New HTML Element to Display a 3D Scene

ANDO Yasushi
Kabuku Inc.

Email: andyjpn@gmail.com
Twitter: @technohippy

Summary

We should have a new HTML element to display a 3D scene.

Problem

- 3D contents are not popular enough for standard web sites.
- Many developers develop a kind of 3D viewer similar to each other.
  - Waste of:
    - Human resource
    - Time
    - Network traffic

Solution: HTML Element to Display 3D Scene

By introducing the new element

- 3D contents can be true first class citizens of the Web.
- Developers can avoid developing similar feature sets of 3D viewers.
- Through well-argued JS APIs, casual games can be built on the element.
- IMVHO: Similar to the <video> element, a browser can load 3D models into the element in cryptic way.

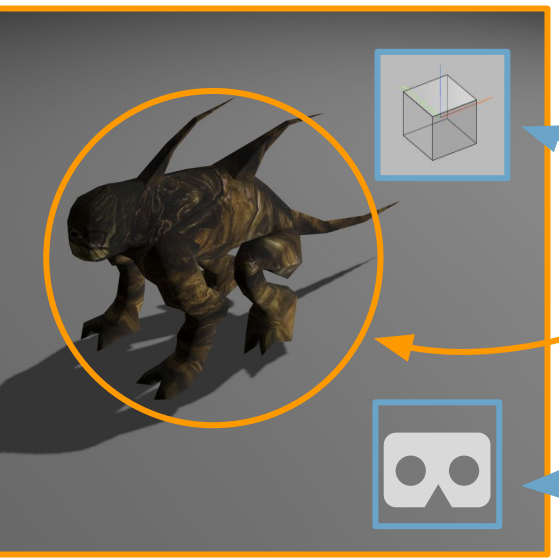
Functionalities the Element Should Have

- Load and display 3D models (probably written in glTF)
- Control a camera by a mouse or fingers
- Show camera controls (for example, a viewcube) if required
- Events
  - Enter/Exit XR mode, Hit test and so on...
- JS APIs
  - Control a camera, Invoke a registered animation, Enter/Exit XR mode and so on...

Conceptual Code (HTML Element)

```
<scene controls vrenabled width="300">
  <source src="http://example.com/Monster_small.glb"
    type="model/gltf-binary" media="(min-width: 320px)">
  <source src="http://example.com/Monster.gltf"
    type="model/gltf+json" media="(min-width: 640px)">
  Message for unsupported browsers
</scene>
```

Conceptual Code (HTML Element)



```
<scene controls vrenabled width="300">
  <source src="http://example.com/Monster_small.glb"
    type="model/gltf-binary" media="(min-width: 320px)">
  <source src="http://example.com/Monster.gltf"
    type="model/gltf+json" media="(min-width: 640px)">
  Message for unsupported browsers
</scene>
```

Conceptual Code (JS API)

```
const scene = document.getElementsByTagName("scene")[0];
scene.addEventListener("hit", (evt) => {
  // "monster" can be found in the `meshes' property of Monster.gltf.
  if (evt.meshes[0].name === "monster") {
    // "animation_9" can be found in the `animations' property of Monster.gltf.
    scene.startAnimation("animation_9");
  }
});
```

Conclusion

We should have a new HTML element to display a 3D scene.