INNOVATION OF TOUCH PROJECTOR TECHNOLOGY AND ITS PURPOSE

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ABSTRACT

The primary objective of this article is to explain about touch projector technology concept and how to use it. This paper intention is to look at the present touch projector as a new technology aimed to enable performing tasks as a huge touch screen. This paper briefs on the historical background and provide review of three recent devices which are Touch Pico, Cicret Bracelet and Dell Interactive Projector S520. The discussion focuses on their uses in business, education and entertainment. Additionally some areas of improvements are highlighted such as the return value and surface problems. Finally, this paper offers some suggestions to make the devices better.

Index Terms: Cicret Bracelet, Dell Interactive Projector, Touch Pico, Touch Projector Devices.

I. INTRODUCTION

The touch projector technology "magic" is that it is able to turn any surface into a touch screen. Touch projector comes in a separate dedicated device, which varies in sizes, depending on the resolution and space of display area. It is able to display the contents from any supported compatible software such as Windows 8 and Android. It can be displayed on any suitable surface such as data show, white board, wall, arm or the interactive table for 16-100 inches projector size. Users can interact with the multi-touch screen by using the touch projector stylus pen, fingers or traditional dry-erase markers.

The technology has a strong demand since it make project reports or lessons to become something special. It provides the ease of interaction with the touch screen for many people at the same time, sharing the ideas and encourages collaboration with a complete interactive projection solution that combines the functionality of a whiteboard with the features of a multi-touch display. It helps the educational institutions to accomplish the effective learning process as in Figure 1.

Figure 1. Epson-595Wi Touch Projector Used in A Classroom

II. LITERATURE REVIEW

Historical background:-Boring, S., Baur, D., Butz, A., Gustafson, S., & Baudisch, in 1992, Tani et al. proposed to remotely operate machines in a factory by manipulating a live video image on a computer screen. Touch projector, a system that enables users to interact with remote screens through a live video image on their mobile device. The handheld device tracks itself with respect to the surrounding displays.

-Touch on the video image is "projected" onto the target display in view, as if it had occurred there. This literal adaptation of Tani's idea, however, fails because handheld video does not offer enough stability and control to enable precise manipulation. Later, many experts try to address this with a series of improvements such as building a separate device, which has its own operating system.

Overview:-The prototype technology turns any surface such as walls, tables, or floors into an interactive touch screen. This has been in development for quite a few years. Nowadays, the technology has matured and development has been quite successful. Almost anyone can get his or her hands on that device. There are many variants in the world market which surrounds on the idea of a touch projector. Many of them are available for sale online. On the other hand, those that are still under the development stage, some companies allows pre-order.

III. CICRET BRACELET

With wearable gaining some traction, smart phones and tablets are by no means the only mobile devices around nowadays. Now, though, Cicret is looking to take things a step farther and turn your arm into a Smartphone. The Cicret Bracelet has Wi-Fi, Bluetooth and Micro USB connectivity The Cicret Bracelet uses a row of eight proximity sensors to work out where the user's fin. The Cicret Bracelet is designed to be an independent device. Conceived 12 months ago and designed over the course of 6 months, the Cicret Bracelet is a small wristband that looks similar to the Jawbone Up. The Bracelet comprises a pico projector and a row of eight proximity sensors that point towards the user's forearm. It operates as a standalone device and, when activated with a twist of the wrist, projects an Android interface onto the users arm; much like Chris Harrison's Skin put research. The proximity sensors detect where the user's finger or fingers are and allow them to interact with the interface as they would any other Android device.

Figure 2. Cicret Bracelet

IV. DELL INTERACTIVE PROJECTOR

Take your lessons and presentations to the next level with the Dell Interactive Projector - S520, a unique interactive projection solution for real-time collaboration and active engagement that features multi-touch capabilities, Intel® Wireless Display (Intel® WiDi) + Mira cast technology1 and advanced wireless functions for classrooms and conference rooms of nearly any size. The S520 takes some of the features of interactive whiteboards and interactive LCD displays, and combines them in one convenient solution.
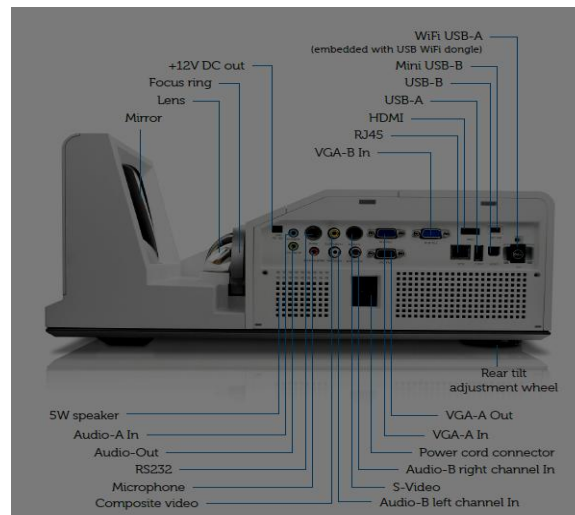

