5 Pen PC Technology

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Abstract:-

P-ISM ("Pen-style Personal Networking Gadget Package"), which is nothing but the new discovery, which is under developing, stage by NEC Corporation. P-ISM is a gadget package including five functions: a pen-style cellular phone with a handwriting data input function, virtual keyboard, a very small projector, camera scanner, and personal ID key with cashless pass function. P-ISMs are connected with one another through short-range wireless technology. The whole set is also connected to the Internet through the cellular phone function. This personal gadget in a minimalist pen styles enables the ultimate ubiquitous computing.

Keywords:- P-ISM ,display , camera ,CPU pen , Battery ,Virtual Keyboard ,Bluetooth , Wireless Connectivity.

Introduction:-

Five pen pc shortly called as P-ISM ("Pen-style Personal Networking Gadget Package"), is nothing but the new discovery, which is under developing stage by NEC Corporation.[8] P-ISM is a gadget package including five functions: a CPU pen, communication pen with a cellular phone function, virtual keyboard, a very small projector, and a camera. P-ISM's are connected with one another through short-range wireless technology. The whole set is also connected to the Internet through the cellular phone function. This personal gadget in a minimalist pen style enables the ultimate ubiquitous computing.[8][4]
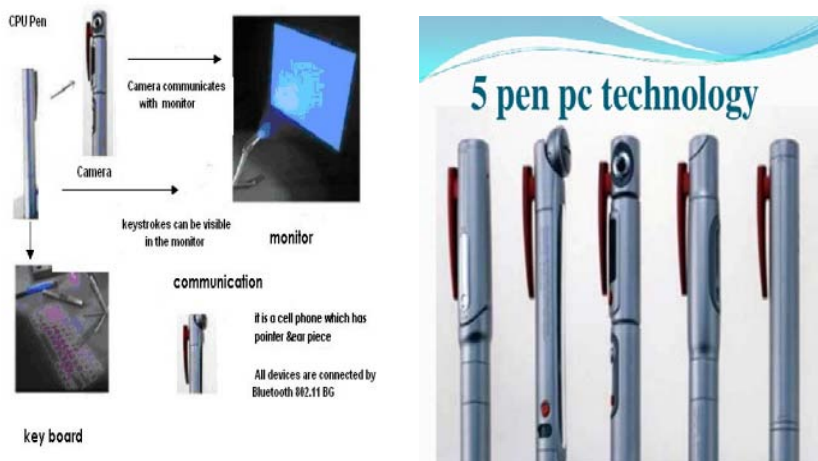

Fig. Diagram of 5 Pen PC Technology

1.1 COMPONENTS NAME:-

Concept Components	Function	Reliability
CPU Pen	Computing Engine	Open
Communications Pen	Cellphone, Pressure Sensitive, Pointing Device, pointer and ear piece, Communications Using Bluetooth.	Near Term
Display	LED Projector A4 Size Approx. 1024 X 768.	Slightly further out than the phone and camera.
Keyboard	Projected keyboard with 3D IR Sensor.	Slightly further out than the phone and camera.
Camera	Digital Camera	Near Term
Based	Battery Charger and Mass Storage.	Open

2 **HISTORY:-**The conceptual prototype of the "pen" computer was built in 2003. The prototype device, dubbed the "P-ISM", was a "Pen-style Personal Networking Gadget" created in 2003 by Japanese technology company NEC. The P-ISM was featured at the 2003 ITU Telecom World held in Geneva, Switzerland.[2][3][8] The designer of the 5 Pen Technology ,"Toru Ichihash", said that" In developing this concept he asked himself – "What is the future of IT when it is small?" The pen was a logical choice. He also wanted a product that you could touch and feel. Further, the intent is to allow for an office anywhere." [2][8] However, although a conceptual prototype of the "pen" computer was built in 2003; such devices are not yet available to consumers. "The design concept uses five different pens to make a computer.

