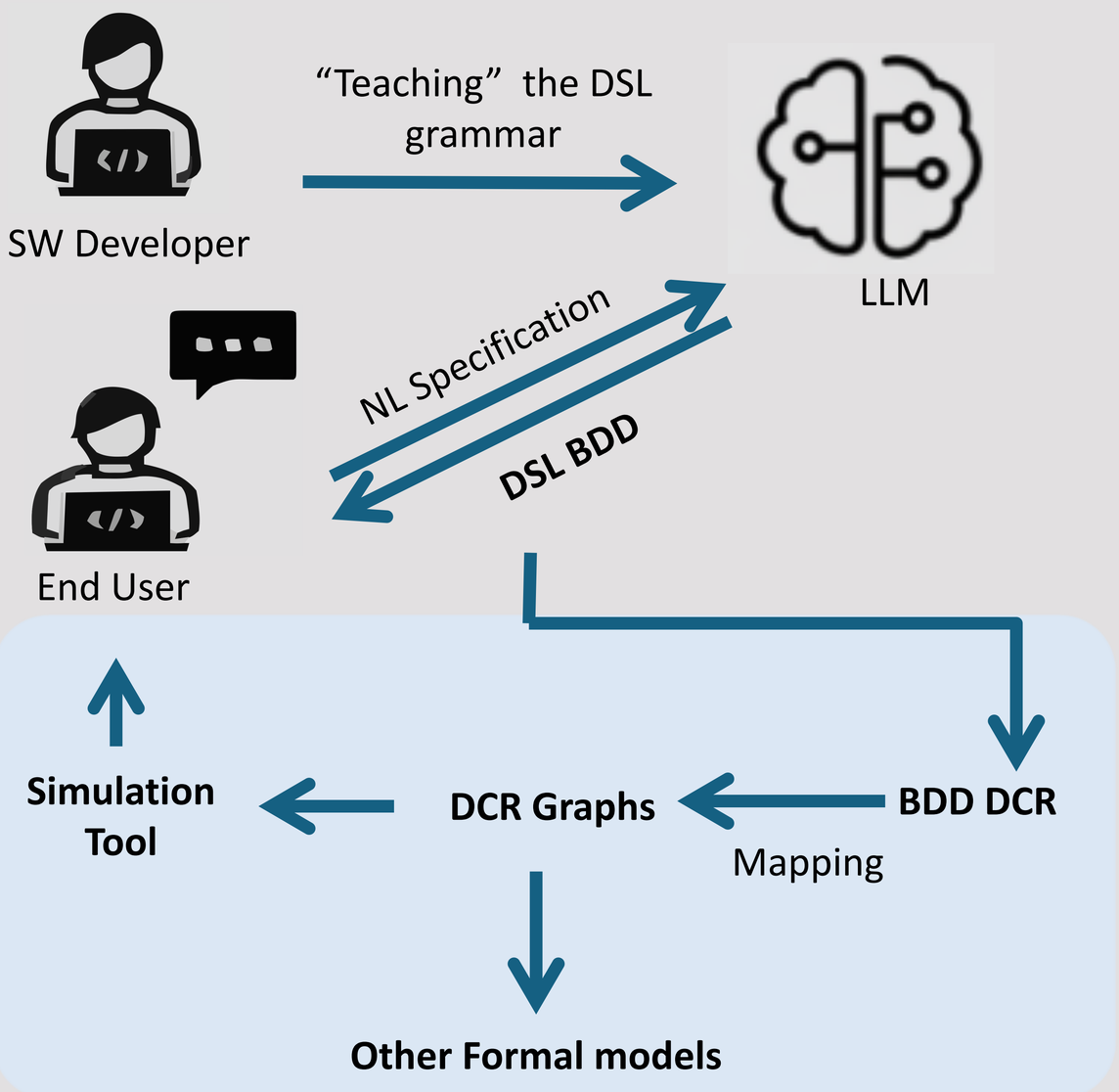
1 Overview



2 BDD DSL

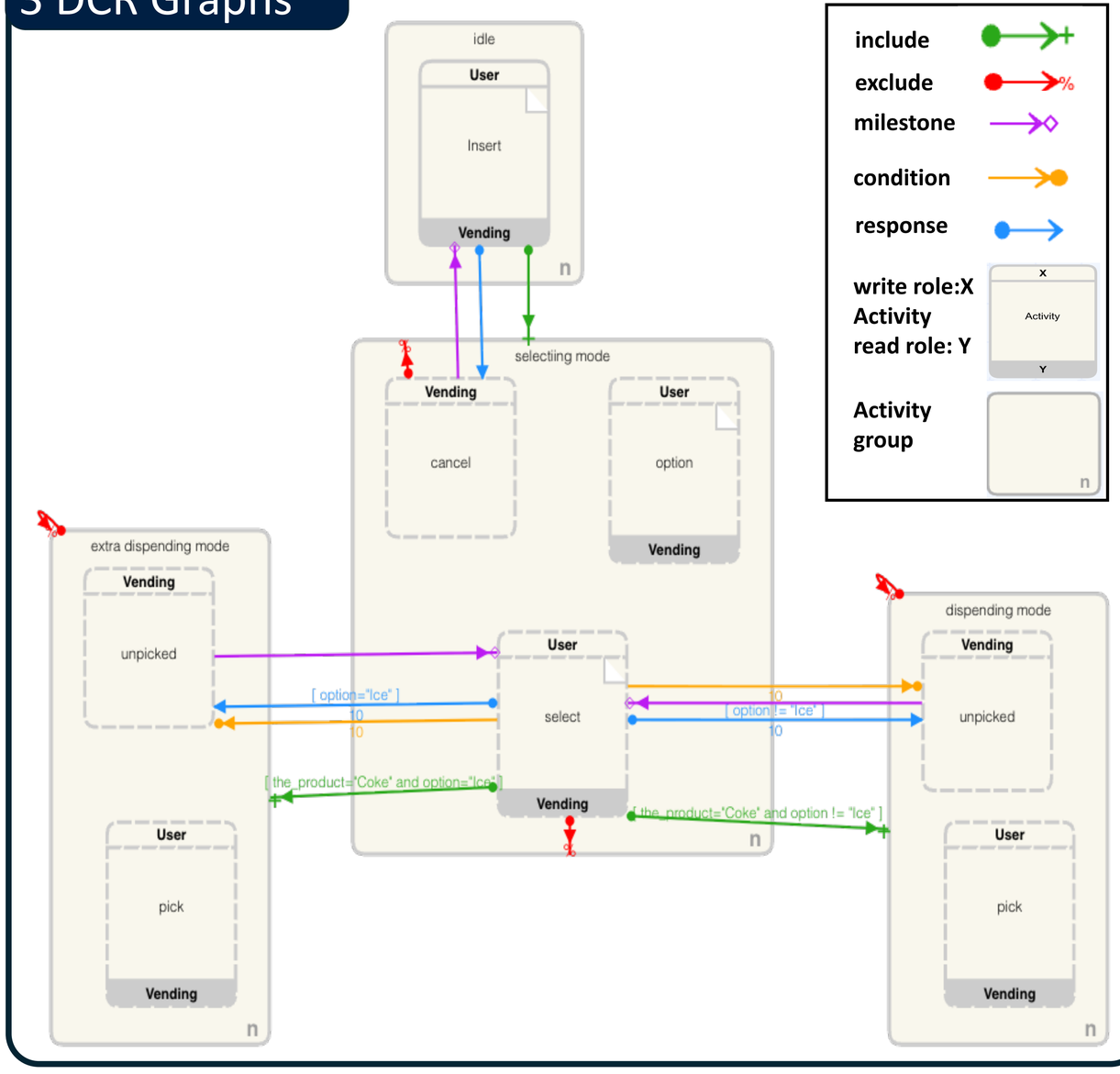
entity vending machine {
actions: insert, select, pick, cancel, unpicked
states: idle, dispensing mode, selection mode, extra dispensing mode
data properties: option, inserted amount, product
}

Declarative specification vending machine **is** idle mode {
IF the action insert **is available**
AND the inserted amount **equal to 0**
}

Declarative specification vending machine **is** selection mode {
IF the action cancel **is available**
AND the action option **is available**
AND the action select **is available**
