

A

Seminar report

On

Microsoft Surface

Submitted in partial fulfillment of the requirement for the award of degree
of Bachelor of Technology in Computer Science

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Preface

I have made this report file on the topic **Microsoft Surface**; I have tried my best to elucidate all the relevant detail to the topic to be included in the report. While in the beginning I have tried to give a general view about this topic.

My efforts and wholehearted co-corporation of each and everyone has ended on a successful note. I express my sincere gratitude towho assisting me throughout the preparation of this topic. I thank him for providing me the reinforcement, confidence and most importantly the track for the topic whenever I needed it.

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ABSTRACT

Microsoft Surface, is a forthcoming Multi-touch product from Microsoft. This is developed as a software and hardware combination technology. That allows a user, or multiple users, to manipulate digital content by the use of natural motions, hand gestures, or physical objects.

It was announced on May 29, 2007 at D5 conference, and is expected to be released by commercial partners in spring 2008. Initial customers will be in the hospitality businesses, such as restaurants, hotels, retail, public entertainment venues and the military for tactical overviews.

A projector underneath the surface projects an image onto its underside, while five cameras in the machine's housing record reflections of infrared light from human fingertips. The camera can also recognize objects placed on the surface if those objects have specially-designed "tags" applied to them.

Users can interact with the machine by touching or dragging their fingertips and objects such as paintbrushes across the screen, or by placing and moving tagged objects.

INTRODUCTION

We are going to represent paper on “**Microsoft surface**” which is known as **surface computing**.

Microsoft Surface is a forthcoming Multi-touch product from Microsoft which is developed as software and hardware combination technology.

Minority Report meets the kitchen table in the new Surface from Microsoft. Claiming that surface computing is "**as significant as the move from DOS to GUI,**" the company today announced a tabletop device with an integrated 30-inch screen and five cameras to enable multitouch access to music, photos, the web, and more. According to Microsoft, Surface isn't simply a regular PC with a touch interface.

It's a whole new category of computing device that will supplement rather than replace traditional machines. Surface is essentially a Windows Vista PC tucked inside a table, topped with a 30-inch reflective surface in a clear acrylic frame.

Surface features a touch interface, but it doesn't use a touch screen. Instead, five separate cameras are used to record motion on the table's surface.

As spoke with Nigel Keam, a member of the Surface team, about the

technology in the device, and he explained that five cameras were needed because of field angle issues. In order to get the table as low as it is, five

Cameras are used so that each one can have a small field of view. That translates into better resolution and speed (measured in pixels/second) than a single camera with an exceptionally wide-angle view of the table surface.

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OVERVIEW

Surface is essentially a Windows Vista PC tucked inside a table, topped with a 30-inch reflective surface in a clear acrylic frame. A projector underneath the surface projects an image onto its underside, while five cameras in the machine's housing record reflections of infrared light from human fingertips. The camera can also recognize objects placed on the surface if those objects have specially-designed "tags" applied to them. Users can interact with the machine by touching or dragging their fingertips and objects such as paintbrushes across the screen, or by placing and moving tagged objects.

Surface has been optimized to respond to 52 touches at a time. During a demonstration with a reporter, Mark Bolger, the Surface Computing group's marketing director, "dipped" his finger in an on-screen paint palette, then dragged it across the screen to draw a smiley face. Then he used all 10 fingers at once to give the face a full head of hair.

In addition to recognizing finger movements, Microsoft Surface can also identify physical objects. Microsoft says that when a diner sets down a wine glass, for example, the table can automatically offer additional wine choices tailored to the dinner being eaten.

Prices will reportedly be \$5,000 to \$10,000 per unit. However Microsoft

said it expects prices to drop enough to make consumer versions feasible in 3 to 5 years.

Partner companies plan to use the Surface in their hotels, restaurants, and retail stores. The Surface is to be used to choose meals at restaurants, plan vacations and spots to visit from the hotel room. Starwood Hotels plan to allow users to drop a credit card on the table to pay for music, books, and other amenities offered at the resort. In T-Mobile stores, the plans for the Surface include dropping two different phones on the table and having the customer is able to view and compare prices, features, and plans.

