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CONTINUUM ON WINDOWS 10



What Is Continuum?

Continuum comes into play with both the Start screen and the modern apps, switching the view to the format suited to PC or tablet use. I tested the feature on a Surface Pro 3 running Windows 10 Technical Preview Build 10049.Here's how it works: One can detach the keyboard by yanking it off the bottom of the tablet, and a message will appear.

Then, after tapping the message box, the display will switch to view. Note that the Start menu now takes over the whole page, just as it used to in Windows 8, though only the few default app tiles and those pinned to the Start menu get large tiles. Another difference is that we don't swipe the tablet Start page from side to side, but up and down instead. Windows 8.1 kept the modern and legacy sides of Windows more separate, while Windows 10 makes the legacy aspect more aware of the modern view.

If anyone is running a modern Windows app in a window on the desktop and switch to Tablet mode, it will reclaim the whole screen, just as if we were back in Windows 8 days. Of course, we can still snap another app even the desktop itself alongside the "full-screen" app and add even a third or fourth, depending on the screen size.

Windows 10 combines the best of Windows 7 with the best of Windows 8 and Continuum is a great example of that; with Continuum one can use a keyboard and mouse when they choose, or can optimize the screen for a great touch experience.

Continuum on our desktop

Windows 10 adjusts our experience for the activity, device and display, so that we can do our thing in any mode anytime we want. Onscreen features, like menus and taskbars, adapt for easy navigation. Apps are built to scale smoothly from screen to screen so they look good from the smallest app window up to the largest 8k displays. We can even change from desktop to tablet mode anytime necesssary – the screen will give us a smooth transition and a beautiful display. Available exclusively on Windows, Continuum is designed to ensure that the best screen is always the one we're on.

How to Use Windows 10 Continuum

One of the most new features in Windows 10 is code-named Continuum. This new ability is really just a way for the operating system to adapt to the way a device is being used at the moment as a PC with a keyboard or as a tablet with touch input. Since the first version of Windows 8, a key goal of the new Microsoft operating system has been to accommodate both tablets and full-size PCs. As most who read this will realize, that accommodation had a bumpy early history, and Continuum is one of the latest efforts to smooth the OS's transition from an on OS only for desktops and laptops to one that adds tablet use to its repertoire.

Possibly the number-one objection to Windows 8 by long time desktop users was the full-screen Start page. Why should we have to look at these big, touch-friendly tiles? Personally, after an initial period of adjustment, it grew comfortable using the informative Start screen tiles, even on desktops equipped with mice and keyboards. It's just as easy (if not easier) to click a tile with the mouse as it is an icon. But many a Windows desktop and laptop veteran raised a cheer when they found out Windows 10's restoration of the Start Menu, even if it is in a form that melds the new tiles with the old icons.

Windows 10 also brings desktop users the ability to display "modern" Windows Store apps (formerly known as "Metro" apps) in non-fullscreen windows on top of the old-style desktop. Windows 8.1 already offered ways to display multiple modern apps, but not in completely resizable windows running on the desktop. Instead, in 8.1 you can resize modern app windows horizontally, but not drag them around the screen in floating windows.

Changing Tablet Mode, Switching Behaviour

We can change the mode-switching behaviour in Windows' modern settings panel, under System, pick Tablet in the Settings app. Here, you see a single toggle setting to turn Tablet mode on or off. Below this, you see three choices for Automatic mode switching: "Never prompt me and always stay in my current mode," "Always prompt me to confirm," and "Never prompt me and always switch modes." It is advised to prefer the middle choice, since it shows us what's going on and gives us the control.

More Tablet mode improvements are yet to come if a leaked build of Windows 10 is to be believed. A Russian software pirate's code calling itself Build 10056 has popped up on BitTorrent, and it may well be the real thing. Based on this code, tech sites have reported that the touch interface is getting some optimizations. Reports say that the build will remove most taskbar app buttons in Tablet mode, leaving only the Start button, Cortana, virtual.

Desktops and the system notification area are formerly called the System Tray. One thing we won't see in Windows 10, whether in Tablet mode or not, is the Charms bar that slides in with a swipe from the right edge of the screen.

Microsoft could certainly be charged with moving too far in favor of the tablet in Windows 8, and possibly too far back to desktops and laptops with Windows 10, from what we've seen up to now. Let's hope by the time the finished product ships, we get an operating system that's equally at home in both modes and fluidly switches between them. It's clear that the software developer is working hard toward that end game.

K. SANTHOSH

I B.Sc. (Information Technology)

OCULUS RIFT



Virtual reality (VR) has not only been the stuff of science fiction novels and movies for decades, but it's also been an actual thing. The first VR headsets were produced in the 1960s. At the time, the technology took up a lot of room and cost massive amounts of money. In the late 1980s to 1990s, VR became accessible to general public in arcades and other amusement venues via heavy headsets and controllers used to play rather simple games such as swinging a pretend sword at virtual foes, with as much accuracy as the era's computing systems could muster.

The head tracking was slow, the field of vision was narrow and the graphics were lowresolution by modern standards. The experience often induced headaches and motion sickness, and it wasn't all that immersive. Still, it was a step forward in gaming and was bound to get better, but it didn't catch on at the time and the industry fizzled. The necessary technology just wasn't out yet to make it compelling to the masses.