3 One pen is a CPU, another camera, one creates a virtual keyboard, another projects the visual output and thus the display and another communicator (a phone). All five pens can rest in a holding block which recharges the batteries and holds the mass storage. Each pen communicates wireless, possibly Bluetooth.[2][3]
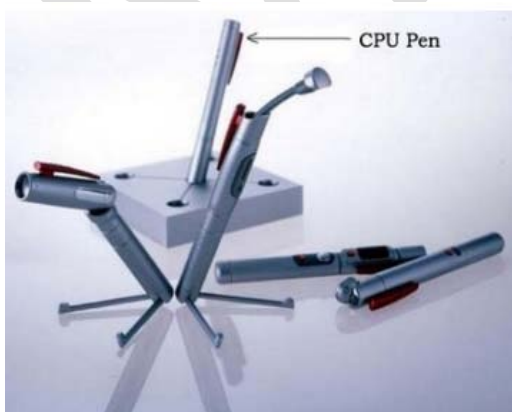
4 **CPU PEN:-**The functionality of the CPU is done by one of the pen. It is also known as computing engine. It consists of dual core processor embedded in it and it works with WINDOWS operation system.[1] The central processing unit (CPU) is the portion of a computer system that carries out the instructions of a computer program, and is the primary element carrying out the computer's functions.[1] The central processing unit carries out each dtruction of the program in sequence, to perform the basic arithmetical, logical, and input/output operations of the system.[1][2]

Fig. Diagram of CPU pen

3. CONTROL UNIT:-next instruction cycle normally fetching the next-insequence instruction because of the incremented value in the program counter. In more complex CPUs than the one described here, multiple instructions can be fetched, decoded, and executed simultaneously. The control unit of the CPU contains circuitry that uses electrical signals to direct the entire computer system to carry out, stored program instructions. The control unit does not execute program instructions; rather, it directs other parts of the system to do so. The control unit must communicate with both the arithmetic/logic unit and memory.[7]

3.1MICROPROCESSOR:-Previous generations of CPUs were implemented as discrete components and numerous small integrated circuits (ICs) on one or more circuit boards. Microprocessors, on the other hand, are CPUs manufactured on a very small number of ICs; usually just one. The overall smaller CPU size as a result of being implemented on a single die means faster switching time because of physical factors like decreased gate parasitic capacitance. This has allowed synchronous microprocessors to have clock rates ranging from tens of megahertz to several gigahertzes. Additionally, as the ability to construct exceedingly small transistors on an IC has increased, the complexity and number of transistors in a single CPU has increased dramatically. This widely observed trend is described by Moore's law, which has proven to be a fairly accurate predictor of the growth of CPU (and other IC) complexity to date.[7]

3.3PERFORMANCE:- The performance or speed of a processor depends on the clock rate and the instructions per clock (IPC), which together are the factors, for the instructions per second (IPS) that the CPU can perform. Processing performance of computers is increased by using multi-core processors, which essentially is plugging two or more individual processors (called cores in this sense) into one integrated circuit. Ideally, a dual core processor would be nearly twice as powerful as a single core processor. In practice, however, the performance gain is far less, only about fifty percent, due to imperfect software algorithms and implementation.[7]

4 COMMUNICATION PEN:- P-ISM's are connected with one another through shortrange wireless technology. The whole set is also connected to the Internet through the cellular phone function. They are connected through Tri-wireless modes (Blue tooth, 802.11B/G, and terabytes of data, exceeding the capacity of today's hard disks.[1] This is very effective because we can able to connect whenever we need without having wires. They are used at the frequency band of 2.4 GHz ISM (although they use different access mechanisms). Blue tooth mechanism is used for exchanging signal status information between two devices. This techniques have been developed that do not require

Fig. Diagram of Communication Pen

communication between the two devices (such as Blue tooth's Adaptive Frequency Hopping), the most efficient and comprehensive solution for the most serious problems can be accomplished by silicon vendors.[2] They can implement information exchange capabilities within the designs of the Bluetooth.

