

Visualizing Place across Data and Platforms with X3D

SIGGRAPH 2017 Carto BOF

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**INTERNATIONAL, NON-PROFIT, MEMBER
FUNDED INDUSTRY STANDARDS
DEVELOPMENT ORGANIZATION**



**DEVELOPING THE X3D SPECIFICATION FOR
INTERACTIVE 3D GRAPHICS ON THE WEB**

**INTERNATIONAL PRESENCE AND
PARTICIPATION**

**BUILDING WORLD CLASS OPEN WEB3D
TECHNOLOGY**





What is X3D?

X3D is a ISO standardized specification for interactive 3D graphics

File format and Runtime API (Javascript, Java, ...)

Multiple encodings (file formats): XML, VRML, JSON, based on same abstract object model

Profile and Component structure promotes interoperability



Implementations on multiple platforms: desktop, mobile, web

Updates and Demos

Web3D Members:

- Virginia Tech
- Synergy software

Virginia Tech Mirror Worlds

3D Blacksburg:
Planning and Public Awareness

Catawba Sustainability Center:
Site Capture and Simulation

... and other mashups

Acknowledgements

Great collaborators & Contributors

@ Virginia Tech:

- Cully Hession
- John Munsell
- Peter Sforza
- Haitao Wang
- Ji-Sun Kim
- Student contributors through class projects

3D Blacksburg


- GIS
- Sketchup
- Laser scans
- X3D
- Instant Player w/ gamepad and Steering Navigator



rotation
translation
button



Northern Green Frog
Lithobates clamitans melanota



Summary
The Northern Green Frog (*Lithobates clamitans melanota*, also known as *Lithobates clamitans* and *Lithobates clamitans melanota*) is native to the northeastern North American region. It is a common frog species, and its mating call sounds like the single note of a plucked banjo.