High-end VR headsets with better resolution and response time have been developed since then, but they've remained prohibitively expensive for the home user and still tend to inhabit places like government and corporate research and training facilities. The military, automotive industry, space program and medical fields, to name a few, all use VR in one way or another, out of the view of the general populace.

But technology is ever evolving, and the small and powerful components that have made our cell phones and gaming systems so much better have now given VR technology a new lease on life by making devices like the Oculus Rift possible. It's the first of several headsets poised to bring realistic VR into the realm of possibility for the average user.

We would expect such a marvel to come from a known electronics manufacturer, but Oculus Rift had a humbler beginning. Palmer Luckey, a teenage gaming and electronics enthusiast with a passion for VR, began collecting old headsets and tinkering to try to create something that would work with modern games. Eventually he realized that there was nothing viable in existence, and he'd have to make his own device from scratch.

Opening the Rift

Luckey began working on what would become the Oculus Rift while he was in college studying journalism. He created the prototype in 2012, when he was only 19 years old. He had an idea to do a Kick starter campaign to fund the creation of VR headset kits for maybe a few dozen devoted VR hobbyists, and he was communicating with lots of people online about it, including John Carmack, the game developer famous for creating "Doom" and "Quake" and founder of Id Software. Carmack was working on a VR project and

LEAP MOTION

requested a prototype. He used the Rift prototype with his own firmware to demonstrate his VR game "Doom 3 BFG" at E3 2012, and that started the hype for the Oculus Rift.

Lucky founded the company Oculus VR and enlisted the help of several industry insiders, including Brendan Iribe and Michael Antonov, cofounders of gaming UI provider Scaleform. The Kickstarter campaign commenced with a funding goal of \$250,000, a goal it hit within the first day. By the end, it reached nearly 10 times that amount in pledges \$2,437,429 total

The company has since gotten millions more from investors and has swelled with employees. It has partnered with Valve, Epic Games and Unity, among others, to bring highquality and low-cost VR gaming to fruition. As of early 2014, the Oculus Rift is currently out in a developer's kit version with the aim of encouraging the creation of content for the device before an improved consumer version goes to market. The consumer version is still in the works, and Facebook announced it was acquiring Oculus VR for \$2 billion in March 2014.

> S. PRADEEP III B.Sc. (Information Technology)



How Does the Leap Motion Controller Work?

From the earliest hardware prototypes to the latest tracking software, the Leap Motion platform has come a long way. We've received lots of questions about how our technology works? so let us take a look at how raw sensor data is translated into useful information that developers can use in their applications?

Hardware

From a hardware perspective, the Leap Motion Controller is actually quite simple. The heart of the device consists of two cameras and three infrared LEDs. These track infrared light with a wavelength of 850 nanometers, which is outside the visible light spectrum.

Wide angle lenses, the device has a large interaction space of eight cubic feet, which takes the shape of an inverted pyramid – the intersection of the binocular cameras' fields of view has a great part. The Leap Motion Controller's viewing range is limited to roughly 2 feet (60 cm) above the device. This range is limited by LED light propagation through space, since it becomes much harder to infer the hand's position in 3D beyond a certain distance. LED light intensity is ultimately limited by the maximum current that can be drawn over the USB connection.

At this point, the device's USB controller reads the sensor data into its own local memory and performs any necessary resolution adjustments. This data is then streamed via USB to the Leap Motion tracking software.

The data takes the form of a grayscale stereo image of the near-infrared light spectrum, separated into the left and right cameras. Typically, the only objects we will see are those directly illuminated by the Leap Motion Controller's LEDs. However, incandescent light bulbs, halogens, and daylight will also light up the scene in infrared. We might also notice that certain things, like cotton shirts, can appear white even though they are dark in the visible spectrum.

Software

Once the image data is streamed to our computer, it's time for some heavy mathematical lifting. Despite popular misconceptions, the Leap Motion Controller doesn't generate a depth map – instead it applies advanced algorithms to the raw sensor data. The Leap Motion Service is the software on our computer that processes the images. After compensating for background objects (such as heads) and ambient environmental lighting, the images are analyzed to reconstruct a 3D representation of what the device sees.

Next, the tracking layer matches the data to extract tracking information such as fingers and tools. Our tracking algorithms interpret the 3D data and infer the positions of occluded objects. Filtering techniques are applied to ensure smooth temporal coherence of the data. The Leap Motion Service then feeds the results – expressed as a series of frames, or snapshots, containing all of the tracking data – into a transport protocol.

Through this protocol, the service communicates with the Leap Motion Control Panel, as well as native and web client libraries, through a local socket connection (TCP for native, WebSocket for web). The client library organizes the data into an object-oriented API structure, manages frame history, and provides helper functions and classes. From there, the application logic ties into the Leap Motion input, allowing a motion-controlled interactive experience. Next week, we'll take a closer look at our SDK and getting started with our API.

A. MAKESH III B.Sc. (Computer Technology)



GOOGLE DRIVER LESS CAR

Why self-driving cars matter ?

Imagine if everyone could get around easily and safely, regardless of their ability to drive. Aging or visually impaired loved ones wouldn't have to give up their independence. Time spent commuting could be time spent doing what we want to do. Deaths from traffic accidents—over 1.2 million worldwide every year—could be reduced drastically, especially since 94% of accidents in the U.S. involve human error.

What's in a self-driving car?

