Agenda Item 1

Featured Start-Up – VisiSonics Corporation

TOPIC: Featured Start-Up – VisiSonics Corporation (information item)

COMMITTEE: Economic Development and Technology Commercialization

DATE OF COMMITTEE MEETING: June 11, 2015

SUMMARY: VisiSonics Corporation, founded by University of Maryland Computer Science faculty members and experienced technology entrepreneurs, has been selected as the featured start-up for the June 11th Committee meeting. The company has an exclusive licensing agreement with the university and has developed technology that is capable of creating a realistic presentation of sound in 3D space.

Notably, Oculus has bought the licensing rights to use audio technology from VisiSonics. In a virtual reality world, the potential applications of such audio technology are numerous.

ALTERNATIVE(S): This item is for information purposes.

FISCAL IMPACT: This item is for information purposes.

CHANCELLOR'S RECOMMENDATION: This item is for information purposes.

COMMITTEE RECOMMENDATION: DATE:

BOARD ACTION: DATE:

SUBMITTED BY: Joseph F. Vivona (301) 445-2783

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VisiSonics – Company Overview

- Recreating how the ears and brain hear audio in the real world

- RealSpace 3D - Real-time physics based software engine
  - Simulation not emulation of how the brain perceives sound
  - Delivering the critical missing component of VR
  - Order of Magnitude Improvement in audio for media & entertainment

- Development and licensing 3D audio software and hardware

- 12 years R&D pioneering 3D Audio - HRTF and 3D audio patents

- Existing customers: Oculus, Tesla and Ford

- Partners: Unity, Wwise, FMOD, Epic/Unreal

- Funded via Grants & Angels, A University of Maryland Spin-off

VisiSonics RealSpace3D leading the recreation of realistic audio
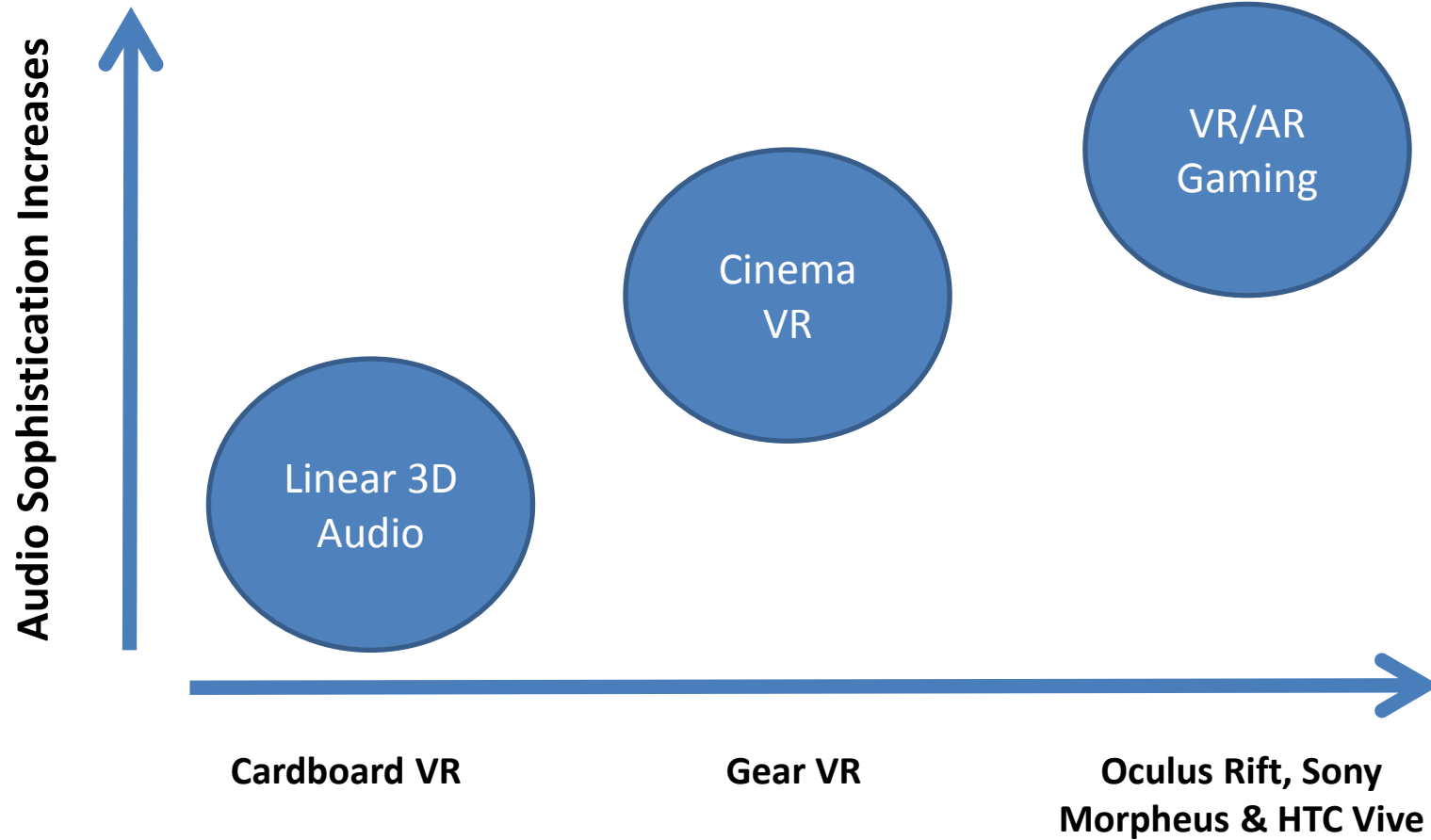
VisiSonics – RealSpace3D™ Audio Engine

