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Booklets

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Title: Desktop forklift simulator -DFS

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PRESENTATION CONTENT

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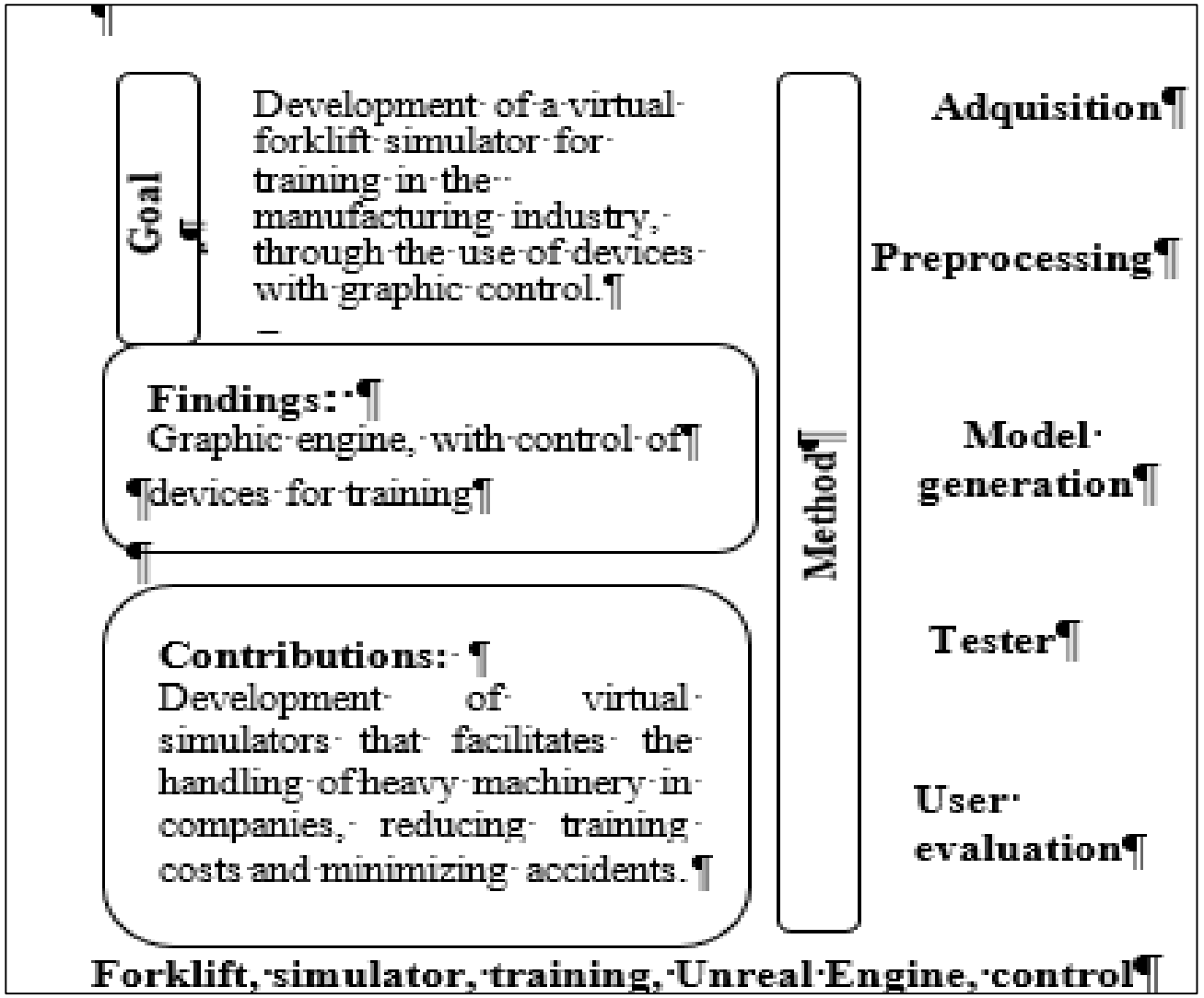
Introduction



Introduction

In the field of engineering and technology, innovation continues to transform the way we approach industrial challenges. This application uses innovative solutions and is presented as a key element to boost operational efficiency and raise safety standards in the work environment. In this work, a technological solution is developed that allows the use of a simulator in a local desktop application that controls the steering wheel and pedal devices.