Our self-driving prototypes rely on their sensors and software to drive themselves. We're working toward vehicles that take us where you want to go at the push of a button. We started by adding components to existing cars like our Lexus SUVs, then began designing a new prototype from the ground up to better explore what should go into a fully self-driving vehicle. We removed the steering wheel and pedals, and instead designed a prototype that lets the software and sensors handle the driving.

Where we've been

We've been working on our project since 2009, but the dream of self-driving cars goes back much farther. It started as early as the 1939 New York World's Fair where visitors were presented a vision of automated highways. In the mid 2000s, the Defense Advanced Research Projects Agency (DARPA) organized the Grand Challenges where teams gathered to compete with self-driving vehicles. In 2009,

Where we are

We've self-driven over 1 million miles and are currently out on the streets of Mountain View, California and Austin, Texas.

Our testing fleet includes both modified Lexus SUVs and new prototype vehicles that are designed

from the ground up to be fully self-driving. There are safety drivers aboard all vehicles for now. We look forward to learning how the community perceives and interacts with us, and uncovering situations that are unique to a fully self-driving vehicle.

AJAY MOHAN III B.Sc. (Computer Technology)

GOOGLE 'PROJECT AURA' HIRES AMAZON ENGINEERS FOR REBIRTH OF GLASS



Google has reportedly hired engineers for a second tilt at a Glass-like wearable, under the name 'Project Aura'.According to reports from Business Insider and the Wall Street Journal, Google has specifically targeted consumer electronics experts from Amazon's Lab126 for the project, which will stay as a part of Google and not become a standalone wing of the new Alphabet holding company.

Headed-up by Next CEO Tony Fadell, and run by Ivy Ross, the project will be an attempt to turn the experimental but ultimately failed Google Glass project into something with a genuine commercial future. Though it was launched with a spectacular presentation at Google's I/O in 2012, and saw huge amounts of media coverage, hype and debate, Glass never turned into more than an oddity, and was quietly shelved earlier this year.

Described as "Google Glass and Beyond" by several of the new hires, whose LinkedIn profiles were noticed by Business Insider, the project will also apparently look to introduce concepts first drawn up for Glass into other types of products.

The launch of Glass at I/O 2012 Reports suggest the Aura group will collaborate directly with Google's other fringe projects, including the VRlite Cardboard group and Soli, a next 'real world gestures' interface concept.

The new hires appear to include Dmitry Svetlov, a software development manager, according to the Wall Street Journal. The hires also appear to be linked to job postings Google published in May, also revealed by Business Insider, which described the Google Glass division as "a world-class team focused on the cutting edge of hardware, software and industrial design. It is charged with pioneering, developing, building and launching smart eyewear and other related products in line with Google's ambitious and visionary objectives".

Meanwhile Amazon has said it will lay off dozens of its own engineers, after the failure of its Fire phone and dulling interest in its higher-end tablets.As for the future of Glass itself, that remains to be seen but Google appears committed to future experiments in the area, even if a realworld product release remains distant.

M. NAVEEN KUMAR III B.Sc. (Computer Technology)

HOW TO CONTROL YOUR HOME WITH YOUR IPHONE OR IPAD



Most iOS users will already be used to using their iPhone or iPad in just about any situation - to kill a bit of time with some games; to check the train schedule to write a shopping list; to watch a video which can be done with huge amount with these tiny computers.

But what we can do with the device isn't just limited to things contained within its screen where we can control it from our home as well. Instead of getting up to hit the light switch, we can just grab our iPhone. To see what's on and change the channel, grab our iPad. Everything from the temperature to the curtains can be controlled with the right apps and accessories.

It's not just about giving commands. Though with wireless audio and video, and remote access to the files on our PC, we can use our iOS device to conduct a digital life like an orchestra. One can even monitor the security of our home when we stay away. If one think the use of an iPhone for everything now, just wait until we're changing the colour of our mood lighting with it. So, one doesn't need to leave the sofa again.

The automated home

The idea of home automation has been around for years, with systems that which let the control level of lighting in home, the temperature, what time the doors lock, systems that can open and close the curtains, turn appliances on and off and much more. In the past, these were only available through expensive installations, and controlling them was awkward, requiring elaborate remote controls or wall-mounted panels.

While the comprehensive home installation is still an option and expensive for giving a most complete control, there are also now easier accessories that can give many of the same options, but just need to be plugged in. The crucial thing these days is that they're just about all appconnected - with the right download from the App Store, where we can take total control of our house by the use of iPhone or iPad.



When it comes to lighting, one of the more outlandish options is the Philips Hue set. These LED light bulbs just plug into regular light sockets, but are wirelessly controlled by a base station that connects iPhone or iPad, which make lighting changes from the accompanying app. What makes the Hue different to other light-dimming systems can change not just the brightness of the bulb, but also its colour. The app allows to customize colours, and if we have multiple Hue bulbs, they can be different colours – which allows to match the various colours in a photograph, to set a scene. Perhaps unsurprisingly, the Hue bulbs are quite expensive, if we are in need of a similar system for less, have a look at LightwaveRF's dimmable CFL bulbs. They work in normal lighting fixtures and control them from an iOS app. They don't change color, but their brightness can be controlled (or turn them off) without having to install custom light switches.

