

Analysis of RPG with UPPAAL

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Overview

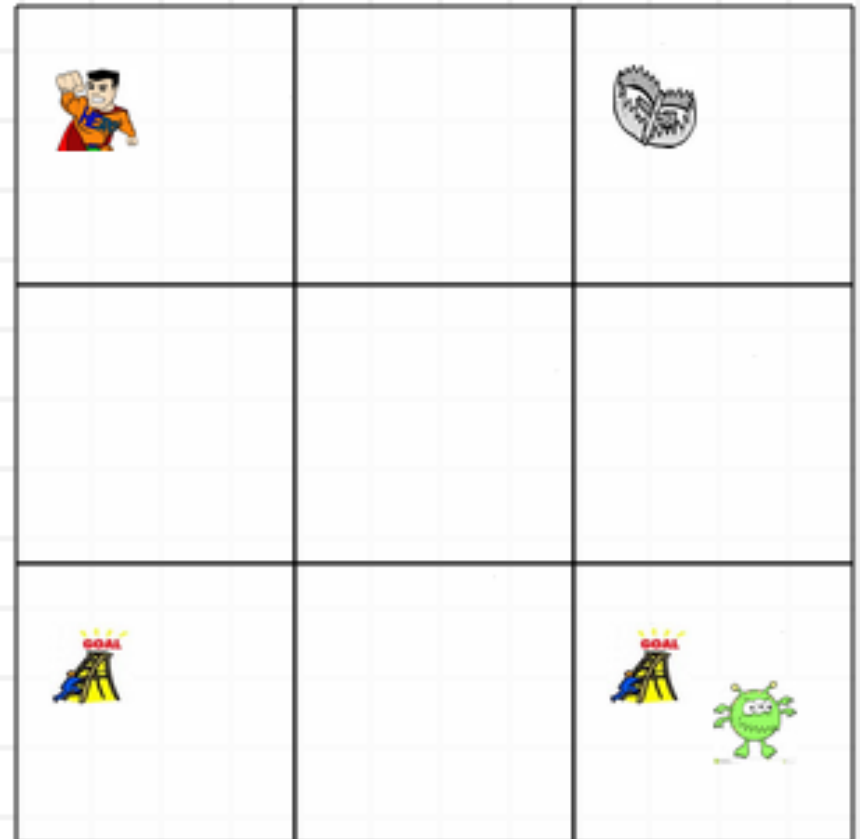
- Some restrictions on models
- RPG in UPPAAL
- AToMPM to UPPAAL
- Analysis



Some restrictions

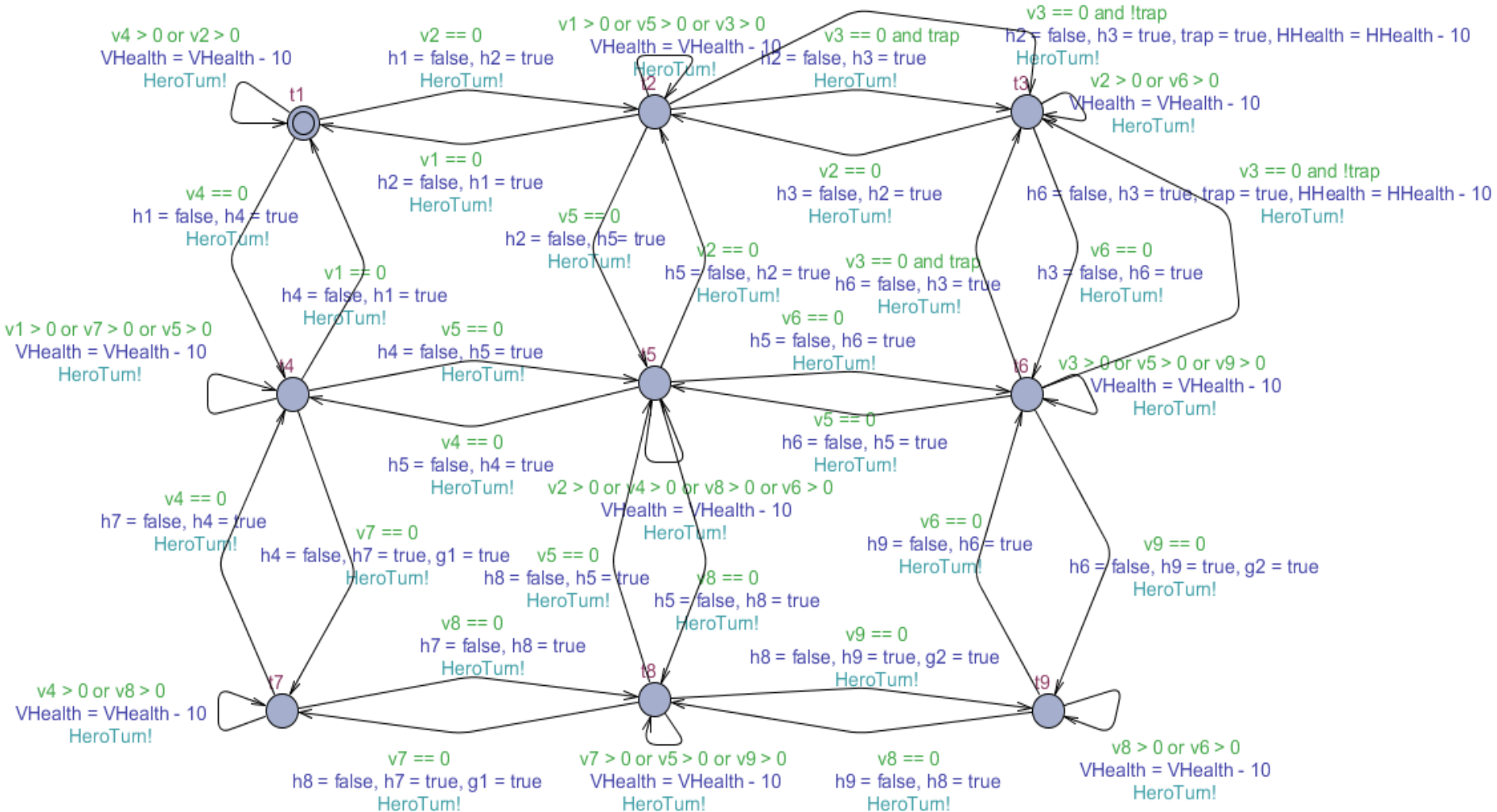
- One villain
- One scene
- No obstacles