4.1 **BLUETOOTH:-** Bluetooth uses a radio technology called frequencyhopping spread spectrum, which chops up the data being sent and transmits chunks of it on up to 79 bands (1 MHz each; centered from 2402 to 2480 MHz) in the range 2,400- 2,483.5 MHz (allowing for guard bands). This range is in the globally unlicensed Industrial, Scientific and Medical (ISM) 2.4 GHz short range radio frequency band.[7]
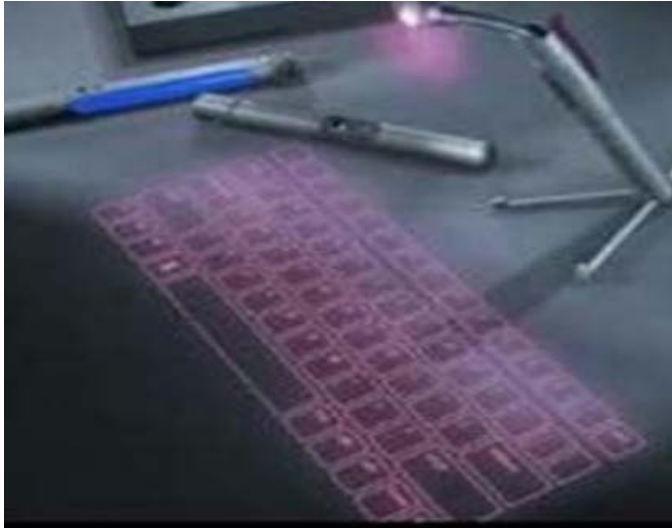
5 VIRTUAL KEYBOARD:- The Virtual Laser Keyboard (VKB) is the ULTIMATE new gadget for PC users. The VKB emits laser on to the desk where it looks like the keyboard having QWERTY [2][5] arrangement of keys i.e., it uses a laser beam to generate a full-size perfectly operating laser keyboard that smoothly connects to of PC and most of the handheld devices. As we type on the laser projection, it analyses what we are typing according to the co-ordinates of the location. A virtual keyboard is a software component that allows a user to enter characters.

Fig. Diagram of Virtual Keyboard

Virtual keyboards can be categorized by the following aspects:

- Physical keyboards with distinct keys comprising electronically changeable displays integrated in the keypads.
- Virtual keyboards with touch screen keyboard layouts or sensing areas.
- Optically projected keyboard layouts or similar arrangements of "keys" or sensing areas.
- Optically detected human hand and finger motions.

Virtual keyboards to allow input from a variety of input devices, such as a computer mouse, switch or other assistive technology device. An optical virtual keyboard has been invented and patented by IBM engineers in 2008.It optically detects and analyses human hand and finger motions and interprets them as operations on a physically non-existent input device like a surface having painted keys

5.2 SECURITY CONSIDERATION:- Virtual keyboards may be used in some cases to reduce the risk of keystroke logging. For example, Westpac's online banking service uses a virtual keyboard for the password entry,[7] as does Treasury Direct (see picture). It is more difficult for malware to monitor the display and mouse to obtain the data entered via the virtual keyboard, than it is to monitor real keystrokes.[7] However it is possible, for example by recording screenshots at regular intervals or upon each mouse click. The use of an on-screen keyboard on which the user "types" with mouse clicks can increase the risk of password disclosure by shoulder surfing, because.

Some implementations of the on-screen keyboard may give visual feedback of the "key" clicked, e.g. by changing its color briefly. This makes it much easier for an observer to read the data from the screen.[7]

6 DIGITAL CAMERA:-The digital camera is in the shape of pen. It is useful in video recording, video conferencing, simply it is called as web cam.[7] It is also connected with other devices through Blue tooth. It is a 360 degrees visual communication device. This terminal will enable us to know about the surrounding atmosphere and group to group communication with a round display and a central super wide angle camera. [7]

Fig. Diagram of Digital Camera

7 LED PROJECTOR:-The role of monitor is taken by LED Projector which projects on the screen. The size of the projector is of A4 size. It has the approximate resolution capacity of 1024 X 768.[7] Thus it is gives more clarity and good picture.

