

# IDIA

L A B

BALL STATE UNIVERSITY

## INSTITUTE FOR DIGITAL INTERMEDIA ARTS

INFORMATION TECHNOLOGY / HYBRID DESIGN TECHNOLOGIES

2016.1 UPDATE

### UPCOMING

John Fillwalk, Jody Rosenblatt and IDIA Lab will be installing their collaborative mobile light installation in Toronto's Nuit Blanche festival of light art held on October 1st in throughout the city of Toronto, Canada.

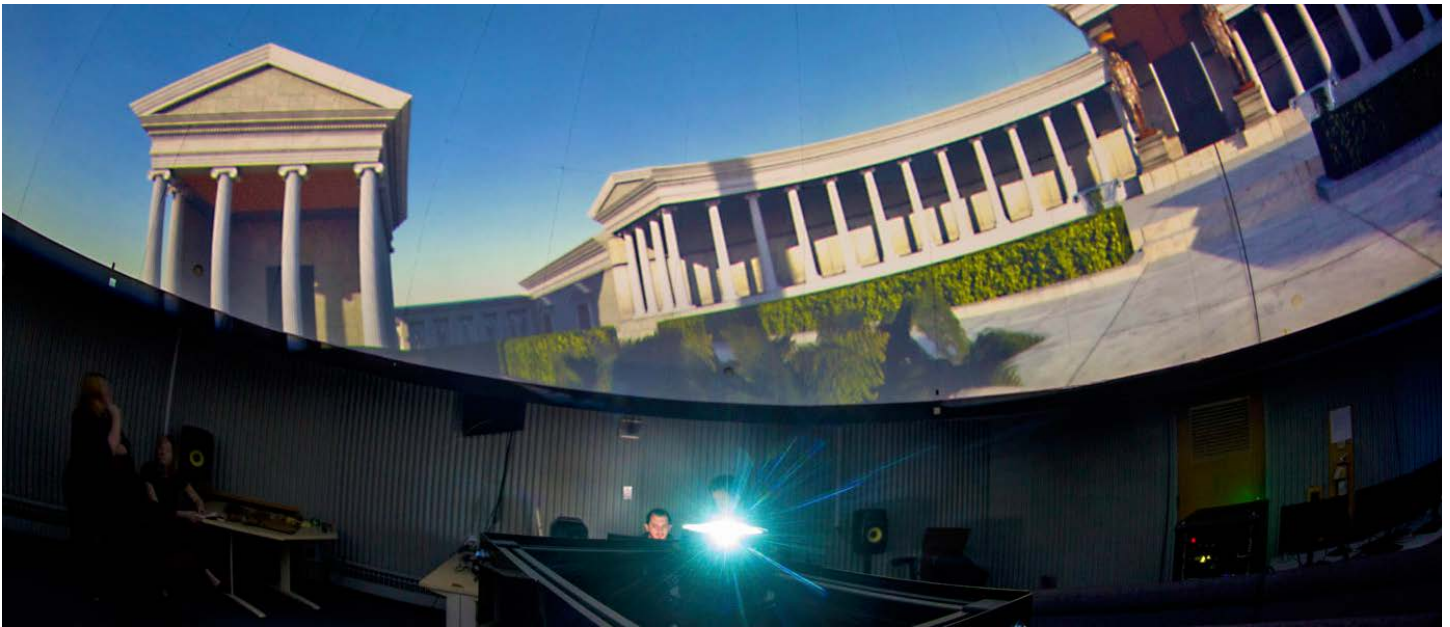
IDIA Lab is continuing its collaborations with Indiana University's Virtual World Heritage Laboratory – designing a joint archaeological survey of the Meridian of Augustus in Rome, Italy – employing ground penetrating radar courtesy of BSU's Applied Archeology Lab.

Paper on cultural heritage simulation accepted in 34th Annual 2016 eCAADe Conference in Oulu, Finland

BSU Office of Information Technology's IDIA Lab creates innovation in the arts, sciences, humanities and technology – engaging students, staff, scholars and clients in contracted projects in 3D, virtual reality and mobile applications. This newsletter includes updates on current IDIA Lab projects including the launch of our Fulldome Media Studio in collaboration with Physics and Astronomy; a recent feature on Indianapolis news station WTHR on virtual reality; our new mobile app exploring the Solar System; and a digital cultural heritage project in Turkey.



OLD PLANETARIUM + CUTTING EDGE STUDIO



## **OLD PLANETARIUM REVAMPED INTO CUTTING-EDGE STUDIO**

Months after the opening of the Charles W. Brown Planetarium, Ball State has found a new use for its almost 50-year-old predecessor. The dome-shaped room in the basement of the Cooper Science Complex has become a production facility dedicated to developing new shows for planetariums nationwide.

"This is an exciting opportunity for us," said planetarium director Ron Kaitchuck, "because the last thing we wanted was for the old planetarium to become a storeroom."