0,500 1,200
0,000 1,000
0,000

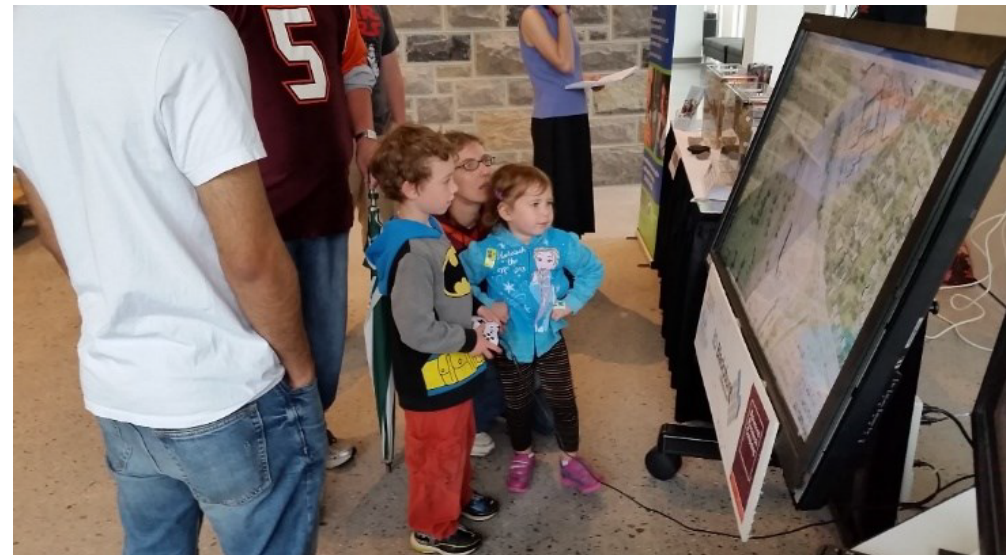


Stroubles Frog Count = 12

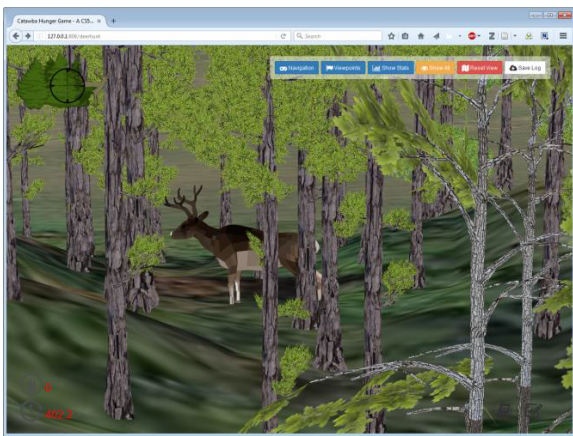
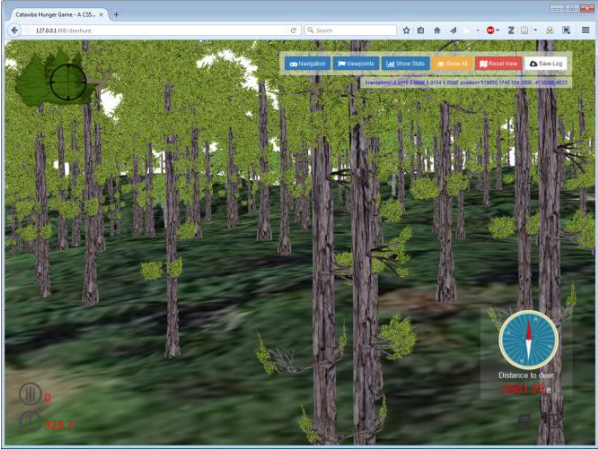
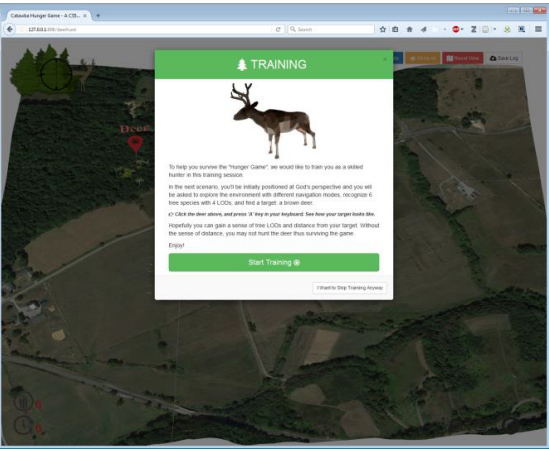
Stroubles
Frog