If we don't want to buy expensive smart light bulbs, installing custom light switches can be a great option.one can replace a current light switch with one that can communicate wirelessly to a compatible base station, and we'll gain dimmable and remote control of any light that switch connects to. LightwaveRF sells switches that work with its base station, as do many other companies, including Control4 and the X10 range. **Control freakery**



Controlling the heating is something else that's really useful to be able to do from a device especially if one wants to turn the heating on before getting home.

The Nest thermostat is a smart system that learns about how our home is heated and when one

tend to feel cold, and adapts automatically, but it can also be controlled remotely from iPhone. Control4 also offers a wireless thermostat system, where multiple thermostats can be controlled independently if you have zoned heating.

If we are in need of such kind of granular control without installing separated heating systems, though, there is a simpler option. LightwaveRF offers wirelessly controlled radiator valves that just replace the normal valves on your radiators. Each can be controlled individually, letting to create 'zoned' heating without having to have a full installation with multiple thermostats. we can then control the valves with our iPhone as well as the compatible wall-mounted control.

One can even use the iPhone to keep our house secure. This is at its most direct with Control4's lock system - its smart deadbolt and handles can be installed instead of a regular lock, and can be controlled either by using a good old-fashioned key, by entering a code on the buttons above the lock, or by using iPhone. Just before bed one could make sure all the locks on our doors are set just by grabbing our iPhone and hitting the button in the app. Z-Wave also offers this type of lock.

Most of these systems will also allow to set timers for many things, such as the lights, so we can set them to come on and turn off at certain times, perhaps to give the impression that are in. This doesn't require any further hardware than what we've already described.

> K. SETHUPATHI III B.Sc. (Information Technology)

PUZZLES

Brainteaser

1. There is a box which has 33 yellow marbles and 35 green marbles. You also have 34 green marbles outside the box. Randomly remove two marbles from the box. If they are of different colors, put the yellow one back in the box. If they are the same color, take them out and put a green marble back in the box. Repeat this until only one marble remains in the box. What is the color of the sole marble left in the box?

Solution: The last marble will be yellow. Since marbles can only be taken out in pairs and started off with an odd number of yellows there is always going to be one yellow left over that you'll keep putting back in the box until it's left on its own.

2. A worker is to perform work for seven straight days. In return for his work, you will pay him $1/7^{th}$ of a bar of gold per day. The worker requires a daily payment of $1/7^{th}$ of the bar of gold. What and where are the fewest number of cuts to the bar of gold that will allow you to pay him $1/7^{th}$ each day?

Solution:

Just2

Day One: You make your first cut at the 1/7th mark and give that to the worker.

Day Two: You cut $2/7^{th}$ and pay that to the worker and receive the original $1/7^{th}$ in change. Day three: You give the worker the $1/7^{th}$ you received as change on the previous day. Day four: You give the worker $4/7^{\text{th}}$ and he returns his $1/7^{\text{th}}$ cut and his $2/7^{\text{th}}$ cut as change. Day Five: You give the worker back the $1/7^{\text{th}}$ cut of gold.

Day Six: You give the worker the $2/7^{\text{th}}$ cut and receive the $1/7^{\text{th}}$ cut back in change. Day Seven: You pay the worker his final $1/7^{\text{th}}$.

3. My town contains 100 buildings. They are numbered from 1 to 100. How many 6's are used in these numbers?

Solution:

20 Just count the nines in the numbers: 6, 16, 26, 36, 46, 56, 76, 86, 96, 60, 61, 62, 63, 64, 65, 66,67,68,69.

Note: 66 contains TWO nines

Riddle:

1. Without the use of calculation, can you find out how many seconds are there in a year?

Solution:24

Every month contains only 2 second like A) 2nd January ("second" January)

B) 22nd January (twenty"second" January)Therefore 2 * 12 months = 24.

2. There are seven guests in a cocktail party. Each guest shakes hand with one another but they do not repeat it again. Can you find out how many handshakes occurred in the party?

Solution: 21

3. John is out with his class of 25 boys to a local park. Each guy has a remote controlled car with them. The park has a racetrack that allows 5 cars to be raced at once. Their teacher, Mr. Ted, declares that the top three fastest cars get ice cream. How many races are required to determine the 3 fastest cars?

Solution:

7 Races.

Illusion:

1. Which of the blue lines is longer than the other?



Solution:

This illusion is also known as the Sander Parallelogram. You might feel that the left blue line is longer than the right one. Go ahead and measure them with a ruler. Surprised right? They both are of same length. However we perceive the left one longer due to the parallelogram figure. 2. Which of these orange circles is larger?



Solution:

This illusion works on our size perception. You will be surprised to know that both the orange circles are exactly same in the sizes. But you might think that the right one is bigger right? Why? This is because we are perceiving the sizes in relation with the surrounding circles. Since the left ones are larger, we perceive that the inner orange circle is smaller than the right one.

3. You must be seeing different background colors with purple and orange wave-lines right? However we are telling you the fact that they all have a same white background.



Solution:

Now this effect is commonly used in so many basic illusions as well as complex ones. The logic behind it is that the tinted orange color wave-lines are creating an illusion on the background. The tint effect cannot be seen with the purple colored lines. While purple is promoting the white background, the orange color is creating its own tint in the background.