- Creating presence and immersion in 3D audio
  - Real-time physics software modeling
    - Optimized for todays platforms and mobile processors
  - Realism through interplay of perceptual cues
    - Simulate head and body reflections via body scattering (HRTF)
    - Simulate environment effects via sound propagation and room scattering (reverb)
    - Simulate object to environment interactions (occlusion and object material)
    - Simulate audio sources position and direction via head tracking
  - Personalized headset experience for all platforms and media
    - Music, Cinema, Gaming, VR and AR
- Competitors focused on linear reproduction & lack immersion
  - Emulation of audio experience not simulation
  - Lack audio positioning in all planes for full 3D immersion

VisiSonics RealSpace3D leads in the recreation of realistic audio

VisiSonics
RealSpace3D
Audio

Complete solution: Capture to Consumption

- VR/AR 3D hardware capture solution
- VisiSonics' Spherical Microphone Array
  - Real-time 3D Audio Capture
  - 64 microphone 360 degree capture
  - Optimized for RealSpace3D playback
  - Competitors capture only in one plane
- Enabling "Best Seat in the House" recording and Real-time Tele-presence
- Future potential to scale down to personal solution

Production requires complete capture to reproduction solutions

ViSiSonics
RealSpace3D
Audio

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Development Roadmap

- ## Enable Greater HRTF Personalization

  - Today: Personal HRTF capture in-lab

  - Tomorrow: Personal HRTF capture at Retail

  - Future: Personal HRTF learning at Home

- ## Driving Greater Realism

  - Leverage greater GPU processing capability

  - Multiple Object Occlusion of Audio Sources

  - Room material and geometry modeling

  - Audio source direction and Velocity (Doppler Effect)

- ## Greater Performance Scaling

  – Latency vs. quality trade-off

Moving technologies out of the lab to consumers

ViSiSonics
RealSpace3D
Audio

Team

Dr. Ramani Duraiswami, Founder, President; Investor, developed VisiSonics' IP. Over 225 pubs; 6 patents; leading authority in Acoustics; PhD JHU; BS, IIT

Adam O'Donovan, Founder, co-inventor of VR sphere, for which he lead development and productization. GPU computing. BS/MS, UMD

Dr. Dmitry Zotkin, co-inventor of 3D audio IP, with over 60 pubs. Lead author of the RealSpace3D audio engine. BS/MS PhysTec Moscow and MS/ PhD UMD

Rod Haxton, Game Engine Plugins & Customer Relations. Experienced programmer in industry

Gregg Wilkes, CEO, Sales/Bus. Dev; Investor. Lead sales and Business Developments teams at Motorola, Sling Media, 3 Com, and Entrega.

Dr. Yuancheng Luo, Research Engineer, Expert on machine learning and spatial audio,

Eugene Evans, Senior Advisor. Seasoned Gaming Executive with experience heading several studios/ start-ups

Conor Mulvey. *Marketing executive*
Brian Goldsman. *Operations*
Jeremy Strain. *Accounting*

VisiSonics
RealSpace3D Audio