



CARTO BOF SIGGRAPH 2021

The Web3D Consortium

www.web3d.org

www.webx3d.org



Outline

1. Web3D Video (Mike)

- a. Presentation layer
- b. Standards-oriented, long-term
- c. Power of SDOs, community

2. VT

- a. Virtual Fields trips
- b. Urban design
- c. Mirror Worlds (3DBBurg)

3. Versar

- a. Video (John) - Annapolis : data & application diversity



Web3D.org

The Web3D Consortium

- Not-for-profit Standards Development Organization (SDO)
- Members dedicated to the **portability**, **interoperability**, and **durability** of interactive 3D content
- Geospatial Working Group:
 - Science
 - Education
 - Facilities
 - Interoperability for Enterprise geospatial 3D...

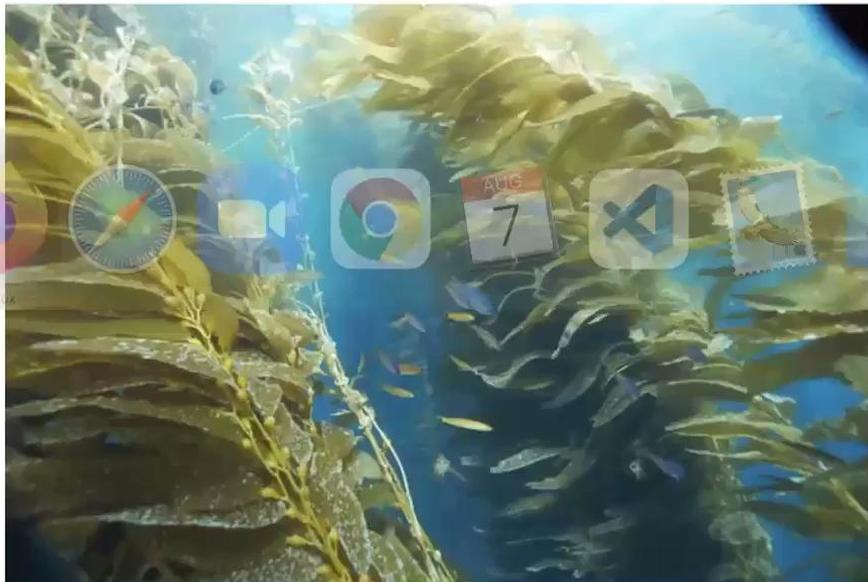
The Web is our platform:

X3D Anywhere !

- **3D + VR + AR Capable**
- **Runs on multiple devices** (Phones, tablets, desktops, caves)
- **Used in multiple domains** (Medical, Geospatial, 3D printing/scanning, CAD and more)
- **Interaction**
- **Animation**



www.web3d.org/x3d/why-use-x3d



Environmental DNA is an effective tool for calculating marine biodiversity

July 29, 2021 – New research demonstrates that eDNA can be a valuable tool for monitoring California's kelp

[Read more >](#)

An interactive map of Monterey Bay. The map is light blue and shows the coastline. There are several icons overlaid on the map: a plus sign, a minus sign, a dollar sign, a magnifying glass, a calendar, and a document. A red button at the bottom of the map says "See the latest updates from Monterey Bay".

See the latest updates from Monterey Bay

*eDNA sampling is a method for identifying species of interest—both non-native and for conservation—in aquatic ecosystems without the need to sample the organism. Learn more about the process on our **new interactive eDNA web page.***

Web3D Standardization Process

Volunteers and Members work together on Standards

Web3D Working Groups:

X3D
Medical
Geospatial
Mixed Reality
Heritage
Semantics
Design Printing & Scanning
Web3D UX

SDO Partnerships:



www.web3d.org/working-groups

X3Dv4

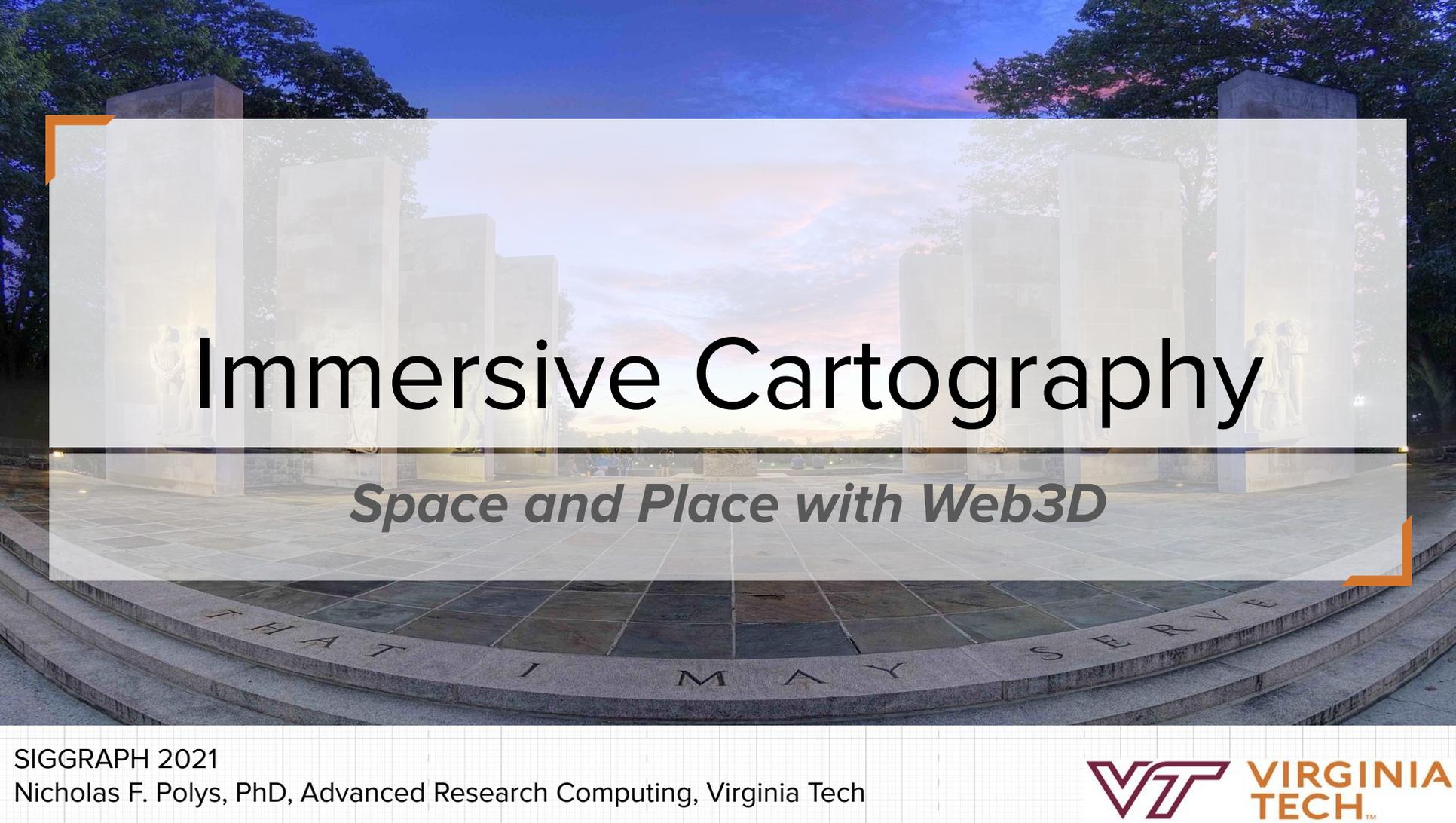
- Drafts released @ last 2 SIGGRAPHs
- Now into ISO Process
- GLTF & PBR
- Web Audio
- DOM API

Member Highlights

X3D Mashup of Mars Perseverance landing worlds with real NASA data!

Created by Dr. Andreas Plesch:

- <https://andreasplesch.github.io/Mars2020/3dmap/index.html>
- <https://andreasplesch.github.io/Library/Examples/Mars2020/index.html>