To make use of the space, Kaitchuck and his staff first needed to outfit it with a new digital projector. Helping him secure funding for the device was John Fillwalk, director of Ball State's Hybrid Design Technologies, a division of the Office of Information Technology that seeks out partnerships injecting the arts into STEM education. More commonly known as STEAM, the acronym stands for science, technology, engineering, arts and mathematics.

"We saw the dome as a valuable space where we could create new content — the kind that's hard to test on flat-screen computer monitors," said Fillwalk, who's also director of the Institute for Digital Intermedia Arts (IDIA), a lab specializing in creating virtual reality and 3-D simulations for a broad range of clients including UNESCO, other universities and the History Channel.

Kaitchuck said Fillwalk's expertise — as well as that of his student and professional designers — will let planetarium staff and students in the Department of Physics and Astronomy create shows they couldn't otherwise. "For instance, we don't know how to craft 3-D models, but John does."

"And I'm not a scientist, but Ron is," Fillwalk said. "So there's a nice synergy at play where he advises us on the science side of these productions and we create the graphics."

## **AN ENTREPRENEURIAL VENTURE IN THE MAKING**

While the partnership is new this year, Dayna Thompson, assistant planetarium director, looks forward to seeing how the IDIA Lab helps improve shows Ball State is already creating.

One goal is to generate more revenue from the productions. Take, for example, "Saturn & Beyond," which recently sold to a distribution company for \$18,000. "Had we been able to work with IDIA on that, we could have included more graphics to help explain the science that the program talks about," she said.

Helping assist with the creation of "Saturn & Beyond" was physics and astronomy student Monique Gabb, a Florida native completing her master's degree who wants to work for a government-backed science and engineering research lab like Argonne. "Astronomy is a great gateway to getting people interested in science, so I enjoyed helping create a show like this."

Gabb said when it came time to test "Saturn" for audiences, it was a challenge to get large blocks of screen time inside the 52-foot domed Brown Planetarium. "There are so many shows going on over there, it was hard to work us in." With the conversion of the old planetarium into a new production dome, "we no longer have to worry about that issue."

Kaitchuck said the size of the old planetarium is also major boon for its new use. "As far as I know, no other planetarium in the country has at its disposal a 30-foot dome for production purposes only," he said, noting New York City's Hayden Planetarium, inside the American Museum of Natural History, uses a production dome a fraction of that size.

### **IDIA TO CREATE NEW, INTERACTIVE CONTENT**

Fillwalk has his own aspirations for the old planetarium, now that he's helped transform it into a studio — one equipped with game-engine computers and a digital projector encased inside a protective fabricated display created by IDIA artist and Ball State alumnus Chris Harrison, '10, MS '12.

Most of Fillwalk's plans involve using the space to help IDIA expand upon — and reshape — content the lab has created for past projects, including virtual simulations of Stonehenge and other ancient ruins in various celestial alignments. "It's a great opportunity for us to test what we already do in another immersive environment. A dome gives you the same kind of view you'd see with a head-mounted, immersive display, but now we don't have to wear goggles to get it."

IDIA is also exploring development of dome-spaced content for new clients including museums and aerospace companies. "My biggest interest is finding ways to allow audiences to be more interactive with these kinds of show," Fillwalk explained. "If you could hold your phone up as you're watching, and have a planet or star jump out at you — I think kids would love that."



## OPPORTUNITIES FOR EDUCATION

Closer to home, Fillwalk and his team are working with Thompson on projects for the Brown Planetarium, which in its first year had about 20,000 visitors — more than the double the number of people who visited the old planetarium in its last full year of operation.

For the planetarium's show, "Black Holes, Worm Holes, and the Movies," IDIA artists visualized travel through a worm hole, which scientists consider to be a shortcut connecting two distant points in space-time. And for an upcoming Halloween show, Fillwalk and his staff will create graphics illustrating the history of the holiday and its astronomical origins.

Kaitchuck wants to use the old planetarium for future entrepreneurial learning opportunities that will let students outside his department help create new planetarium shows. "We could use music media production students for the audio, creative writing majors to help with scripts — it could be a very diverse group," he said. "And now, with John's help, the kinds of work we'll be able to do ... well, the sky really is the limit."

By Gail Werner

DOMe Lab photographs courtesy of Ball State University, Division of Strategic Communication

<http://bit.ly/2anJRzr>



Explore the solar system by touch and augmented reality. New app for iOS, Android and Oculus Rift designed by BSU's IDIA Lab allows users to learn about our sun and planets - and their moons. Physical museum objects trigger augmented experiences of each planet, providing deeper context and understanding. View the moon's orbits, examine each moon, the planet's atmosphere and unique features such as Jupiter's Great Red Spot. IDIA designed this augmented reality app as a prototype for the Boston Museum of Science Planetarium.