> S. AKSHAYA III B.Sc. (Information Technology)

SOLID STATE LASER TECHNOLOGY MATURATION PROGRAM



The Department of Defense began funding research in high-energy lasers soon after the invention of the laser in 1960 when it was thought that they might (if scalable to high power) have tremendous impact on how wars were fought. In 1973, a new chemical laser technology, based on deuterium fluoride (DF), was determined to be scalable to high power at mid-infrared wavelengths which propagate far better in the atmosphere than other frequencies. The Navy and ARPA then jointly built a multi-hundred-kW class laser, from which the Navy leveraged this technology to produce the nation's first MW-class HEL weapon test bed. The Mid-InfraRed Advanced Chemical Laser (MIRACL) and the SeeLite Beam Director (SLBD) were installed and integrated at White

Sands Missile Range in the mid-1980s and used for experiments by DoD. While performance of these MW-class lasers was highly promising with many targets successfully engaged, the logistics and safety issues of hazardous chemicals in a shipboard severely environment hampered further development or implementation on the Navy's surface combatants. Solid State Laser technology with weapons-level effects has been maturing rapidly, and recent advancements by the scientific and commercial sectors have begun to show that a potential application on surface combatants is possible. In particular, the ONR Maritime Laser Demonstration (MLD) for the first time in 2011 took a laser to sea and successfully conducted a mission scenario against a representative threat small boat, while in underway. Further, it support for a continuation of competitive programs like LaWS (Laser Weapon System - NSWC Dahlgren), the MLD (Northrop Grumman) and MK 38 TLS (Tactical Laser System, Boeing/BaE) continues to garner interest and generate discussion. The start of the SSL-TM Program has been strongly encouraged by Navy leadership to enhance expertise and develop programmatic focus. A key goal of SSL-TM is to align the S&T program thresholds and objectives with future R&D/acquisition planning processes and requirements, meeting current budgetary constraints. The goal of the SSL-TM Program is to produce multiple demonstration-level events with prototypical quality systems in a competitive environment.

What is it?

Initiated in 2012, the ONR Solid State Laser Technology Maturation Program will develop and mature high-energy laser technologies into a prototypical weapon system for the use and installation on the Navy's surface combatants.

How does it work?

LASER means "Light Amplification by Stimulated Emission of Radiation" and specifically, Solid State Lasers utilize specific solid chemicals that when combined with a light source (often LEDs), amplify and focus light at long range.

For a laser weapon system, the resulting light and heat transmitted to a target causes the failure of structures. SSLs are typically categorized into one of two classes – either slab-type or fibertype.

Slab lasers use small centimeter-sized prismatic or rectangular geometries, whereas fiber lasers are thin rods about the diameter of a human hair and many meters long.

In either type, a SSL weapon utilizes ship's electricity to power the laser, and then the resulting light is directed by mirrors through an external, aimable beam director, where a complex optic system focuses the laser light onto targets. What will it accomplish?

The SSL-TM Program goal is to produce a prototypical weapon system for use on surface Navy combatants. Lasers have the capability for speed-of-light engagements, with very precise, real-time targeting and battle damage assessments. Lasers can provide measured weapon effects, matched with extremely deep magazine capacities to defend against multiple, simultaneous arriving threats potentially posed against Naval surface forces: armed, unarmed ISR or lethal UAVs, light aircraft, small boats, asymmetric surface targets, or small diameter rockets and missiles.

The prototypes will also examine the utility for precision discrimination of targets and enhancement in aiming of existing guns and missiles.

> R. PRADEEP RAJAN I B.Sc. (Information Technology)

INTEL 6th GENERATION CORE PROCESSOR



The 6th Gen Intel[®] CoreTM processor family is comprised of Intel's newest wave of 14nm processors that deliver a leap in performance and power efficiency, provide stunning visuals, enable the broadest range of designs, and enable amazing user experiences when paired with Windows[®] 10. The all-new 6th Gen Intel Core processors (Y-series, U-series, and H-series) deliver a new class of computing with a host of new features to power the next generation of 2 in 1s, thin and light clamshell notebooks, and other small form factor or mobile devices.

New enhancements to 6th gen Intel® core[™] processors include

Architectural and design improvements to the 14nm process that result in superior performance vs. previous generations on Y-series, U-series, and H-series processors27. Additional execution units on select H-series processors and eDRAM on select U-series processors, for exceptional compute and graphics processing power that brings stunning visuals to life. Platform SOC and power reductions that enable significantly longer battery life on active workloads29. I/O Integration and enhancements such as the Intel® Integrated Sensor Solution and enhanced audio DSP. Hardware-level security features including Intel® Software Guard Extensions that hardens multifactor authentication. Product Brief 6th Gen Intel® Core[™] Processors: Y-series, U-series, and H-series

Responsive Performance

The 6th Gen Intel® $Core^{TM}$ processors leverage the power efficiency of a new micro architecture to deliver faster performance than previous generation processors27. Intelligent power management with Intel® Turbo Boost 2.0 dynamically controls performance and power for cores and graphics boosting performance precisely when it is needed, and saving energy when it counts. Both the Y-series and U-series processors (Core m and Core-I, respectively) support two cores and four threads with Intel® Hyper-Threading Technology (Intel® HT Technology), enabling compelling 2 in 1 designs and clamshells that achieve a unique balance between performance and mobility. For the ultimate performance in mainstream and premium notebooks, H-series processors support up to four cores and eight threads, delivering the power that enthusiasts, gamers, and content creators demand. With the newly expanded 6th Gen Intel® CoreTM processor H-series, Intel is introducing its first mobile K SKU with enhanced over clocking through BCLK and DDR4 over clocking as well as introducing mobile quad-core processing to Core i5.