Example:



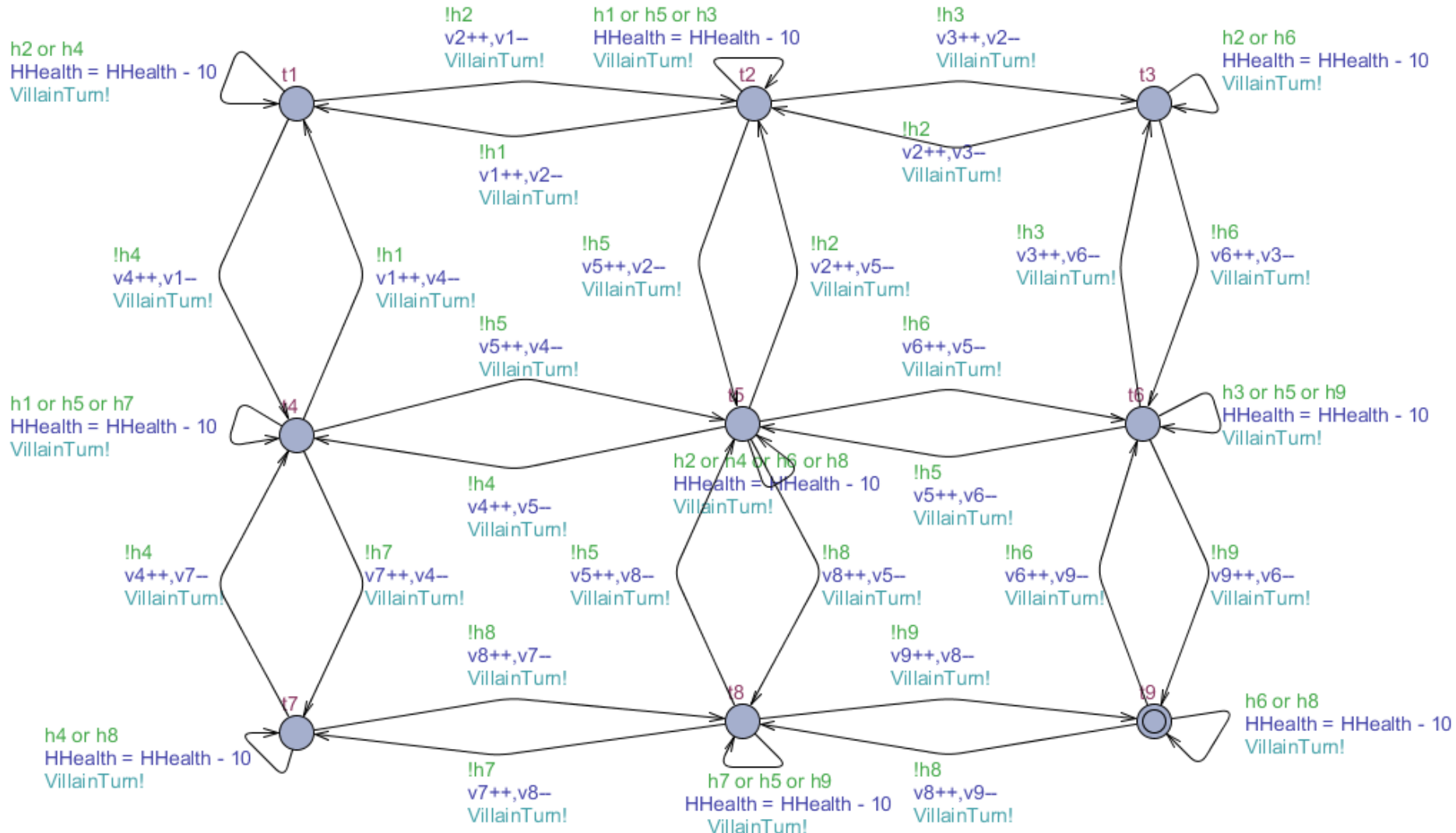
RPG in UPPAAL

○ Hero



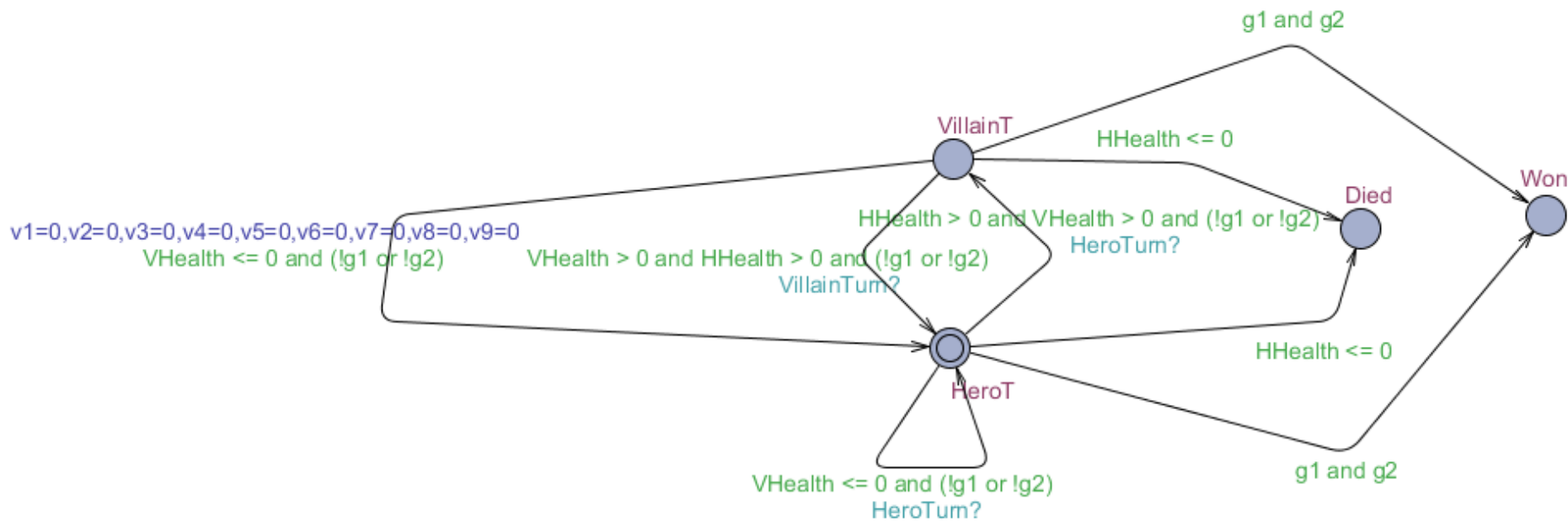
RPG in UPPAAL

○ Villain



RPG in UPPAAL

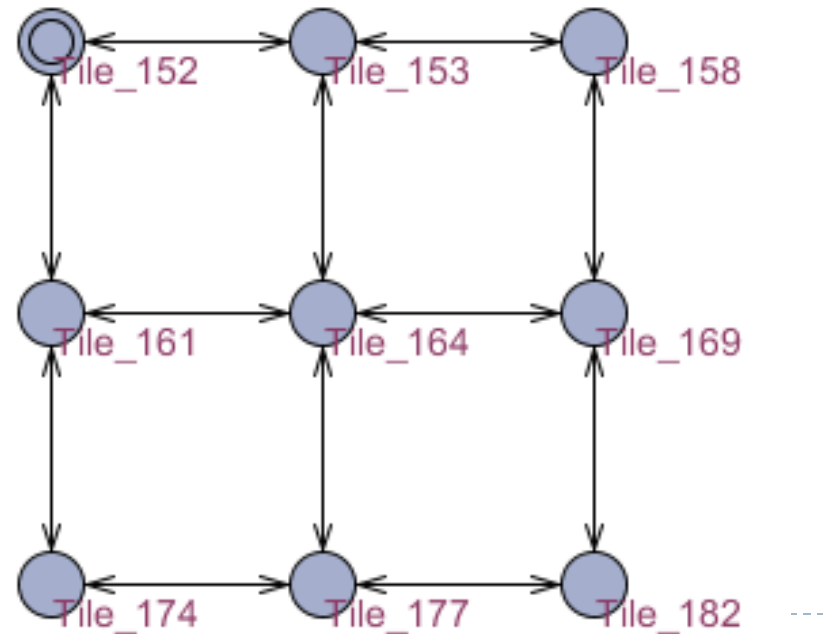
○ Turn



AToMPM to UPPAAL

- AToMPM to metaDepth
- metaDepth to XML with EGL

```
HeroTurnl  
vTile_161 = 0 and !trap1  
hTile_161 = false, hTile_162 = true
```



Analysis

- **Simulator**
 - Fast debugging in implementing phase
- **Verifier**
 - Invariants
 - Deadlocks
 - Reachability



Analysis

The image displays two overlapping windows from a software application, both titled "Overview".

The top window has tabs for "Editor", "Simulator", and "Verifier". Its "Overview" section contains a list of test cases:

- `E<> Hero1.t7` (highlighted in blue, green status indicator)
- `E<> Hero1.t9` (green status indicator)
- `E<> Villain1.t1` (green status indicator)
- `E<> not (Hero1.t1 and Villain1.t1)` (grey status indicator)
- `E<> not (Hero1.t2 and Villain1.t2)` (grey status indicator)
- `E<> not (Hero1.t3 and Villain1.t3)` (grey status indicator)