Figure 3. Dell Interactive Ultra Short Throw Projector

V. TOUCH PICO

The Touch Pico projector is launching today on IndieGogo. Announced at this year's CES, it's about as powerful as a mid-range Android phone, and has a camera that sees when you draw on the surface it's projecting on- it basically turns any surface into a giant tablet-like display. The Touch Pico was a surprisingly quick performer when we tried it out in our offices last week. While you have to use the included stylus to get the most accurate control of the "screen," it was responsive to taps and swipes and didn't take too long to switch between apps. The interface is stock Android, though it's running an older build.

Figure 4. View Touch Pico

5.1 Magic Touch Virtual Projection Keyboard

This types of devices are available known as magic cube projection Keyboard Company such as cellulon designs this keyboard projector. Basic design of this projector is shown in figure.

The projection laser displays the layout onto any surface; keystrokes are recognized and relayed via an invisible infrared laser combined with an optical sensor. Process of reorganization works as: when user presses key on projected keyboard, the infrared layer is interrupted. This produces IR reflections that are recognized by sensor in three dimensions, allowing the system to assign a coordinate.

Figure 5.Magic Touch Virtual Projection Keyboard

VI. PRACTICAL APPLICATION

The versatility of touch projector has become very popular in recent years. No surprise here, no one can deny how useful they are. There are many benefits to having a touch projector in any institutions or home, far more than most people realize. However, the truth is, only few people actually can get the full benefit out of these projectors compared to the many features a touch projector can deliver.

1. Education:-The biggest benefit of touch projector technology is in education. The easiest solution for classrooms across the world is to use touch projector. It enables the teacher and student to perform functions such as writing on the interactive touch surface with the stylus, drag-and-drop images or text from one place to another. It helps the teacher to display the lesson with sound and let the students engage with educational multimedia activities by drawing/writing the answers, watch simulations and view graphics. The portable device can be transferred from classroom to classroom, eliminating costly hardware upgrades especially in the rural area schools.

2. Business Use:-Touch projector also helps businesses in carrying out business activity by providing interactive visual display. A manger can communicate so many different ways with his workers. Sending an instruction, progress discussion or learning how to figure out any problem by displaying it on a touch screen and directly interacting with it.

3. Entertainment:-Gaming may become one of the strongest reasons to buy a touch projector. Kids always wish for a bigger screen to play Angry Birds. With a touch project, it will become more fun and interactive by simply touching the wall. Other fun uses could be the parents want to show their favorite movie in a child's bedroom, while camping or on vacation. All in one, no extra pieces needed. Another one potential hit of touch projector is for people who are engaged with physical activities. Two examples of these are practicing yoga pose or learning a golf stance. With a touch projector an enlarged video tutorial will be like having the trainer in front of you.

VII. COMPARISON

From the previous discussion, touch projector has amazing features. Developers were able to use this technology to be the beginning of the 'Future is tomorrow' concept. With more research and design, consumer will be spoilt for choices. Consumer would evaluate between ease of use, cost, durability and power consumption. A summary and comparison of the three touch projector mentioned before, the Touch Pico, Cicret Bracelet and Dell Interactive Projector are tabulated. Unfortunately, Cicret Bracelet details are not readily available due to it is still under development even with contacting the developing team members.

VIII. CONCLUSION

In summary, the real issue faced by touch projector technology is not whether it is completely good or bad but whether the device features is comprehensive enough to meet user's expectation whether in business, education or entertainment. The value for money comparing price, surface problems, integrated operating system and built-in speaker may vary in terms of importance from one person to another. All in all, the four weakness mentioned above should be addressed accordingly because it can be the break or make for the device.

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