The machines, which Microsoft debuted May 30, 2007 at a technology conference in Carlsbad, California, were set to arrive in November 2007 in T-Mobile USA stores and properties owned by Starwood Hotels & Resorts Worldwide Inc. and Harrah's Entertainment Inc. But with delays in developing custom applications for each of the partners, it will take until spring 2008 before the machines start showing up at these locations.

HISTROY

The technology behind Surface is called Multi-touch. It has at least a 25-year history, beginning in 1982, with pioneering work being done at the University of Toronto (multi-touch tablets) and Bell Labs (multi-touch screens).

The product idea for Surface was initially conceptualized in 2001 by Steven Bathiche of Microsoft Hardware and Andy Wilson of Microsoft Research. In October 2001, a virtual team was formed with Bathiche and Wilson as key members, to bring the idea to the next stage of development.

In 2003, the team presented the idea to the Microsoft Chairman Bill Gates, in a group review. Later, the virtual team was expanded and a prototype nicknamed T1 was produced within a month. The prototype was based on an IKEA table with a hole cut in the top and a sheet of architect vellum used as a diffuser. The team also developed some applications, including pinball, a photo browser and a video puzzle. Over the next year, Microsoft built more than 85 early prototypes for Surface. The final hardware design was completed in 2005.

A similar concept was used in the 2002 science fiction movie *Minority Report* and in the 2005 science fiction movie *The Island*, by Sean Bean's character "Merrick". As noted in the DVD commentary, the director Michael

Bay stated the concept of the device came from consultation with Microsoft during the making of the movie. One of the film's technology consultant's associates from MIT later joined Microsoft to work on the Surface project.

Surface was unveiled by Microsoft CEO Steve Ballmer on May 30, 2007 at The Wall Street Journal's 'D: All Things Digital' conference in Carlsbad, California.

Surface Computing is part of Microsoft's Productivity and Extended Consumer Experiences Group, which is within the Entertainment & Devices division. The first few companies to deploy Surface will include Harrah's Entertainment, Starwood Hotels & Resorts Worldwide, T-Mobile and a distributor, International Game Technology

FEATURES

Surface computer.

Microsoft notes four main components being important in Surface's interface: direct interaction, multi-touch contact, a multi-user experience, and object recognition.

Direct interaction refers to the user's ability to simply reach out and touch the interface of an application in order to interact with it, without the need for a mouse or keyboard.

Multi-touch contact refers to the ability to have multiple contact points with an interface, unlike with a mouse, where there is only one cursor. Multi-user is a benefit of multi-touch -- several people can orient themselves on different sides of the surface to interact with an application simultaneously.

Object recognition refers to the device's ability to recognize the presence and orientation of tagged objects placed on top of it.

The technology allows non-digital objects to be used as input devices. In one example, a normal paint brush was used to create a digital painting in the software. This is made possible by the fact that, in using cameras for input,

The system does not rely on restrictive properties required of conventional touch screen or touchpad devices such as the capacitance, electrical resistance, or temperature of the tool used.

The computer's "vision" is created by a near-infrared, 850-nanometer-wavelength LED light source aimed at the surface. When an object touches the tabletop, the light is reflected to multiple infrared cameras with a net resolution of 1280 x 960, allowing it to sense, and react to items touching the tabletop.

Surface will ship with basic applications, including photos, music, virtual concierge, and games, that can be customized for the customers.

SPECIFICATIONS

Surface is a 30-inch (76 cm) display in a table-like form factor, 22 inches (56 cm) high, 21 inches (53 cm) deep, and 42 inches (107 cm) wide. The Surface tabletop is acrylic, and its interior frame is powder-coated steel. The software platform runs on Windows Vista and has wired Ethernet 10/100, wireless 802.11 b/g, and Bluetooth 2.0 connectivity.

CARLSBAD, Calif. — May 29, 2007 — Picture a surface that can recognize physical objects from a paintbrush to a cell phone and allows hands-on, direct control of content such as photos, music and maps.

Today at the Wall Street Journal's D: All Things Digital conference, Microsoft Corp. CEO Steve Ballmer will unveil Microsoft Surface™, the first in a new category of surface computing products from Microsoft that breaks down traditional barriers between people and technology.

Surface turns an ordinary tabletop into a vibrant, dynamic surface that provides effortless interaction with all forms of digital content through natural gestures, touch and physical objects.

