Gamified Internet of Things Testing within a Virtual Learning Environment - The interactive simulation game "IoTCityLab"

SE Games 2020, Thomas Auer, 10 November 2020

IoT City Lab
Simulation Game
The Game Environment
Case Study

Lane Assistant:
- Keep vehicle in track
- Turn left/right onto track

Traffic Light Recognition:
- Start vehicle
- Stop vehicle
- Start engine depending on traffic light status
Game Process

Game Unit

✓ Design Thinking Process
✓ Allocation of roles
✓ Sprint
✓ Sprint Review
✓ Sprint Retrospective

Retrospective

✓ Analysis Learning Progress
✓ Announcement Team Scores

Assessment Center

✓ Candidates meets trainer
✓ Evaluation Learning Objectives
✓ Assignment
The Roles

Client

SCRUM Master

Tasks:
- √ Moderation of daily stand-up meetings
- √ Ensure a smooth project course

Product Owner

Tasks:
- √ Management of the product backlog
- √ Decide about end of a sprint
- √ PoC to client

Test Automation Engineer

Tasks:
- √ Automate regression test set

Test Analyst

Tasks:
- √ Design test plan in coordination with Product Owner
- √ Design regression test set
Game Scoring

- **SCRUM Master**: Successful mediation of contributions (1 Credit)
  - Total Score SCRUM Master

- **Product Owner**: Artifact accepted by client (1 Credit)
  - Total Score Product Owner

- **Test Analyst**: Released test case (1 Credit)
  - Total Score Test Analyst

- **Test Automation Engineer**: Successful automated test case (1 Credit)
  - Total Score Test Automation Engineer
  - Total Score Team
Benefits:

✓ Role-based collaborative lessons
✓ Customized learning units related to individual learning objectives
✓ Gamified approach for learning Internet of Things Testing interactively
✓ Multi-Player Game – Focus on team work
✓ Modular game design
Contribution for Industry and Science

(Young) Professionals in IT Quality Assurance

- Targeted, interactive further training of testing experts to Internet of Things testing experts
- Promotion of team skills among distributed project teams

Students of Computer Science, Information Technology and similar subjects, Trainees in information technology or similar careers

- Gain interest for a future career in Internet of Things Quality Assurance
- Contribution for a present-day application field of Internet of Things
Prospects

✓ Extension of the simulated Learning Environment to a Digital Twin
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