AND the inserted amount **does not equal to 0**
}

Scenario : Cancel
Given the vending machine **is in** selection mode
When the action cancel **is executed**
Then the vending machine **is in** idle mode

3 DCR Graphs



4 BDD DCR

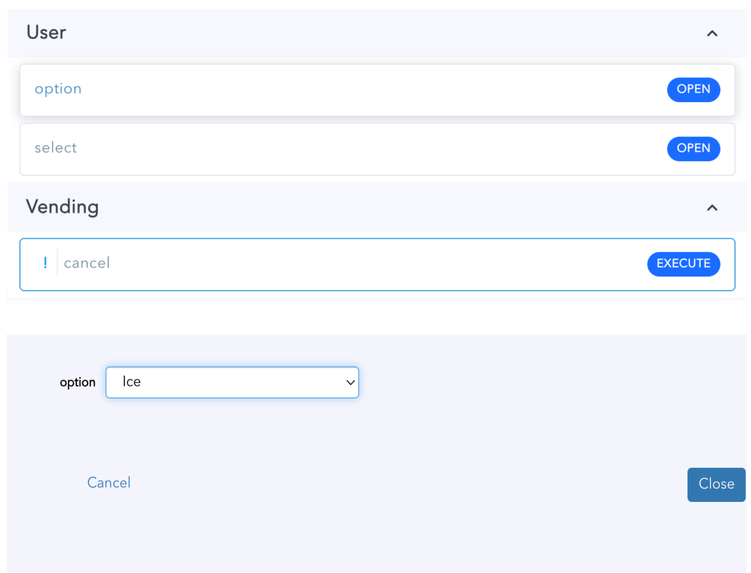
DCR Marking-wise Condition- Reaction

< {cancel, option, select}, Ø, Ø, Ø, Ø,{vm.ins != 0}>

cancel

< {insert}, Ø, Ø, Ø, Ø,{vm.ins = 0} >

5 Simulation Tool



Future Works

1. Combination of conversational LLM to generate DSL BDDs
2. Propose new methodology to map BDD DCR to DCR graphs
3. Propose new paradigms for object-centric DCR

DCR Graph

Simulation Tool