Striking Visuals

Intel[®] HD graphics, Intel® IrisTM graphics, and Intel® Iris Pro[™] graphics deliver an eye-popping visual experience and take Intel builtin visuals to the next level. With 6th Gen Intel® CoreTM processors, you can watch, games, and create like never before. 6th Gen Core offers significant graphics performance improvement compared to prior generation28. Videos come to life in Ultra HD 4K, so users can enjoy amazing and vibrant multimedia experiences on compatible displays. The 6th Gen Intel Core processors also decode HEVC 8-bit content in hardware and natively support the new DirectX 12 API. Finally, 6th Gen Intel Core processors also support graphics programmability features like OpenCL 2.0 so programmers can easily leverage graphics compute capabilities.

More Freedom With Extended Battery Life29

With 6th Gen Intel Core processor family improving energy efficiency at a processor and platform level new possibilities emerge. Compared to previous generations, 6th Gen Intel Core systems have longer battery life and can use even smaller batteries to enable thinner and lighter systems. On video playback and video conferencing, a new low-power media transcode reduces enhancement power consumption dramatically. With the Core m processors (Yseries), 2 in 1s and clamshell notebooks are reimagined, enabling razor thin and fanless designs for ultra mobility. With Core I processors (Useries), the improvements mean that productivity and creation are possible in increasing sleek designs.

Expanded I/O

The 6th Gen Intel® Core[™] platform I/O in Y-series and U-series now offers Gen 3 PCIe support, which is supporting higher data transfer rates of 8 GT/s versus 5 GT/s with PCIe Gen 2. The latest Intel® Rapid Storage Technology now supports NVMe PCIe x4 Solid State Drives and is capable of utilizing Gen 3 PCIe speeds. Intel is also offering an Integrated Sensor Solution Context Sensing SDK so that third-party software vendors can develop exciting sensor enhanced applications.

> T.S. CHARAN NATH III B.Sc. (Information Technology)

APPLE, GOOGLE BRING SMARTPHONE FUNCTIONS TO CAR DASHBOARDS



Playing deejay with voice commands will get easier for more Americans this fall as some best-selling cars get updated with software that integrates smartphones into the dashboard.

With the 2016 model year, Apple's CarPlay and Google's Android Auto will turn cars as affordable as a base model Chevy Spark into rolling robotic assistants that give directions to nearby restaurants or play the latest hits with commands as simple as "Play Ellie Goulding."

The Associated Press recently tried out both systems on a 2016 Honda Accord. As with phones, voice-activated car technologies don't always work as intended, bringing up inaccurate directions or failing to open an app, for example. But overall the two systems are convenient and incredibly intuitive.

Both CarPlay and Android Auto should give drivers more time to keep their eyes on the road compared with the automakers' own voice systems, which can require multiple steps and looking at on-screen menus. Still, as with any system that requires driver input, there are concerns about distraction. "Anything that takes your attention away from the task of driving is not something you want to engage in," said Kathy Lane, a spokeswoman for the National Safety Council, a non-profit organization created by Congress to promote safety. Neither system has been tested yet by the Insurance Institute for Highway Safety, says spokesman Russ Rader. The institute studies both human and mechanical factors in trying to reduce the number of vehicle crashes.

Consumers increasingly want to use their smartphone while driving-without running afoul of the law. For the last few years, drivers of most new cars have been able to speak to their phones and have audio stream through a car's speakers using the nearly ubiquitous Bluetooth wireless standard. However, doing so can require fiddling with the phone, like holding down the home button first.

Both CarPlay and Android Auto allow voice commands to be turned on with a touch of a steering wheel button. Phones need to be plugged into the USB port, where the phone is kept charging and powering the in-car entertainment. You can access maps, voicemail, phone contacts and music apps using a touch screen embedded in the dashboard no need to grab your phone.

One wrinkle is that Apple reserves voice commands for its proprietary apps phone, maps, texts and Apple Music. That means the magical ability for iPhone users to ask the digital voice assistant Siri such complicated tasks as "play the top song from 2011" will only work if you're paying \$10 a month for Apple Music. (It's Gotye's "Somebody That I Used to Know," if you were wondering.) However, you can use your voice to play songs you have downloaded and own on your iPhone.

The less restrictive Android Auto will allow the user to use apps like Spotify as long as the user specifically tell it to "play Aerosmith on Spotify," or set Spotify as the default music app. A Spotify subscription also costs \$10 a month.

The 2016 Honda Accord EX with manual transmission is the lowest trim on which Honda is offering CarPlay and Android Auto support. At \$25,480, the EX is \$1,315 pricier than the Sport trim, and includes things like a moon roof, keyless remote and a better touch-screen display. Volkswagen's entry level 2016 Jetta 1.4T at \$17,680 offers CarPlay and Android Auto as part of a \$995 technology upgrade that includes a larger touch screen and rear-view camera. Some automakers believe that such features could motivate buyers to move up the trim level, rather than to more expensive models. "It's going to provide a good benefit to the Accord shopper," says Jay Guzowski, manager of product planning for mid-size cars at American Honda Motor Co.