Immersive Cartography

Space and Place with Web3D

SIGGRAPH 2021

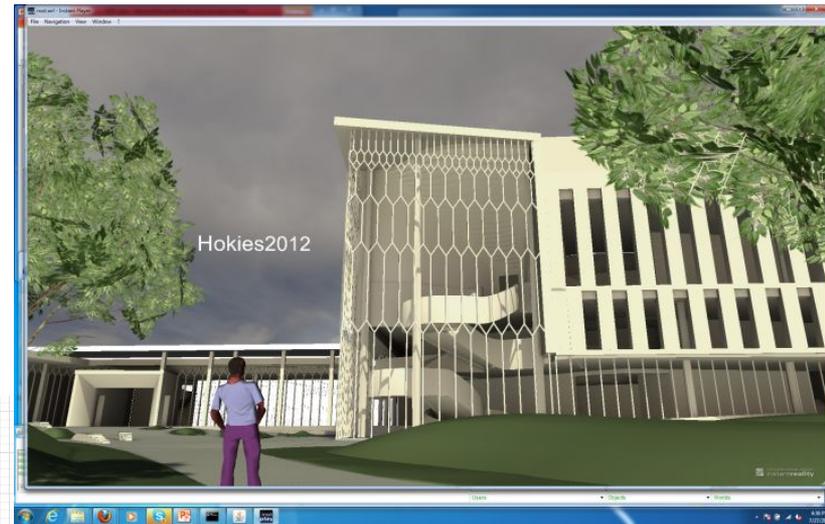
Nicholas F. Polys, PhD, Advanced Research Computing, Virginia Tech



Extensible 3D (X3D) @ The Visionarium Lab

- Application-independent
- Platform independent
- International Standard
- 3D graphics with WWW technologies

3D Blacksburg



3D Blacksbur

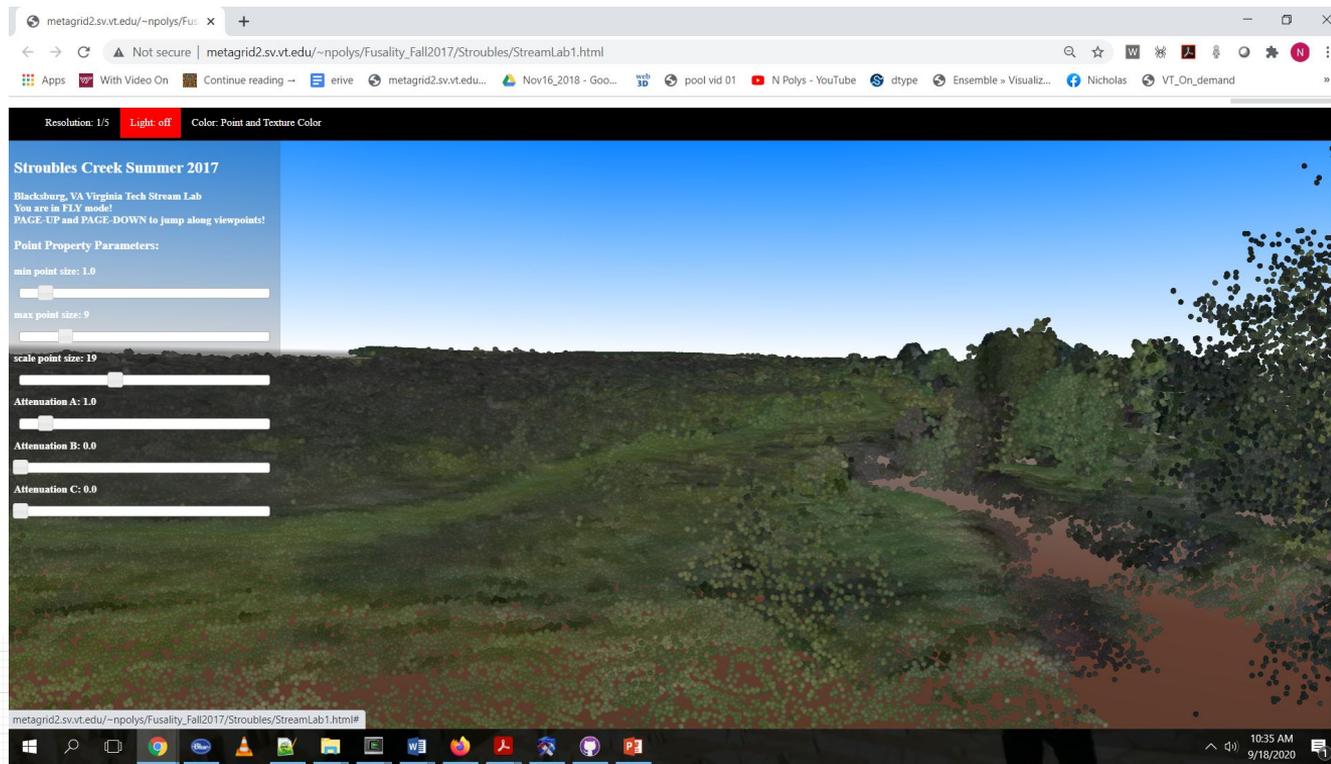
Town Planning:
collaborative
design review
sessions



2020: Best Paper @ Web3D 2020

Point Properties
in X3Dv4!