The use of cutting-edge technology is essential in the industry for training high- risk activities and allowing immediate interactions between devices. In this project, it was implemented using Blender and Unreal Engine software, which allowed the functionality of each device to interact as a forklift simulator.

The manufacturing industry deals with areas with a high range of difficulty, such as the ability to drive a forklift in warehouses. Training workers can be dangerous when interacting directly with a physical forklift. For this reason, this project seeks to reduce the risk with a virtual simulator that covers and improves the practice of driving.

Methodology

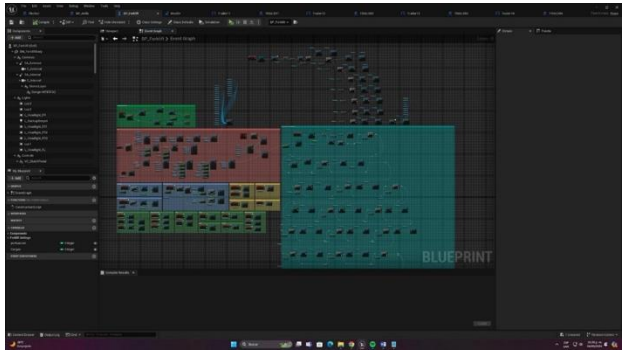
- **Phase 1: Environment Design**
- Phase 2: **Modeling the Forklift**
- Phase 3: **Programming in Unreal Engine**
- **Phase 4: Implementation of Interactions**
- **Phase 5: Testing and Optimization**

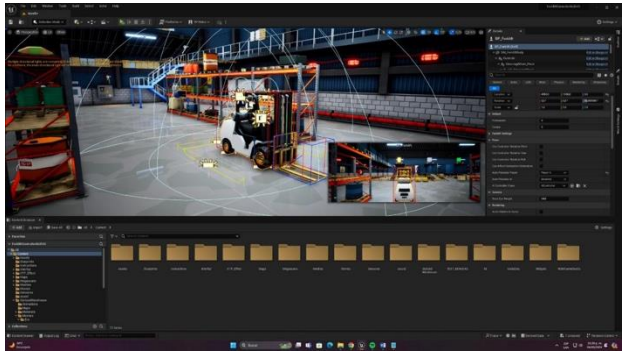
Methodology

1: Environment Design

2: Modeling the Forklift

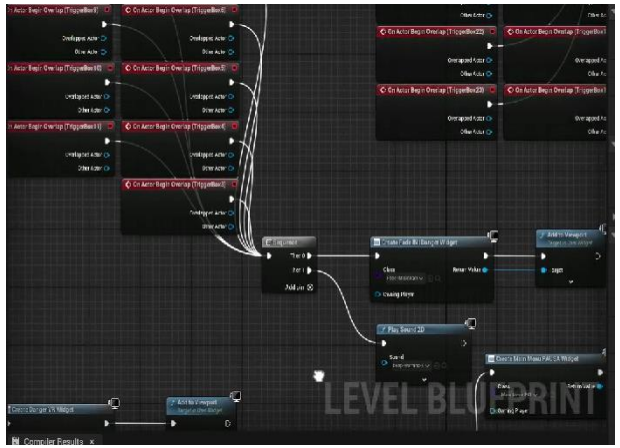
3:Programming in Unreal Engine



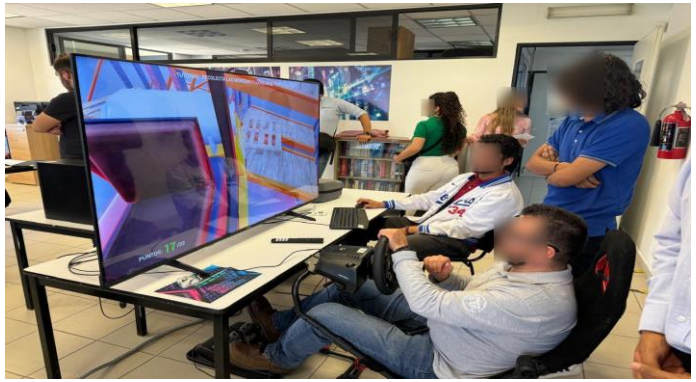


Methodology

4: Implementation of Interactions



5.-Test and optimitation



Results

For the VR forklift simulator, a satisfaction level survey was prepared, where the results are presented in graph 1. A graph where the weighting is from 0 to 10, identifying the level of effectiveness of each essential aspect of the simulator, where the level of realism and effectiveness of the simulator is acceptable.
The population is made up of 10 forklift drivers from the company.