<https://youtu.be/zCN6lTXiGzg>



## BSU'S IDIA LAB FEATURED ON WTHR NEWS

The future of home entertainment is taking a giant step forward into the world of virtual reality. More devices are hitting the market that transform the way we look at the world around us, and a group of developers at Ball State is on the cutting edge.

It's something we experienced first-hand at Ball State University, where they produce content for virtual reality devices at the Institute for Digital Intermedia Arts. The lab is located in the architecture building on the Ball State Campus, where the focus is on the exploration the arts, science and technology.

For the last ten years, Ball State has been developing a wide range of projects for museums, the History Channel and other clients.

John Fillwalk oversees the work done there.

"We basically explore 3D simulation and virtual reality," he explained. "The skill sets from the staff are across computer science to design to animation."

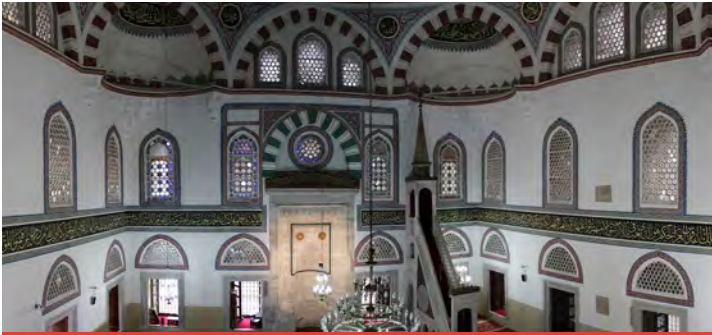
"We continue to further the emerging media brand aspect of this university, giving students professional opportunities to work and stay in Indiana for design technology jobs," said John Fillwalk.

The virtual reality industry estimates more than 7 million headsets will ship this year, even though researchers have found more than half of Americans have no interest in VR and don't know what it is. Developers foresee huge growth in the next six years as they develop virtual reality social media apps, combined with lower prices for the technology.

<http://bit.ly/29JHJAL>

## TWEETS

- BSU DOME Lab render by IDIA for Charles Brown Planetarium illustrating the effects of traveling through a wormhole! <http://bit.ly/29TmBvy>
- IDIA Lab is beginning work on three interactive museum installations for the Buffalo Bill Center of the West in Cody, WY. Bringing the past to life through augmented and virtual reality experiences.



**DIGITAL HERITAGE MOSQUE**

IDIA Lab's Chris Harrison presented on the topic of photogrammetry at a workshop in İzmit, Turkey, the results of which have recently been published in Mimarlık | Tasarım Kültürü Dergisi (Architecture | Design Culture Magazine).

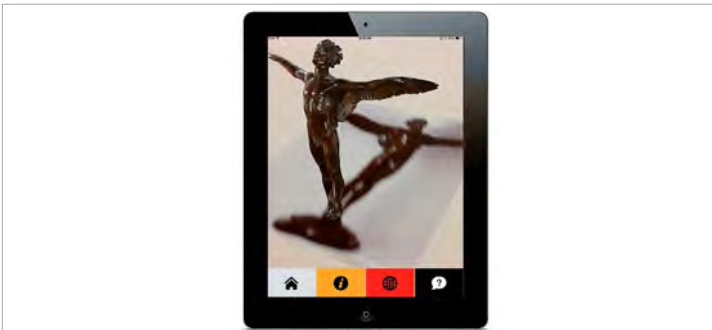
<https://skfb.ly/PKpx>



**FITBIT CALENDAR APP**

Luvtaps - our new Fitbit calendar reminder app connects your Google Calendar to your Fitbit Flex, Charge and Surge. Add a new event on your Google calendar and get reminders for your work or personal life, medication or any schedule! Set-up is free at <http://lvtaps.org>.

[https://youtu.be/\\_mtsCJb-UU](https://youtu.be/_mtsCJb-UU)



**AR MUSEUM VISITOR APP**

Augmented Reality iOS app by IDIA Lab at Ball State University to enhance visitor experiences for Natural History and Art museums. This project uses image targeting to create an interactive 3D exhibit that can be animated and examined by the user as they learn about its history. <https://youtu.be/P2hhyjKyyoM>

<https://youtu.be/crUvkbedUKE>



**INTERACTIVE DFAB CHASSIS**

IDIA Lab's new interactive digital fabrication chassis designed for Microsoft's Pixelsense. LED light and sound controlled by the Arduino micro controller using proximity sensors. Table supports a digital museum archive interface designed by IDIA.

<https://youtu.be/Zoie6UhDCzs>

## ABOUT HDT AND IDIA

Hybrid Design Technologies and the Institute for Digital Intermedia Arts explore of the intersections between the arts, science and technology. Scholarly, creative and pedagogical projects investigate virtual reality, Human Computer Interface, augmented reality, mobile apps, visualization and 3D simulation. The labs' staff and students develop projects in partnership with international clients in this innovative studio initiative investigating the forefront of emergent media design and learning.