



Using ShadowSense to Bring a Mobile Hit to the Arcades

The Unique Challenge

With the abundance of mobile gaming options now available to anyone with a smartphone, it is becoming increasingly difficult to produce arcade games that are engaging and have mass appeal. Game makers need to find creative ways to draw people, young and old, out of their homes and away from their mobile phones.

ICE recently obtained the rights to produce an arcade game based on the widely popular mobile game developed by Rovio Entertainment - Angry Birds. With hundreds of millions of monthly active users, this was an opportunity to create something special. In the past, arcade versions of mobile games had been designed by simply putting them onto a larger touchscreen. Many of these games had limited success because they didn't offer anything truly unique from the mobile experience.

With this in mind, Drew Krouse, Vice President of Development at ICE, set out to design a game that would combine traditional electromechanical aspects with leading edge technology. His idea still involved a touchscreen, but he wanted to use it in a completely different manner. Instead of receiving touches from fingers, the screen would register touches from a bouncing ball. Using an electromechanical slingshot, a player could sling a rubber ball (the birds) at a touchscreen and knock down the various obstacles on screen (the pigs) to earn valuable coupons for redemption.

The challenge was finding a touchscreen that could detect the instantaneous impact caused by a ball hitting a screen. A ball whose speed and point of impact would be completely unpredictable.

Innovative Concepts in Entertainment

Innovative Concepts in Entertainment (ICE) has been a manufacturer of the best amusement and arcade games since 1982. They are an innovator of coin operated amusement games, consistently manufacturing the highest quality redemption games, and have become an industry leading producer of sports games for the home, arcade and office.

Today, ICE carries one of the largest, most prolific product ranges in the coin operated industry. They are known for immensely popular games such as Super Chexx, Down the Clown, Kung Fu Panda Dojo Mojo and the carnival classic Gold Fishin'. Their products are sold into over 70 different countries around the globe.



The Innovative ShadowSense Solution

In early experiments it was determined that the ball being shot at the touchscreen was only making a measurable impact of a few milliseconds. For most touch technologies this wasn't enough time to capture the information. In the event that it could be captured, the information had to be delivered to the host computer in a timely manner to prevent any lag in gameplay. Technologies that rely on complicated onboard graphic processors, drivers or resources from a computer, cannot accomplish this.

Having worked with Baanto in the past, ICE knew that if there was a touch technology that could meet their requirements then it would be ShadowSense. Using patented software algorithms, ShadowSense computes the position and size of a touch object directly on the frame without requiring any external computing resources. This allowed Baanto to optimize the touch detection algorithm to not only detect the instantaneous touch of the ball but to also relay this information to the computer fast enough that the content on the screen could reflect the impact without noticeable delay.

Another critical requirement of the touchscreen was accuracy. The arcade industry is very competitive and if a game isn't immediately engaging then players will move on to the next one. It was essential to the responsiveness of the game that when a ball hit a particular location on the screen, the exact co-ordinates and size of the impact were translated to the computer. ShadowSense was able to accomplish this with its unique ability to detect the pressure of an object based on the size of the shadow, and by using the standard USB HID class to communicate to the computer.

Having found the only solution that met their requirements, ICE equipped each of the Angry Birds arcade machines with a 55" ShadowSense touch frame.

The Successful Result

In August of 2015, the Angry Birds Arcade game was released as a month long exclusive to every Dave & Buster's location in North America. Each of the over 77 restaurant/arcades throughout the United States and Canada featured the game, which quickly became one of the most popular attractions. A national television ad was released, promoting the game, giving it even further recognition. The commercial can be seen at <https://youtu.be/PQ2ecV6dQbs>.

Using ShadowSense, ICE was able to produce a fun and captivating game that differentiates it from the mobile experience while still paying homage to the Angry Birds franchise.

