Web-based Virtual Reality With A-Frame

Introduction

- Virtual Reality (VR) accessibility

- A-Frame

- Goal: Evaluate the development effort of creating VR experiences with A-Frame

A-Frame

- A-Frame: An open-source web framework for building VR experiences based on HTML and Javascript.

- Syntax:
    - `<a-sphere position="3 3 -10" radius="0.7" color="red"></a-sphere>`

- Provides 3D primitives, event handlers, and components(for added functionality)

Approach

- Analyze the learning process and development effort, while documenting shortcomings and current flaws of A-Frame.

- Steps taken:
  - Learn A-Frame - online courses and A-Frame's documentation
  - List virtual tour elements - main elements found in existing virtual tours
  - Test implementation - implement each element and document difficulties encountered
  - Integrate - integrate all elements into a virtual tour

Results

- Difficulties found:
  - Lack of flexibility when positioning 3D objects

  - A-Frame does not support CSS, which requires image editing for simple effects

  - Many situations require complex or custom A-Frame components

  - Limited browser support

Conclusion

- Results show that a multimedia designer with experience in web programming is able to create a VR experience using A-Frame

- However, there are some shortcomings, such as lack of CSS styling language, improved visual editor for adjusting 3D objects, and browser support.

Reference:

Web-based Virtual Reality with A-Frame. S. G. Santos and J. C. S. Cardoso. 2019 14th Iberian Conference on Information Systems and Technologies (CISTI). 2019.