AN INTEGRATED 3D WEB VIEWER

Software Requirements Specification

9th February 2025

R 1.0

Revision History

REVISION	DATE	MODIFIED BY
1	2025-02-09	S MAHALINGAM

Table of Contents

1. Summary

1.1 Objective

To build an integrated web-based 3D viewer which can open different file formats

1.2 Standards

TBD

1.3 Customers

TBD

1.4 Future Developments

TBD

2. Market Research

2.1 Industry

Currently, the commercial web viewers available in the market are very expensive. Moreover, these web viewers are not available for on-premise hosting. Some of the popular solutions available are Tandem (Autodesk), ArcGIS (Esri), Open-Design-Alliance SDK (ODA), Cesium JS (Bentley), iTWIN (Bentley).

The existing solutions are mostly cloud hosted SAAS services except for Cesium JS & ODA SDK which has options to customize and host on-premises.

2.2 Detailed Description of Customers

TBD

2.3 Advantages

- TBD

2.4 Regulations & Certifications

TBD

3. Functional Requirements

3.1 Operating System

Main aim is to build the application as OS agnostic. However, priority will be provided to Linux hosting. If the viewer requires any processing capabilities which is not available in Linux, Window OS can be favored.

3.2 Known Constraints

- Internet will not be available in the servers where the Viewer will be eventually hosted. Thus, the application cannot try to reach any external network location or depend on any external CDN libraries.

3.3 Hardware Interface

TBD

3.4 Software Interface

TBD

3.5 User Interface

User Interface needs to be as simple as possible, without any complex structure. Throughout the development, consider the users as primary school students who are not exposed to any modern technology devices.

Keep the buttons, text box and other user input components as minimum as possible.

3.6 Compatible File Formats

The application should open as many 3D formats as possible. Idea is to start with at least one format and add new formats in later releases of the software. Below list of formats is only indicative and not exhaustive/mandatory.

- OBJ
- GLTF
- 3D Tiles (Preferred Choice of format)
- Collada
- IFC
- RVT, NWC (Requires ODA SDK)

4. Non-Functional Requirements

4.1 Security

Some of the certifications required are

- VAPT Cleared certification
- Source Code Review Cleared Certification by an ISO accredited company

4.2 Compatibility

- TBD

4.3 Scalability

TBD

4.4 Maintenance

TBD

5. System Architecture

To be designed.

6. Software Features

6.1 Feature : Basic Viewing

A landing screen which shows different 3D models available in the system. Initially, load some random 3D models (GLTF or OBJ formats) in the application itself. Later these 3D models will be provided via an API, which will list the URLs of the 3D models.

When user clicks on a 3D file, display the selected model in the viewer.

