



THE CASE FOR DECLARATIVE VR

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LEVERAGE HUGE WEB DEVELOPER USER BASE

- Democratize VR development
- MILLIONS of web developers familiar with HTML, Javascript and CSS
- Some estimates as high as 11 Million Web Developers in the world

THE BASIC IDEA

- Declarative VR/AR (XR) tags eventually made part of the HTML Spec
- XR-related added to subsequent CSS specification
- Take the best of the best of ideas from existing 3D platforms but ...
- **START OVER WITH A CLEAN SLATE**

- For prototyping early on, consider using A-Frame

```

1 <HTML>
2 <BODY VR-TYPE="VR">
3 <VR-SCENE>
4   <VR-CAMERA class="main camera"/>
5   <VR-CAMERA class="observer camera"/>
6   <VR-LIGHT id="lightMain" class="spot light"/>
7   <VR-OBJECT id="train" src="objets/myTrain.gltf">
8     <VR-HITREGION id="smokestack"></VR-HITREGION>
9   </VR-OBJECT>
10 </VR-SCENE>
11 </BODY>
12 </HTML>

```

HTML ⚙️

No need for the **HTML** tag, it's already in the output.

```

1 var smokeStack;
2 function setup() {
3   smokeStack = document.getElementById(smokestack);
4   smokeStack.addEventListener("smokeStackClickHandler"
5     , .. blah ..)
6 }
7
8 function smokeStackClickHandler(event) {
9   // Code that triggers when you click on the object
10 }

```

JAVASCRIPT ⚙️

```

1 .camera {
2   transform: vr-position{ 10,100,200 }
3 }
4 .camera .observer {
5   position: fixed; /* Does not move */
6   transform: vr-position{ 1000,100,200 }
7 }
8 .light {
9   transform: vr-position{ 100,10,20 }
10  /* Can be Spot, Directional, Area or Ambient */
11  vr-light-type: spotlight;
12 }
13 #smokestack {
14   // Defines the 3-D "hit region" on the 3D Object
15   // Clean way of describing 4 3-D points
16   vr-region: {
17     (10,100,1), (100,1000,1), (10,1000,1), (50,50,1)
18   }
19 }

```

CSS ⚙️

RESULT

EXAMPLE

(Josh has a better one)

SOME THINGS TO CONSIDER

- Possibility of having a “built-in” render loop (ie no need to set up one)
- “OnClick” or “OnMouseDown” on a 3D Object (or region of a 3D Object) to have high-level (browser) support. Raycasting is not scalable.
- Think of a “nicer” way to describe 3D points in space. (translate-X, translate-Y, translate-Z is nice, but a bit clumsy).
- Whatever we do – PLEASE KEEP IT SIMPLE
- Bottom line, if a web-developer needs to get “down and dirty”, they can always drop down to straight WebGL code.