x3dom

Instant 3D the HTML way!

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Agenda

- X3DOM Basics
- Demo
- Hot topics (PBR, glTF & WebVR)
- Demo
- Roadmap 2018

X3DOM // Overview

- Integrates 3D content seamlessly into your webpage
- Access & manipulate Nodes per DOM-API
- No Plugins needed
- Simply include a javascript file
- Open-Source
- Free for non-commercial and commercial purposes

Demo

X3DOM // Evolution of Binary Formats

Image Geometry

X3D-based Scene description + external referenced binary data images

Binary Geometry

X3D-based Scene description + external referenced binary data blobs

Shape Resource Container (SRC)

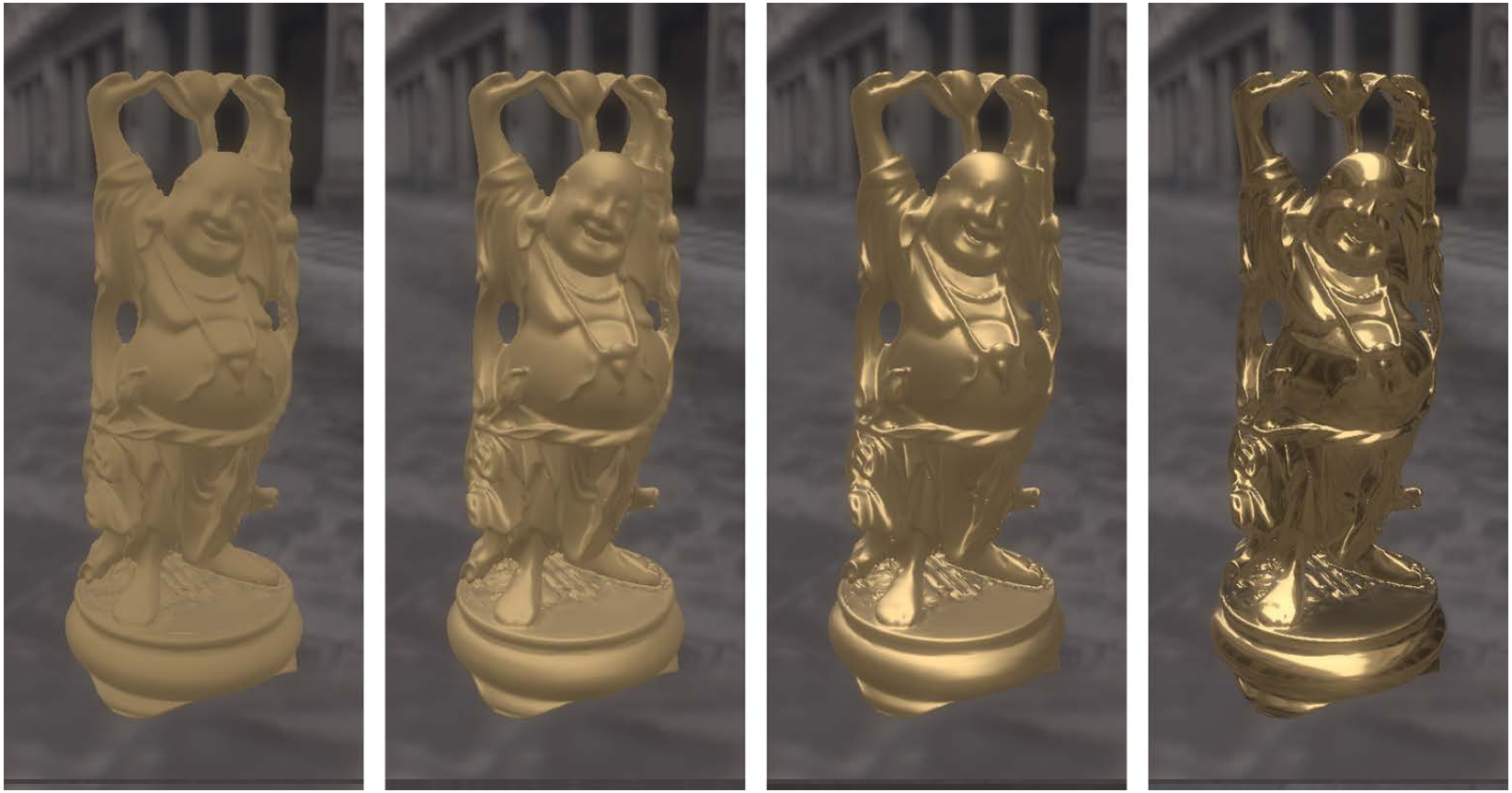
JSON-based Scene description + internal or external binary data blobs

PBR

Physically-based Rendering

PBR // Overview

- Modern physically-based Material description
- Minimal parameter set to describe a wide range of different Materials.
- Available in the big Engines: Unreal, Unity, Frostbite, etc...
- But not in the web.
- So we have proposed a web-ready PBR Material description at the Web3D 2016



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LUXJS

PBR // X3DOM

- Integrated as PhysicalMaterial-Node like proposed in our paper.
- So every standard X3D Geometry-Node can rendered with this Physically-based Material.
- Direct lighting is already in.
- Image Based Lighting comes in the next weeks


glTF

glTF // Overview

- Modern 3D Transmission format
- Uses a JSON-based Scene description + internal or external referenced binary data blobs inspired by our SRC
- Uses our proposed PBR-Material as default material
- Used by Microsoft, Facebook, Sketchfab, and many many more.

glTF // X3DOM

- Simple loading per Inline-Node like an external X3D-File
- Nodes are fully integrated into the X3DOM-Scenegraph
- Easy access & manipulation per DOM-API
- Supports glTF, glTF-Embedded & glTF-Binary
- Integration is still experimental

WebVR

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WebVR // Overview

- Modern WebAPI to access VR Devices like HTC Vive, Oculus Rift or Google Daydream directly in the Browser.

- Available in Chrome, Firefox & Microsoft Edge

- Easy to use

WebVR // Usage

Get the VR Display

```
navigator.getVRDisplays().then( ( displays ) => { ... } ) );
```

Enter VR Mode

```
display.requestPresent([{source:canvas}]).then(()=> { … } );
```

Get the Display data

```
display.getFrameData( vrFrameData );
```

Submit a frame

```
display.submitFrame();
```

WebVR // X3DOM

Last Years

- No deep integration into the X3DOM-Core
- All examples are build around X3DOM
- Duplicated Scenes & RenderTextures

Now (still experimental)

- Deep integration into the X3DOM-Core
- Enter VR simply by clicking the VR-Button
- Single Pass Rendering with hardware Instancing

Demo

Roadmap 2018

March // April

Further integration of PBR, WebVR & glTF into the X3DOM-Core

May // June

Merge of the new experimental core features (PBR, WebVR & glTF) to the official development Branch for stabilization.

July // August

Stable Release of X3DOM v1.8.0

Links

Official Website:	**www.x3dom.org**
Github Repository:	**www.github.com/x3dom/x3dom**
Stable Build:	**www.x3dom.org/download/1.7.2**
Development Build:	**www.x3dom.org/download/dev**
Experimental Build:	**www.x3dom.org/download/exp**
glTF Example:	**www.examples.x3dom.org/gltf2**

Links

SRC Paper: https://x3dom.org/src/

PBR Paper: https://x3dom.org/pbr/pbr2016.pdf

WebVR Website: https://www.webvr.info

glTF Repository: https://github.com/KhronosGroup/glTF