



Fluid Flow Experience: Interactive Display

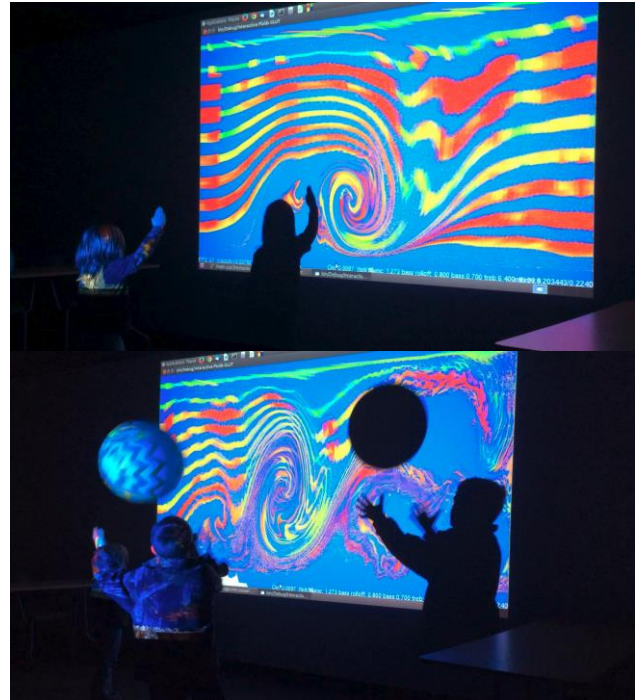
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TECHNOLOGY

This novel interactive display projects a computer-generated depiction of fluid flow against a wall or other surface. When any object is placed in the path of the projector beam, casting a shadow in the image, the fluid flow changes to seemingly flow around the shadow.

Large projections can allow participants to walk in front of the image and see the fluid swirl and flow around their silhouettes. In addition, objects of interest such as airfoils, models of fish, and any other object can be suspended by fine wires or utilized as puppets to observe the flow around these objects. If the projected surface is a whiteboard, shapes can be drawn on the whiteboard in dark marker, or dark refrigerator magnets could be used on a magnetic surface.

An installation of this kind could be useful in multiple settings. It would provide a fun yet educational attraction at a museum for children and adults. In airport terminals, this display can provide an alternative to sitting and waiting, where parents and kids alike could be active, burn some energy, and also learn about fluid and air flow. Sound sensitive versions may be utilized for music performances and on stage. Lastly, the scientific aspects of fluid or air flow can be used for teaching in school or university courses.



To see the technology in action, please follow these links:

<https://www.youtube.com/watch?v=cLQ98Wizx7Y>

<https://youtu.be/NG2vzb3hODc>

<https://youtu.be/OO6Ywrq4brA>

FEATURES/BENEFITS

- **Educational** – The software utilizes scientifically accurate computational fluid dynamics software to model the flow
- **Flexible Set-up** – A range of pricing for projection and CPU components can be utilized to fit your budget needs and your specific display space
- **Multiple Applications** – The technology can be used in museums, airports, and in the classroom; sound sensitive versions may be utilized for music performances and on stage
- **Upgrades** – Different versions of the technology can be adapted for the desired application



INTELLECTUAL PROPERTY

This software is a registered with the US copyright office and is available for licensing.

MARKETS

Children's museums, which attract more than 30 million visitors annually, according to research conducted by the Association of Children's Museums (ACM) in 2007, are a growing industry. According to ACM, in the mid-1970s, there were 38 children's museums across the nation. That number grew to 118 between 1976 and 1990, and, since 1990, an additional 125 children's museums have opened in the United States. There are approximately 850 million visits each year to American museums. Museums spend more than \$2 billion a year on education activities; the typical museum devotes three-quarters of its education budget to K-12 students.

The number of public use airports in the US alone was 5,233 in 2013. An increasing number of airports are attempting to liven up the pre-flight experience by providing a variety of weird and wonderful distractions to keep the weary traveler entertained. From live music concerts to contemporary art exhibitions and from IMAX cinemas to public ice rinks, some have so much going on that they are on the verge of becoming travel destinations in themselves. <http://www.cnn.com/2013/04/02/travel/gateway-airport-entertainment/>

Increasing need for student engagement and collaboration is driving significant change in instructional technology in classrooms. While widespread use of interactive flat panel displays may take a few years, Interactive White Boards are commonly used in the education vertical, particularly in K-12 schools, due to their price, flexibility, design and ability to engage with students. As it is, interactive display devices are "front-and-center" in about 60 percent of classrooms in the United States, according to Futuresource; by 2019, 73 percent of classrooms are expected to have some interactive display at the front of the classroom.

<https://technology.ihs.com/521521/need-for-student-engagement-and-collaboration-drives-demand-for-interactive-instructional-technologies-in-the-education-marke>

INVENTOR

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Tom Hansen is Senior Information Processing Consultant and Ph.D. candidate in the School of Freshwater Sciences at the University of Wisconsin-Milwaukee. Tom is involved in many areas of research at the School, including database and information systems design, networking, data visualization, and the design and deployment of environmental sensors: aboard ships, on buoys, as well as on land. Tom has been a professional app designer, software engineer, and database architect for over 25 years, in diverse industries including health care, real estate, and science. Most recently, Tom has been concurrently pursuing a Ph.D. in Freshwater Science. Tom also actively performs semi-professionally as a violinist in styles ranging from Irish rock to classical.

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