WEB3D 2020

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Tutorial: Extending X3D Realism with Audio Graphs, Acoustic Properties and 3D Spatial Sound Introduction and Overview

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ACMSIGGRAPH web3D CONSORTIUM Korea Computer Graphics Society

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Outline and Presenters

- Introduction and Overview - ***Eftychia Lakka***
- Sound and Acoustics Fundamentals - ***Athanasios G. Malamos***
- X3D4 Tool and Validation Support for Web Audio Graphs- ***Don Brutzman***
- W3C Web Audio API Overview - ***Eftychia Lakka***
- X3D4 Sound model and Validation Examples - ***Eftychia Lakka, All***
- Participants, Questions, Discussion, Future Work - ***All***

Tutorial Title and Summary

- **Title**: “Extending X3D Realism with Audio Graphs, Acoustic Properties and 3D Spatial Sound”

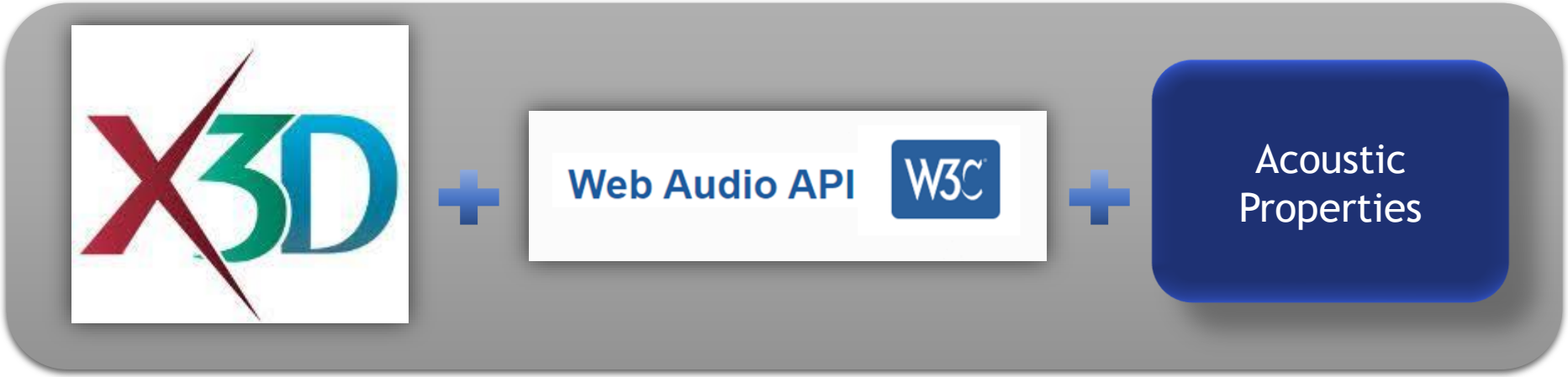
- **Summary**: X3D4 Graphics offers new extensions for the high-fidelity capabilities of Web Audio API, providing advanced 3D spatial sound propagation plus acoustic properties for aural rendering

- **Covered subjects**: Sound propagation and acoustics, X3D modeling, Web Audio API, and spatial sound

- **Learning objectives**: Modeling and modifying high-fidelity advanced audio using Web standards, including X3D4 HTML5 and JavaScript

Tutorial Overview (1)

- Structure of new nodes is suggested in order to extent the X3D specification both with spatial sound attributes and with acoustic properties which are involved in sound propagation, such as surface reflection (specular, diffuse) and wave phenomena (refraction, diffraction)
- The strong point of our work is the fact that the proposal is harmonized with Web Audio API, which is the most effective framework for spatial audio in Web (3D) environments, but it does not depend solely on this, as it can be parsed through others sound libraries. Equally important is the additional of acoustic properties ensuring that the quality of 3D scenes can be increased



Tutorial Overview (2)

The tutorial provides

- an overview of fundamentals of sound and acoustics, the improved X3D4 Sound Component,
- and an overview of the W3C Web Audio API,
- multiple example scenarios are shared for evaluation of the proposed approach, using the new X3D nodes in an interactive Web 3D scene

Contact

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