General Motors stands alone in offering CarPlay and Android Auto as standard equipment on cars as inexpensive as the Spark—the 2015 version retails for upward of \$12,170—and as high-volume as its Chevrolet Cruze and Malibu sedans and Silverado trucks. Chevrolet marketing director Steve Majoros calls the decision "revolutionary," and one the automaker hopes will improve its market share. "CarPlay and Android Auto are about to really hit the mainstream," says Kelly Blue Book senior analyst Karl Brauer. "We're talking about some 40 to 50 models that'll have it in probably the next 12 months or less, which is maybe about 20 percent of the entire car market. "IHS analyst Colin Bird predicts that automakers in the U.S. and Canada will sell a modest 497,000 cars with CarPlay, Android Auto or both this year. The number should jump to 5 million in 2018 and nearly 10 million in 2020.As smart and helpful as the CarPlay and Android Auto are, they aren't prefect.

On a quick demo of a fully-loaded, coffeecolored 2016 Accord Touring, the Android Auto voice assistant helped me play songs from artists like Adele, Sting and Ellie Goulding but would not recognize "U2" as anything other than "You Tube". It also failed to open the iHeart Radio app despite being told to (a later check showed the app hadn't been set up to recognize its location, which may have thrown a wrench into things).

CarPlay users won't be able to use the superior Google Maps through the interface, even if the app is on their phone. In the demo, Apple's notoriously quirky maps app directed me to drive to Honda's American headquarters in Torrance through the research and development back way, bypassing the front driveway and visitor parking lot even though it was a more direct route.

One problem is that when phones must be plugged in rather than left in a pocket or purse usage of Internet-connected apps goes way down, says Pandora's vice president of automotive business development, Geoff Snyder. "When it's required for use of the system, utilization falls off pretty dramatically". So for now, certain automaker-made infotainment systems with apps will be more convenient for people who just want to get in their cars and go.

Apple software engineering executive Craig Federighi said in June that the iOS 9 mobile operating system update coming this fall will make CarPlay work without taking out your iPhone. But according to Apple, that may require another hardware update from automakers.

S.HEMALATHA III B.Sc. (Information Technology)

GOOGLE OS



Google Chrome

Google now has its well-funded mitts on just about every aspect of computing if it is unnoticed. From Web browsers to cell phones, soon we will be able to the spend all day in the Googleverse and never have to leave. Will Google make the jump to building its own PC operating system next?

What is it?

It's everything, or so it seems. Google Checkout provides an alternative to PayPal. Street View is well on its way to taking a picture of every house on every street in the United States. And the fun is just starting: Google's early-beta Chrome browser earned a 1 percent market share in the first 24 hours of its existence. Android, Google's cell phone operating system, is hitting handsets, becoming the first credible challenger to the iPhone among sophisticated customers.

When is it coming?

Though Google seems to have covered everything, many observers, believe that logically it will take next attempt to attack one very big part of the operating system in software market. The Chrome browser is the first to Google has dipped into these waters. While a browser is how the users interact with most of the Google's products, making the underlying operating system somewhat irrelevant, Chrome nevertheless needs an OS to operate.

To make Microsoft irrelevant, Google would have to work its way through a minefield of device drivers, and even then the result wouldn't be a good solution for people who have specialized application needs, particularly most business users. But a simple Google OS-perhaps have basically a customized Linux distribution combined with cheap hardware could be something that changes the PC landscape in the ways that smaller players who have toyed with open-source OS so far haven't been quite able to do. Check back in 2011, and take a look at the not-affiliated-with-Google gOS, think gos in the meantime. Where are You At? Ask Your Phone, Not Your Friend?



Right Now, only a handful of devices sport GPS service. In the near future, it will be the norm.GPS is taking off, as phone makers, carriers, and service providers have realized that consumers generally have no idea where they are, ever. A location-based service (LBS) takes raw GPS data that pinpoints your location and enhances this information with additional services, from suggesting nearby restaurants to specifying that where your friends are.

What is it?

LBS was originally envisioned as simply using old-school cell-phone signal triangulation to locate where is user abouts, but as the chips become more common and more sophisticated, GPS is proving to be not only handy and accurate but also the basis for new services. Many startups have formed around location-based services. Want a date? Never mind who's compatible; who's nearby? MeetMoi can find them. Need to get a dozen people all in one place? Both Whrrl and uLocate's Buddy Beacon tell you where your friends are in real time. Of course, not everyone is thrilled about LBS: Worries about surreptitious tracking or stalking are in common place, as is the possibility of a flood of spam messages being delivered to your phone.

When is it coming?

LBS is growing fast. The only thing holding it back is the slow uptake of GPS-enabled phones (and carriers' steep fees to activate the function). But with iPhones selling like Ben & Jerry's in July, that's not much of a hurdle to overcome. Expect to see massive adoption of these technologies in 2009 and 2010.

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Office 2016

MICROSOFT 2016

Built in teamwork

The Office 2016 apps simplify collaboration and remove barriers to team success.

Co-authoring is now provided in Word, PowerPoint and OneNote desktop software, including real-time typing in Word that lets you see others' edits as they make them.

Skype in-app integration across the rich client apps allows you to IM, screen share, talk or video chat right in your docs.

Office 365 Groups are now an integrated part of the Outlook 2016 client app and available on your favorite mobile device through the **Outlook** **Groups app**, delivering a consistent team experience across the suite. In addition, new Office 365 solutions that combine the power of apps and services for better collaboration are coming soon.