Virginia Science Festival

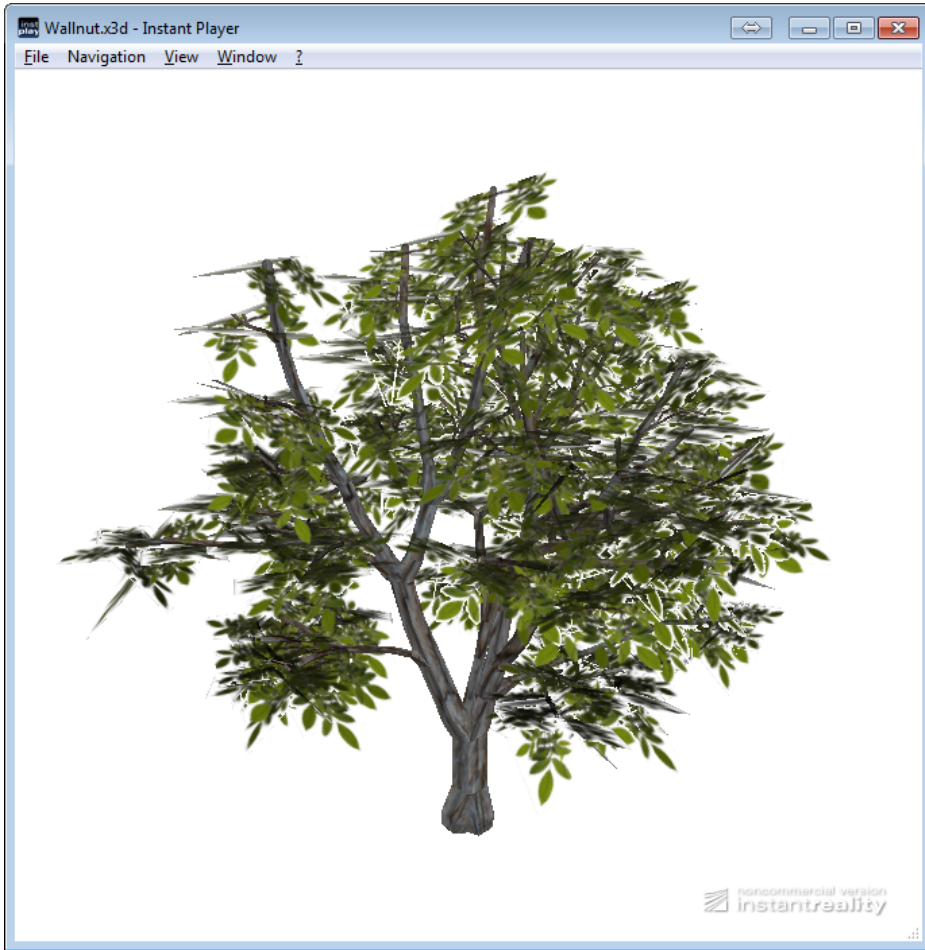
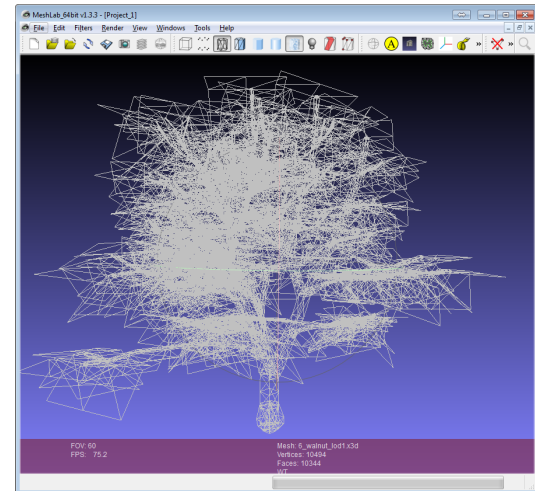
- One day public deployment
- Over 350 visitors, 1754 frogs found
- Observations
 - navigation
 - spatial references (parent → child)



