UEMCON 2022

Workshop on Aspects of VR

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Outline

On-screen only

Motivation

Foundations

Basics

Goal

Give an understanding about how VR works

More under the hood, than flashy details

Style

Interactive

Prefer simple development environments over added value and complex development environments

Using A-Frame and three.js - HTML and JavaScript

Focusing on general principles applicable to VR

Simplest way to learn

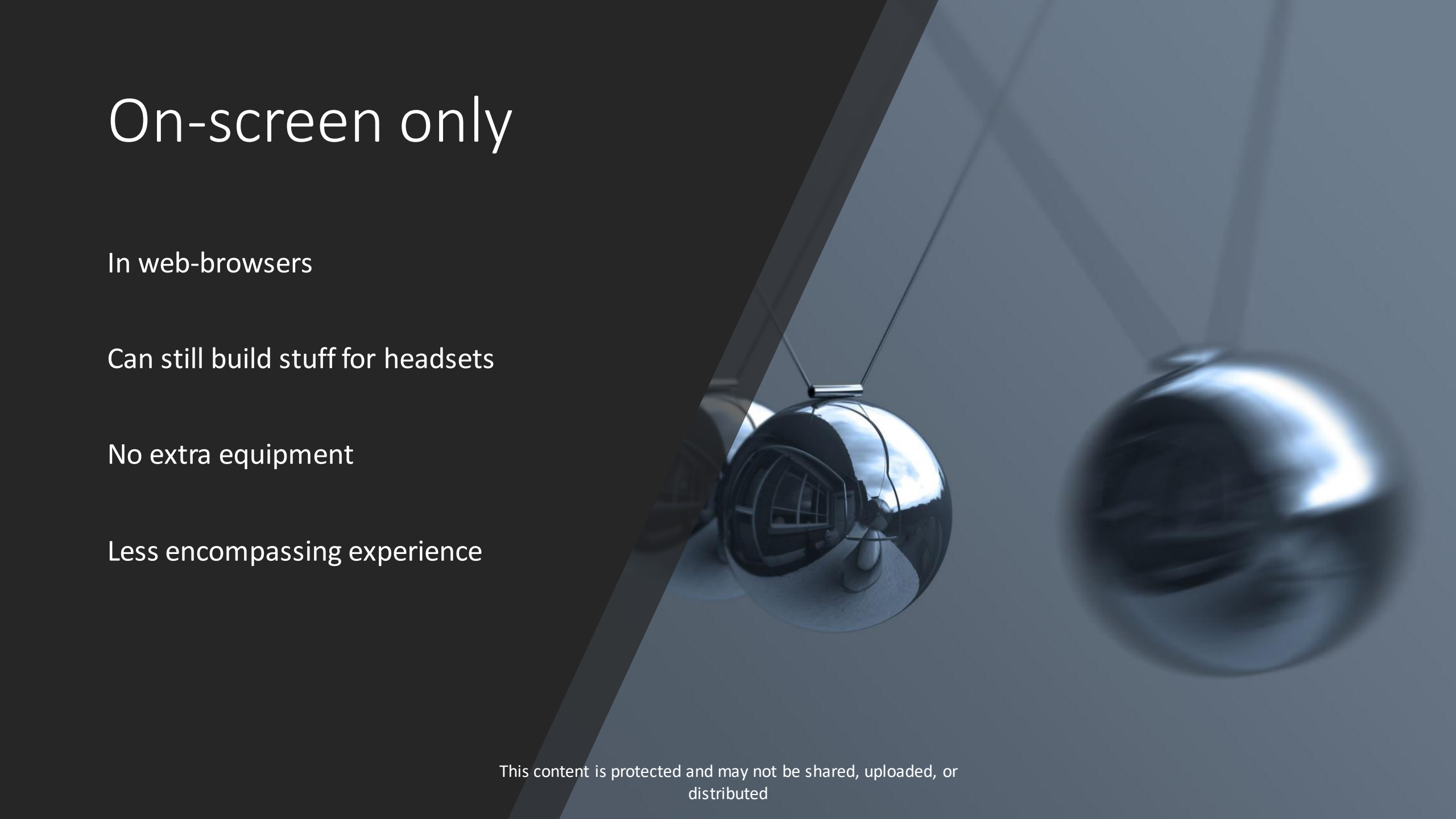
On-screen only

In web-browsers

Can still build stuff for headsets

No extra equipment

Less encompassing experience



Definitions

AR – Augmented Reality: adding virtual components to enhance reality

VR – Virtual Reality: emulating a situation that does not exist

Motivation

AR

- Industrial enhancements
- Personal enhancements
- Learning enhancements

VR

- Deeper understanding
- Research and big questions

DOM – Document Object Model

HTML – text, CSS style, JavaScript action

Trees with code

Web Components

Shareable

Composition

Object Oriented (OO) design

WebXR

WebMR – Mixed R

WebGL

Rasterization

Three.js

Most popular 3D grahics using WebGL

Entity Component System

OOP is often used for libraries of components that have hierarchy

Example: Bicycle
- Made of metal
- Transmits electricity
- Can be used by humans
- Transportation
- Bought/sold
- Man made
- Can be thrown

Entity Component System

OOP is often used for libraries of components that have hierarchy

Example: Car

- Made of metal
- Transmits electricity, generally not hurting occupants
- Can be used by humans
- Transportation – very fast
- Bought/sold
- Man made
- Cannot be thrown
- Needs fuel

A-Frame

Framework for Three.js

So, leverages OpenGL/WebXR

Web component based