Efficient
point-splatting
method



AgroForestry

VT AgroForestry

Class:

Student design
project

With photospheres



USDA Professional

Pivoting to online training

USDA Advanced
Silviculture Program is
usually a 2 week on-site
intensive course

6 forests, dozens of plots
captured w 360-degree
photospheres

DAMN pendic!



X	A	B	C	D
1	Tree Number	Penobscot Number	Tree Species	Diameter Breast Height
2	1	20	Eastern Hemlock	7
3	2	21	Eastern Hemlock	5.4
4	3	22	Eastern Hemlock	6.3
5	4	113	Balsam Fir	8.5
6	5	322	Eastern Hemlock	9.3
7	6	522	Red Pine	7.2
8	7	517	Balsam Fir	7.2
9	8	316	Balsam Fir	7.8
10	9	710	Eastern White Pine	6.3
11	10	819	Red Maple	4.5
12	11	808	Paper Birch	5.6

Appalachian Trail

Appalachian Trail Conservancy: Viewshed Analysis

<https://www.roanoke.com/news/86080-f099-5bf9-b010-db77da>





Forward

- Virtual Watershed project exhibition and installations this Spring
 - Mirror worlds with videospheres, images, and information
- Work with Web3D and OGC to increase interoperability and efficiency
 - Geopackage support
 - 3D Tile support

More Cool examples

Elphel using open standards and open source!



media products in X3D!~

position, m			orientation, °			
x	y	z	azimuth	elevation	roll	
mouse	4.73	12.73	-148.42	1.8	4.9	0
camera	0.10	0.05	-0.91	356.1	1.4	-0.0

shape id: k3d_1527256855_550165__shape_id: 535
dx: 147.6 m dxy: 148.1 m



More Cool Examples

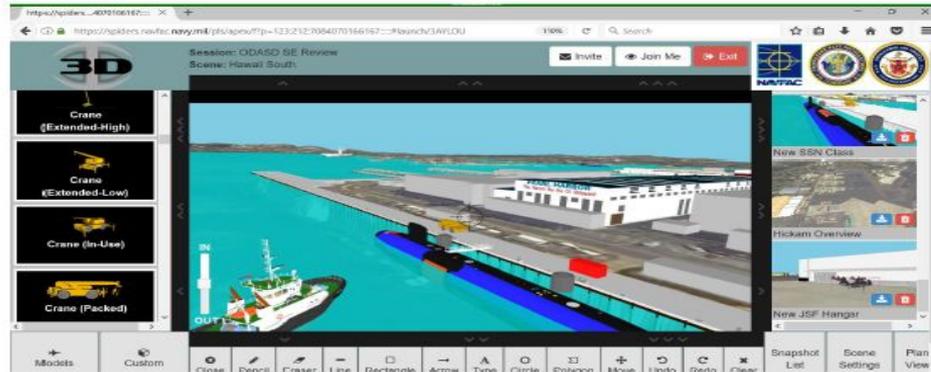
PointFuse X3D export



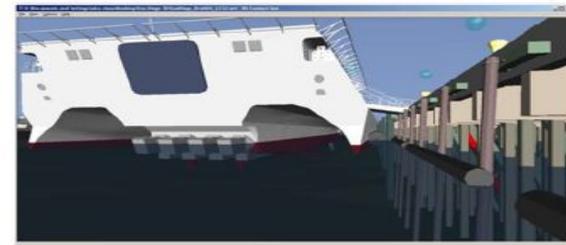


US Navy Facilities: Worldwide

- X3D Database
- X3DOM client



- ✓ Interactive 3D Models in Geospatial Context
- ✓ High Velocity Group Learning Environment





Web3D BOF Today @ 12 PDT !

References

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- Polys N, Hotter J, Lanier M, Purcell L, Wolf J, Hession WC, Sforza P, Ivory JD. Finding frogs: using game-based learning to increase environmental awareness. InProceedings of the 22nd International Conference on 3D Web Technology 2017 Jun 5 (p. 10). ACM.
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