Beginning at the end of this year, consumers will be able to interact with Surface in hotels, retail establishments, and public entertainment venues.

The intuitive user interface works without a traditional mouse or keyboard, allowing people to interact with content and information on their own or collaboratively with their friends and families, just like in the real world. Surface is a 30-inch display in a table-like form factor that small groups can use at the same time. From digital finger painting to a virtual concierge, Surface brings natural interaction to the digital world in a new and exciting way.

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TECHNICAL VIEW

Microsoft Surface puts people in control of their experiences with technology, making everyday tasks entertaining, enjoyable and efficient.

Imagine ordering a beverage during a meal with just the tap of a finger, Imagine quickly browsing through music and dragging favorite songs onto a personal playlist by moving a finger across the screen.

Imagine creating and sending a personal postcard of vacation pictures instantly to friends and family, while still wearing flip-flops.

Surface also features the ability to recognize physical objects that have identification tags similar to bar codes. This means that when a customer simply sets a wine glass on the surface of a table, a restaurant could provide them with information about the wine they're ordering, pictures of the vineyard it came from and suggested food pairings tailored to that evening's menu.

The experience could become completely immersive, letting user's access information on the wine-growing region and even look at recommended hotels and plan a trip without leaving the table.

Surface computing at Microsoft is an outgrowth of a collaborative effort

between the Microsoft Hardware and Microsoft Research teams, which were Struck by the opportunity to create technology that would bridge the physical and virtual worlds.

What started as a high-level concept grew into a prototype and evolved to today's market-ready product that will transform the way people shop, dine, entertain and live. It's a major advancement that moves beyond the traditional user interface to a more natural way of interacting with information.

Surface computing, which Microsoft has been working on for a number of years, features four key attributes:

- Direct interaction. Users can actually “grab” digital information with their hands, interacting with content by touch and gesture, without the use of a mouse or keyboard.

- Multi-touch. Surface computing recognizes many points of contact simultaneously, not just from one finger like a typical touch-screen, but up to dozens of items at once.

- Multi-user. The horizontal form factor makes it easy for several people to

gather around surface computers together, providing a collaborative, face-to-face computing experience.

- Object recognition. Users can place physical objects on the surface to trigger different types of digital responses, including the transfer of digital content.

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APPLICATION

T-Mobile USA. Customers in T-Mobile retail stores might place different cell phones on Surface's interactive surface where product features, prices and phone plans would appear so they could be easily compared. "We are continuously working to build the greatest retail experience we can for our customers," said Bonita Inza, vice president of Retail at T-Mobile USA. "They tell us they want more information about our products and services, but in a way that is easily accessible, at their own pace and with the amount of detail that they prefer. Surface is one example of how we're turning our stores into a playground where customers can comfortably explore exciting new products in their own personal way."

Surface will also be made available through a distribution and development agreement with IGT (International Game Technology NYSE: IGT), a global company specializing in the design, development, manufacturing, distribution and sales of computerized gaming machines and systems products.

"Consumers now have an entirely new way to get the information they need, turning their everyday tasks into enjoyable and engaging experiences," said Pete Thompson, general manager of Microsoft Surface Computing. "There are hundreds of thousands of restaurants, hotels and retail locations that are

looking to give their customers the unique and memorable experiences that Surface will provide. In turn, companies have a new opportunity for generating additional revenue streams and increasing retail traffic.”

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MULTIMEDIA RESOURCES

Journalists can find still images and broadcast-quality broll and video (registration required) of Microsoft Surface.

“With Surface, we are creating more intuitive ways for people to interact with technology,” Ballmer said. “We see this as a multibillion dollar category, and we envision a time when surface computing technologies will be pervasive, from tabletops and counters to the hallway mirror. Surface is the first step in realizing that vision.”

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ABOUT MICROSOFT SURFACE COMPUTING

Microsoft Surface Computing brings to life a whole new way to interact with information that engages the senses, improves collaboration and empowers consumers. By utilizing the best combination of connected software, services and hardware, Microsoft is at the forefront of developing surface computing products that push computing boundaries, deliver new experiences that break down barriers between users and technology, and provide new opportunities for companies to engage with people.

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