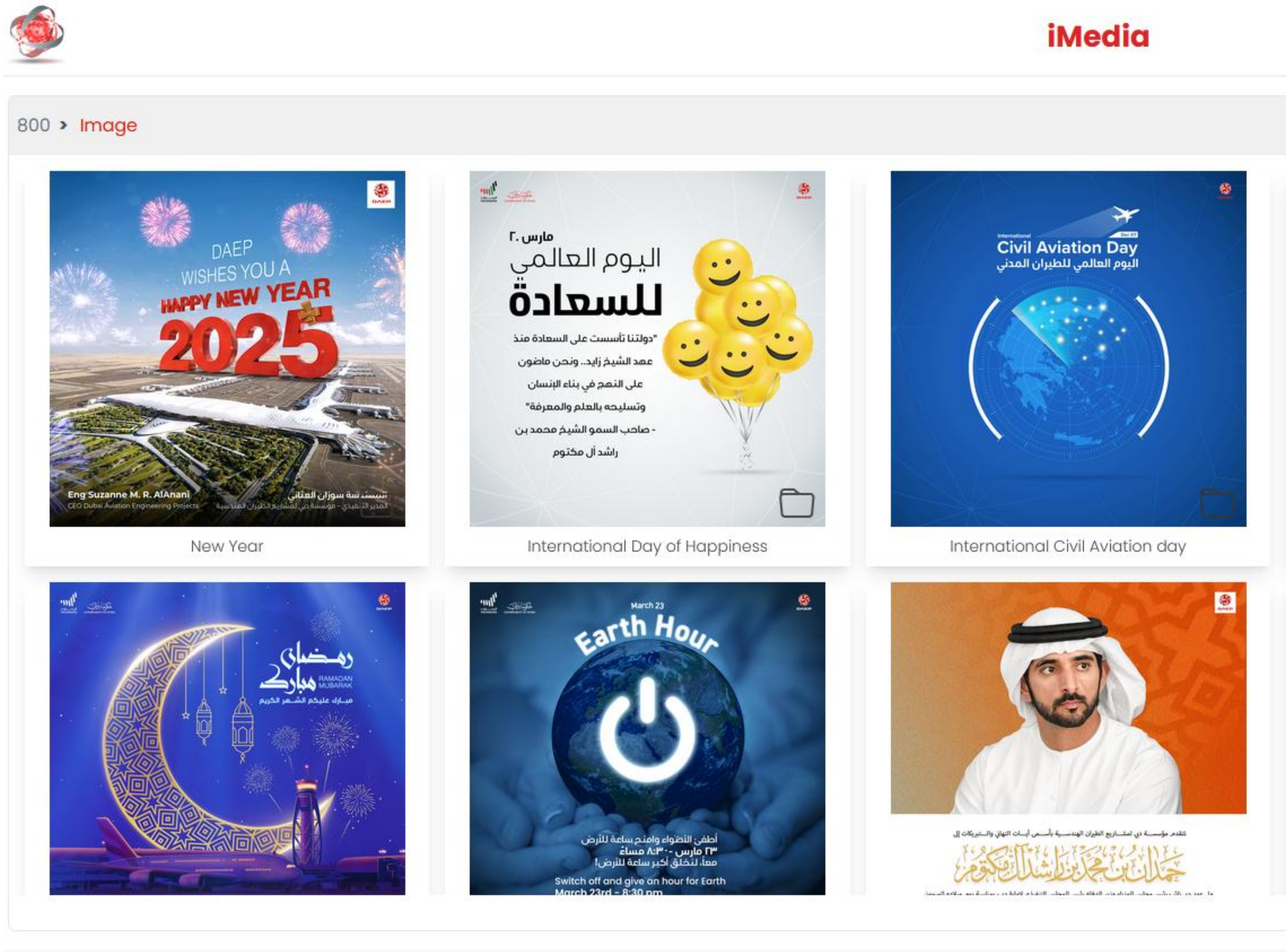
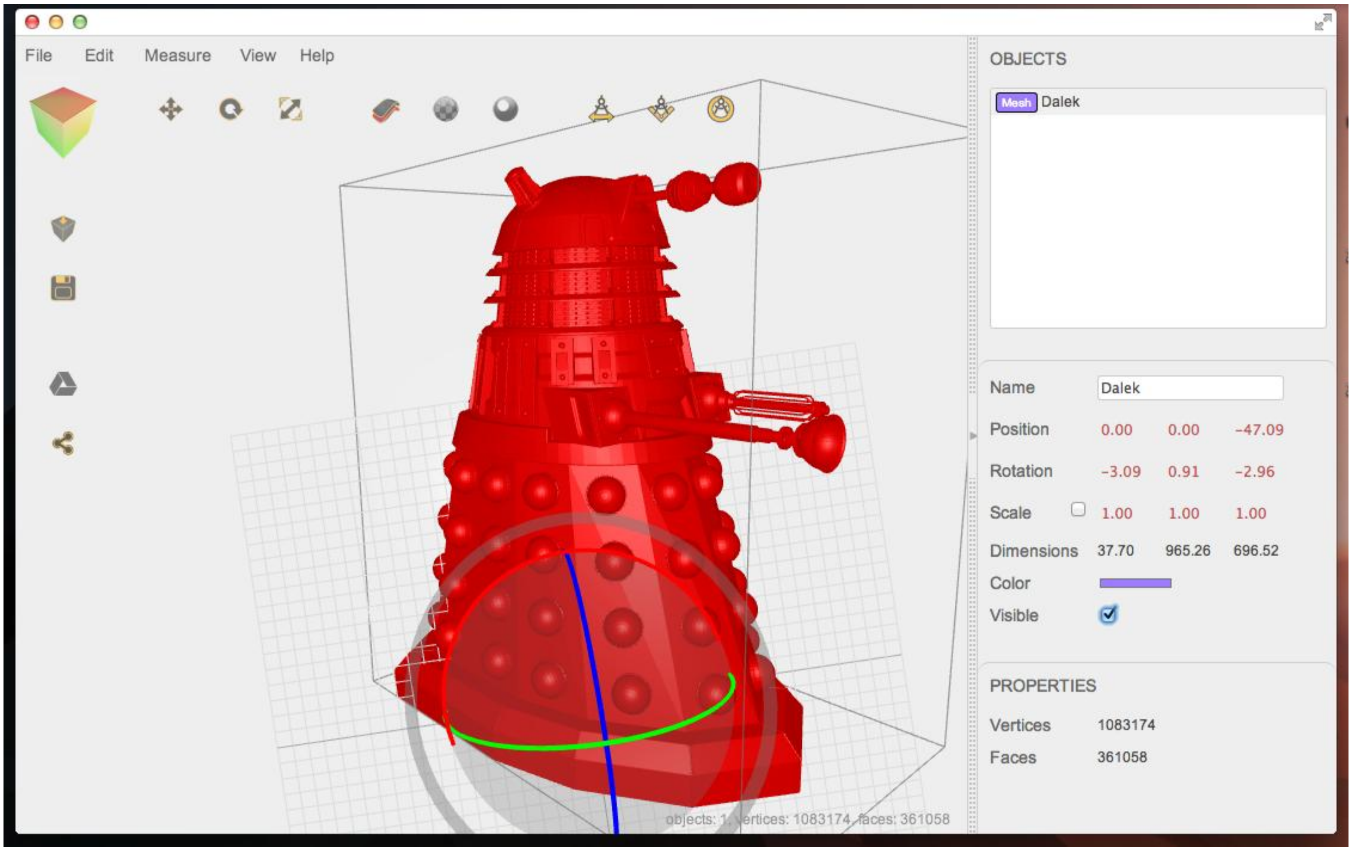

iMedia
800 > Image
New Year
International Day of Happiness
International Civil Aviation day

Figure 1 : Sample Landing screen display different 3D model files available



OBJECTS

Mesh Dalek

Name	Dalek		
Position	0.00	0.00	-47.09
Rotation	-3.09	0.91	-2.96
Scale □	1.00	1.00	1.00
Dimensions	37.70	965.26	696.52
Color	🟪		
Visible	☑		

PROPERTIES

Vertices	1083174
Faces	361058

objects: 1, vertices: 1083174, faces: 361058

Figure 2 : Basic viewer example