- `E<> not (Hero1.t4 and Villain1.t4)` (grey status indicator)
- `E<> not (Hero1.t5 and Villain1.t5)` (grey status indicator)

To the right of the list are three buttons: "Check", "Insert", and "Remove".

The bottom window also has tabs for "Editor", "Simulator", and "Verifier". Its "Overview" section contains a list of test cases:

- `E<> not (Hero1.t1 and Villain1.t1)` (highlighted in blue, grey status indicator)
- `E<> not (Hero1.t2 and Villain1.t2)` (green status indicator)
- `E<> not (Hero1.t3 and Villain1.t3)` (green status indicator)
- `E<> not (Hero1.t4 and Villain1.t4)` (green status indicator)
- `E<> not (Hero1.t5 and Villain1.t5)` (green status indicator)
- `E<> not (Hero1.t6 and Villain1.t6)` (green status indicator)
- `E<> not (Hero1.t7 and Villain1.t7)` (green status indicator)
- `E<> not (Hero1.t8 and Villain1.t8)` (green status indicator)
- `E<> not (Hero1.t9 and Villain1.t9)` (green status indicator)

To the right of the list are four buttons: "Check", "Insert", "Remove", and "Comments".

Analysis

The image shows two overlapping windows from a software analysis tool. Each window has tabs for 'Editor', 'Simulator', and 'Verifier'. The top window's 'Overview' section contains a list of properties with their verification status indicated by a green dot. The bottom window's 'Overview' section contains a list of properties, with the top three highlighted in blue and their status indicated by green dots.

Top Window Overview:

- E<> not (Hero1.t8 and Villain1.t8) [Green dot]
- E<> not (Hero1.t9 and Villain1.t9) [Green dot]
- A[] HHealth <= 100 and HHealth >= 0 [Green dot]
- A[] VHealth <= 50 and VHealth >= 0 [Green dot]
- A[] HHealth > 0 [Green dot]

Bottom Window Overview:

- A[] HHealth <= 100 and HHealth >= 0 [Green dot]
- A[] VHealth <= 50 and VHealth >= 0 [Green dot]
- A[] HHealth > 0 [Green dot]
- Turn1.Won --> Hero1.t7 or Hero1.t9 [Green dot]
- E<> not (trap and HHealth > 90) [Green dot]
- E<> deadlock and VHealth <= 0 [Green dot]
- E<> not deadlock and (not g1 and not g2) [Green dot]

Demo



Questions