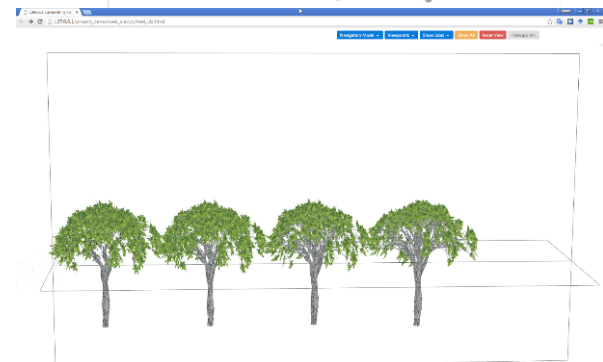
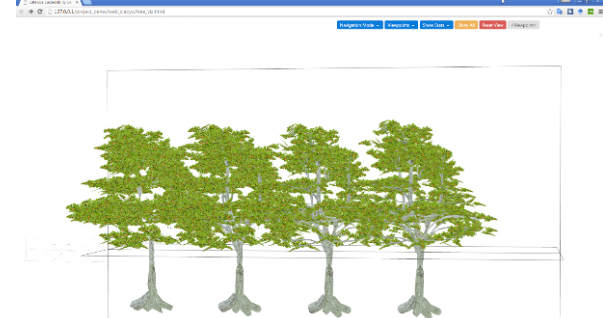
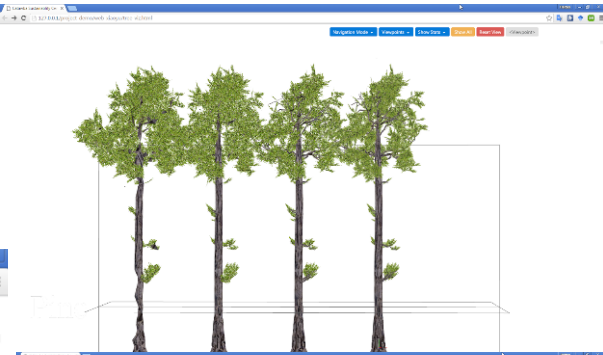
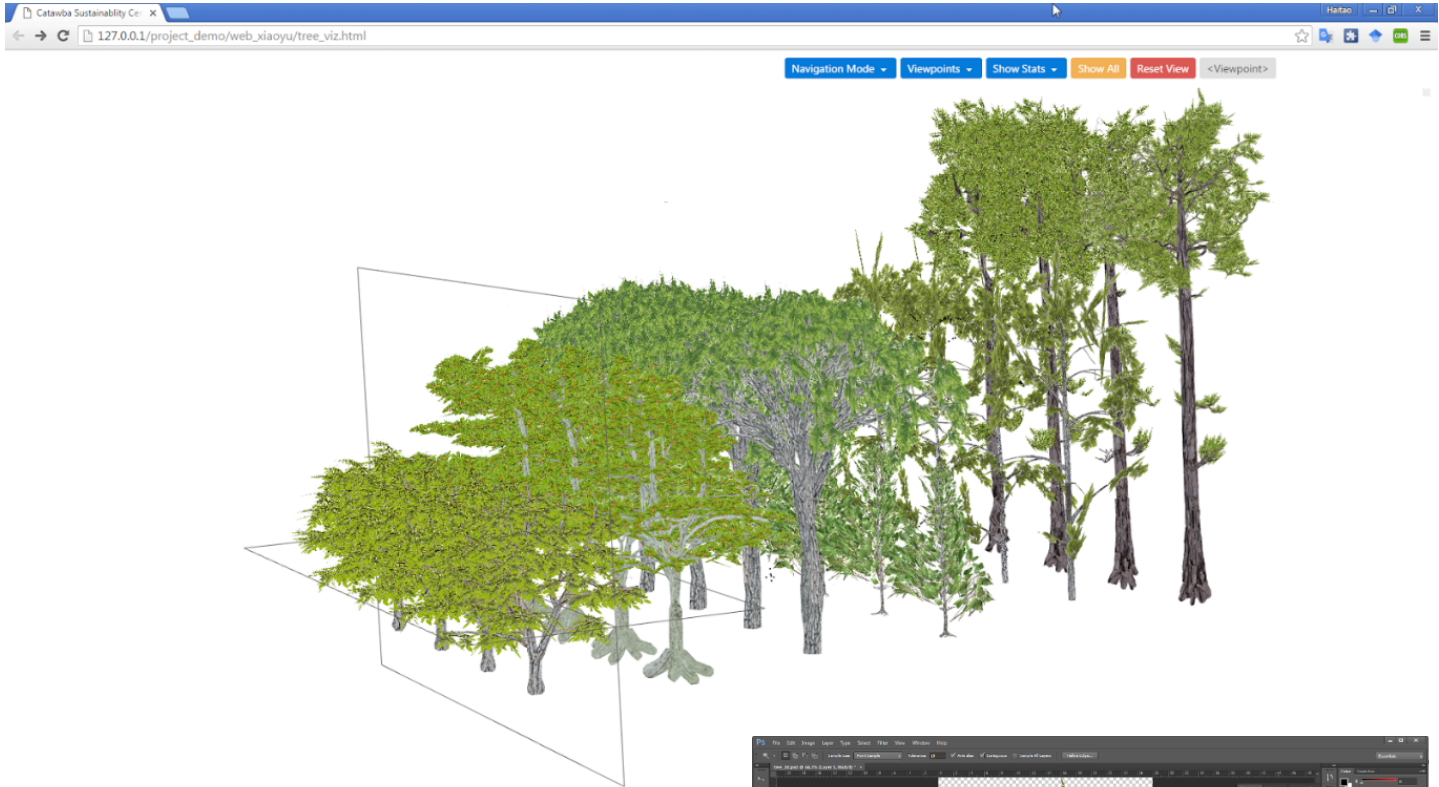
Catawba Sustainability Center