Introduced today, **Office 365 Planner** helps teams to organize their work, with the ability to create new plans, organize and assign tasks, set due dates, and update status with visual dashboards and email notifications. Planner will be available in preview to Office 365 First Release customers starting next quarter. Significant new updates to **OneDrive for Business** are coming later this month, including a new sync client for Windows and Mac, which will deliver selective sync and enhanced reliability. Updates also include increased file size and volume limits per user, a new user interface in the browser, mobile enhancements, and new IT and developer features.

Unveiled earlier this year, **GigJam** is available Tuesday in private preview and will become part of Office 365 in 2016. GigJam is an unprecedented new way for teams to accomplish tasks and transform business processes by breaking down the barriers between devices, apps and people.

Works for you

Office 2016 provides built-in intelligence to help you work faster and smarter. Outlook 2016 provides the smartest inbox yet, with lightning-fast search and automatic removal of low-priority mail. Everyone on the to line has the right access to documents with modern, cloud-based attachments. Tell me helps you quickly find the right Office feature or command, and Smart Lookup brings insights from the Web right into the documents.

Excel 2016 now includes integrated publishing to Power BI and new modern chart types to help you make the most of your data. The most recently used documents list allows you to pick up the right where you left off, traveling across with your devices, whether you are working in Office Online, in the Office Mobile apps or in the Office 2016 desktop apps.

The most secured Office

Office 2016 apps with Office 365 deliver new capabilities for better enterprise security and protection. Built-in **Data Loss Prevention** across Word, PowerPoint, Excel and Outlook significantly reduces the risk of leaking sensitive data, giving IT administrator's tools to manage content authoring and document sharing policies.

Multifactor authentication ensures secured access to content anywhere when you're away from the corporate network.

Enterprise Data Protection will be available for the Office Mobile apps for Windows10 later this year and for the desktop apps early next year, enabling secured content sharing within corporate boundaries.

Availability and requirements

The new Office 2016 apps are available in 40 languages and require Windows 7 or later. Starting Tuesday, Office 365 subscribers can choose to download the new Office 2016 apps as part of their subscription. Automatic updates will begin rolling out to consumer and small-business subscribers next month, and to commercial customers early

next year. Office 2016 is also available today as a one-time purchase for both PCs and Macs.

Customers can visit one of the more than 110 Microsoft Stores in the U.S., Canada and Puerto Rico to discover and purchase the new Office. While there, they can participate in a free, one-hour Office 2016 workshop and visit the instore Answer Desk, a one-stop shop for your Office needs. Microsoft (Nasdaq "MSFT" @microsoft) is the leading platform and productivity company for the mobile-first, cloudfirst world, and its mission is to empower every person and every organization on the planet to achieve more.

Windows Hello requires specialized hardware, including fingerprint reader, illuminated IR sensor or other biometric sensors, and may require additional authentication steps in certain configurations.

Available only on premium Windows Phones. External monitor must support HDMI input. Requires a Continuum-compatible accessory.

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ROBO BEES



Honeybees, which pollinate nearly one third of the food we eat, have been dying at unprecedented rates because of a mysterious phenomenon known as colony collapse disorder (CCD). The situation is so dire that in late June the White House gave a new task force just 180 days to devise a coping strategy to protect bees and other pollinators. The crisis is generally attributed to a mixture of disease, parasites, and pesticides.

Other scientists are pursuing a different task: replacing bees. While there's no perfect solution, modern technology offers hope. Last year, Harvard University researchers led by engineering professor Robert Wood introduced the first RoboBees, bee-size robots with the ability to lift off the ground and hover midair when tethered to a power supply.

The details were published in the journal Science. A coauthor of that report, Harvard graduate student and mechanical engineer Kevin Ma, tells Business Insider that the team is "on the eve of the next big development." Says Ma: "The robot can now carry more weight."

The project represents a breakthrough in the field of micro-aerial vehicles. It had previously been impossible to pack all the things needed to make a robot fly onto such a small structure and keep it lightweight.

A Bee-Placement?

The researchers believe that as soon as 10 years from now these RoboBees could artificially pollinate a field of crops, a critical development if the commercial pollination industry cannot recover from severe yearly losses over the past decade. The White House underscored what's at stake, noting that the loss of bees and other species "requires immediate attention to ensure the sustainability of our food production systems, avoid additional economic impact on the agricultural sector, and protect the health of the environment." Honeybees alone contribute more than \$15 billion in value to U.S. agricultural crops each year.

But RoboBees are not yet a viable technological solution. First, the tiny bots have to be able to fly on their own and "talk" to one another to carry out tasks like a real honeybee hive."RoboBees will work best when employed as swarms of thousands of individuals, coordinating their actions without relying on a single leader," Wood and colleagues wrote in an article for Scientific American. "The hive must be resilient enough so that the group can complete its objectives even if many bees fail."

Although Wood wrote that CCD and the threat it poses to agriculture were part of the original inspiration for creating a robotic bee, the devices aren't meant to replace natural pollinators forever. We still need to focus on efforts to save these vital creatures. RoboBees would serve as "stopgap measure while a solution to CCD is implemented," the project's website says.

Harvard's Kevin Ma spoke to Business Insider about the team's progress in building the bee-size robot since publishing its Science paper last year. Following is an edited version of that interview. Business Insider: Where are you? a little over a year after it was announced that the first robotic insect took flight.

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