The forklift drivers used the application as experts so that they could make an evaluation of the 7 variables considered.
The variables were: 1. Accessibility 2. Satisfaction 3. Playability 4. Realism 5. Sound 6. Reaction 7. Environment

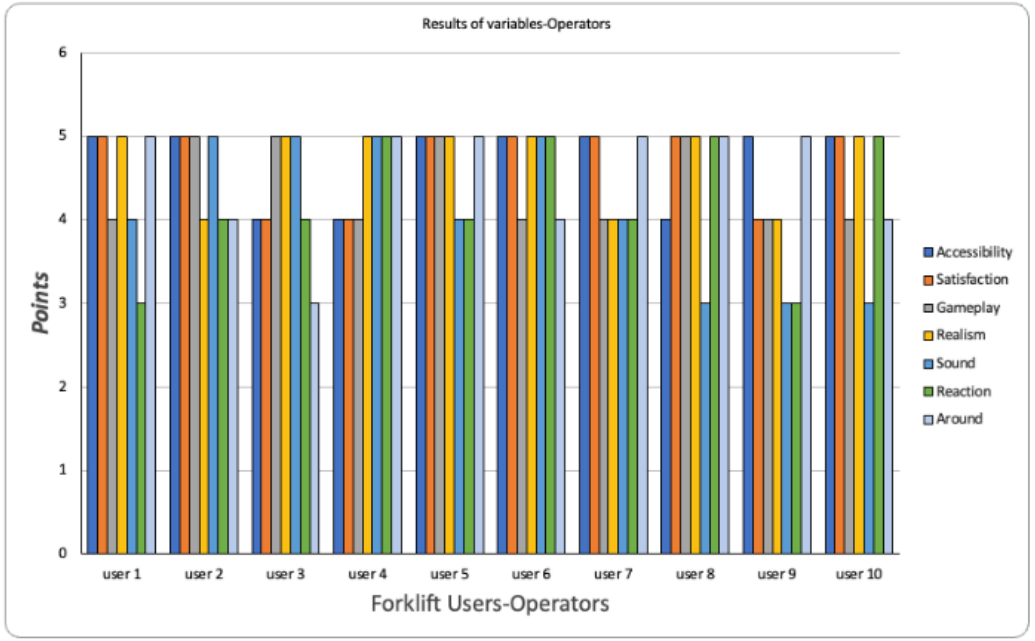


Figure 10

Graphic results of user evaluations with the 7 variables.
Source: Own elaboration