A video projector is a device that receives a video signal and projects the corresponding image on a projection screen using a lens system. All video projectors use a very bright light to project the image, and most modern ones can correct any curves, blurriness, and other inconsistencies

Fig. Diagram of Led Projector

through manual settings. Video projectors are widely used for conference room presentations, classroom training, home theatre and live events applications. Projectors are widely used in many schools and other educational settings, connected to an interactive whiteboard to interactively teach pupils.[1]

7.1 OVERVIEW:- A video projector, also known as a digital projector, may be built into a cabinet with a rear- projection screen (rear-projection television, or RPTV) to form a single unified display device, now popular for "home theatre" applications. Common display resolutions for a portable projector include SVGA (800×600 pixels), XGA (1024×768 pixels), 720p (1280×720 pixels), and 1080p (1920×1080 pixels). The cost of a device is not only determined by its resolution, but also by its brightness.[7]

7.2 PROJECTION TECHNOLOGIES:- CRT projector using cathode ray tubes. This typically involves a blue, a green, and a red tube. This is the oldest system still in regular use, but falling out of favor largely because of the bulky cabinet. However, it does provide pixel resolution. the largest screen size for a given cost. This also covers three tube home models, which, while bulky, can be moved (but then usually require complex picture adjustments to get the three images to line up correctly)

LCD projector using LCD light gates. This is the simplest system, making it one of the most common and affordable for home theaters and business use. Its most common problem is a visible "screen door" or pixelation effect, although recent advances have minimized.[7]

BATTERY :- The most important part in portable type of computer is battery and storage capacity. Usually batteries must be small in size and work for longer time. For normal use it can be used for 2 weeks. The type of battery used here is lithium ion battery. The storage device is of the type tubular holographic which is capable of storing. The use of lithium ion battery in this gadget will reduce energy density, durability and cost factor.[1][7]

7.3 TYPES OF LED DISPLAY:- There are two types of LED panels: conventional (using discrete LEDs) and surface-mounted device (SMD) panels. Most outdoor screens and some indoor screens are built around discrete LEDs, also known as individually mounted LEDs.[7] A cluster of red, green, and blue diodes is driven together to form a full-color pixel, usually square in shape. These pixels are spaced evenly apart and are measured from center to center for absolute pixel resolution. The largest LED display in the world is over 1,500 ft (457.2 m) long and is located in Las Vegas, Nevada covering the Fremont Street Experience. The largest LED television in the world is the Center Hung Video Display at Cowboys Stadium, which is 160×72 ft (49×22 m), 11,520 square feet (1,070 m2).[7]

8. Future Scope:-

The 5 Pen Pc Technology project started in the year 2003.However, the information about its release is not yet made public. Whether it will be available for the public use is still a question, because of its excessive price of 30,000$.[5] The prototype developed by the company proves that the creation of such complex technology is feasible, but because of lack of information about its recent developments, it is unclear what the company's intentions are about this technology.[5]

9. Conclusion:-

The communication devices are becoming smaller and compact. This is only a example for the start of this new technology. We can expect more such developments in the future, It seems that information terminals are infinitely getting smaller. However, we will continue to manipulate them with our hands for now. We have visualized the connection between the latest technology and the human, in a form of a pen. P-ISM is a gadget package including five functions: a pen-style cellular phone with a handwriting data input function, virtual keyboard, a very small projector, camera scanner, and personal ID key with cashless pass function. P-ISMs are connected with one another through short-range wireless technology. The whole set is also connected to the Internet through the cellular phone function. This personal gadget in a minimalistic pen style enables the ultimate ubiquitous computing. "The design concept uses five different pens to make a computer. One pen is a CPU, another camera, one creates a virtual keyboard, another projects the visual output and thus the display and another communicator (a phone).

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