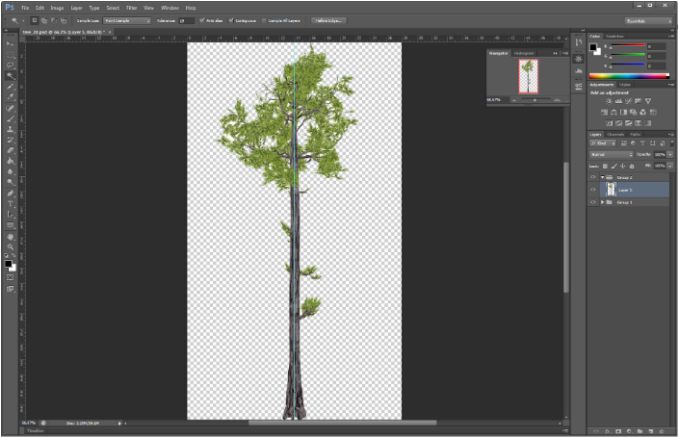
3D Tree model



LODs of trees



Virginia common tree species: oak, pine, maple, poplar, beech, walnut



Tree coordinates

The screenshot displays the QGIS 2.14.0-Essen interface. The main map area shows a grayscale terrain map with numerous green circular points representing tree coordinates. The interface includes a top menu bar, a toolbar, a left sidebar with a Browser Panel and Layers Panel, and a right sidebar with a Processing Toolbox. An 'Attribute table' window is open over the map, showing a table with 13 rows and 7 columns. The table columns are: id, tree_type, height, altitude, region, z, x, and y. The data rows show numerical values for each attribute. A status bar at the bottom indicates the current coordinate (580070, 4138030), scale (1:5,137), rotation (0.0), and projection (EPSG:32617).

id	tree_type	height	altitude	region	z	x	y
0	1	2	0.0000000000	0.0000000000	3	516.5610000000	579828.9601049...
1	2	2	0.0000000000	0.0000000000	3	516.4910000000	579841.3955459...
2	3	2	0.0000000000	0.0000000000	3	516.3260000000	579834.5163660...
3	4	2	0.0000000000	0.0000000000	3	515.5670000000	579845.3643040...
4	5	2	0.0000000000	0.0000000000	3	515.5670000000	579852.2434839...
5	6	2	0.0000000000	0.0000000000	3	514.8550000000	579846.9518069...
6	7	2	0.0000000000	0.0000000000	3	515.1320000000	579856.7414100...
7	8	2	0.0000000000	0.0000000000	3	514.6640000000	579858.5934970...
8	9	2	0.0000000000	0.0000000000	3	514.2460000000	579851.1851490...
9	10	2	0.0000000000	0.0000000000	3	513.8990000000	579850.1268139...
10	11	2	0.0000000000	0.0000000000	3	513.6000000000	579858.8580810...
11	12	2	0.0000000000	0.0000000000	3	513.7870000000	579861.2393360...
12	13	1	0.0000000000	0.0000000000	3	512.9730000000	579866.5310130...
13	14	2	0.0000000000	0.0000000000	3	512.5930000000	579855.9476590...

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