Results

Figure 11

Graphic results of time for level 1

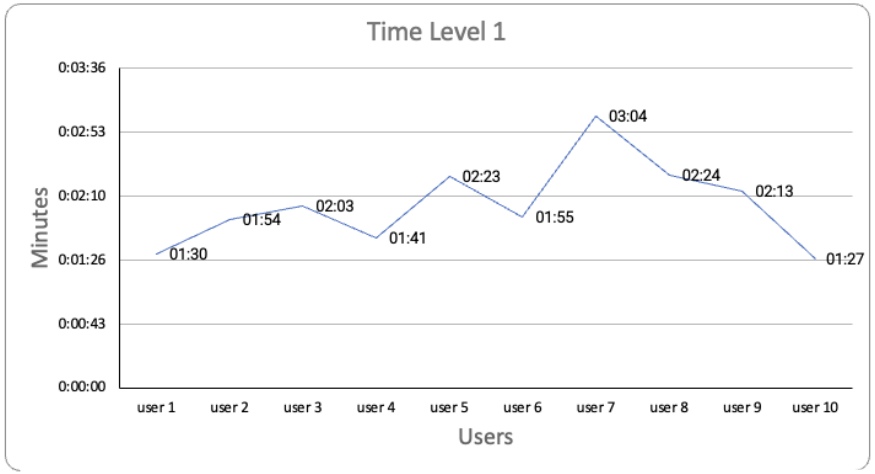


Figure 12

Graphic results for time to pass level 2

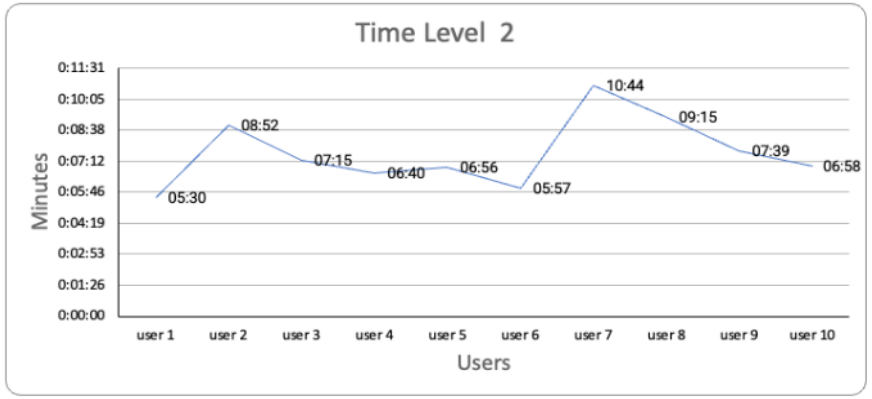


Figure 14

Graphic results comparing time at the 3 levels of play.

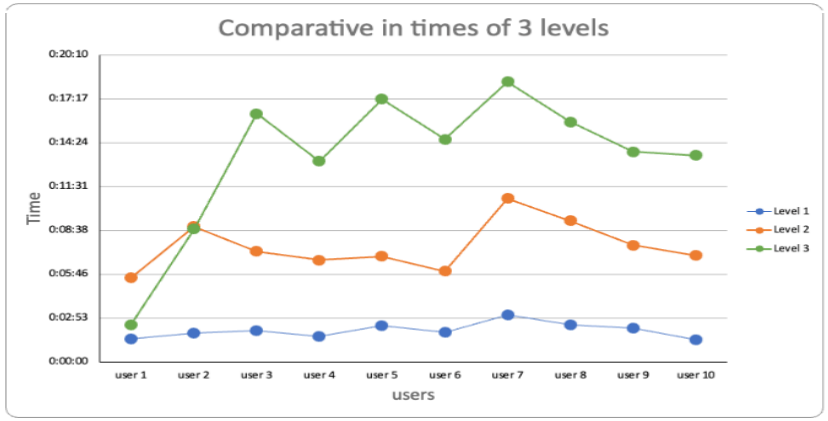
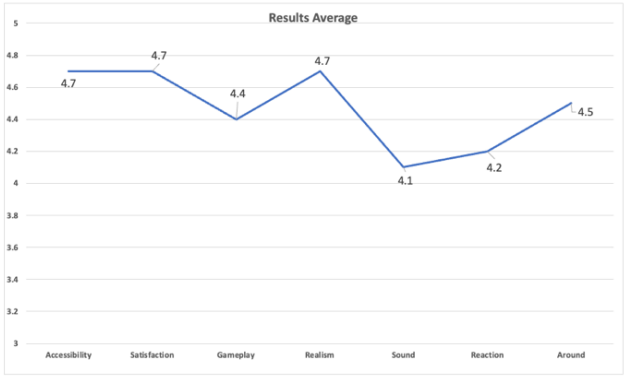


Figure 15

Graphic results of the average with variables evaluated by forklift operators.



Annexes

NOM 035-STPS

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Conclusions

When developing a software program for a desktop application, it allows the integration of visual programming and block design with objects that were first tested in a unitary way. These objects can be integrated within the industrial warehouse. This provided a virtual environment that could be used by actual forklift operators collaborating with the software developers. The operators showed that a training strategy employing technology can be very supportive. A virtual environment, with this type of application can be a helpful tool for industry in support for their forklift training efforts, help to reduce warehouse accidents, and reduce fuel costs.

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