A Study on Expandable Latest Software Feature in Bundling of Latest Hardware with Earlier Software

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ABSTRACT

The revolution of IOT (Internet of Things) effects the usage of power day by day increasing more dangerously, In latest generations of computers are running by the most successful Windows operating system by checking at run command as Msconfig we can find out a number of unnecessary applications and programs are running in service and startup. By stopping some of those applications the system performance will be increased but at times, it doesn't. The strength in development of a computer means huge changes in hardware and software and also introducing so many new inventions and are adopting old systems called as the latest technology, but here in these latest technology developing time some of the unwanted implementations are forced to apply which are not required but as per the capability of new strength latest technologies of the system will run safely and with any problematic by running large size of operating Software, in the year of 1985 the Microsoft company developed full version of operating system Microsoft windows 1.0 and this operating software from this operating system selected some of the important set of file by below values of 100MB the system will be running by 1GB capacity of hard disk and run by 256KB capacity of RAM and run by only two colors by 640*200 mode. Here this system can be run 1 or 2 or more partitions of drives by the hard disk and this system run better performance by supporting of hard disk RPS speed, and the latest technology of Microsoft company operating system windows 10 running by number of multitasking of programs by taking minimum of 4GB operating system storage space, and run with 4GB capacity of ram with hard disk capacity from above 1TB, but here by the interchange of windows10 and windows 95 components of hardware and software are not working, but it can be possible with the latest system of Dock USB type C it will be the best suitable example of this innovative technology the speed parameter will be increased and power consumption of the firmware will be reduced.

Keywords: Internet of Things, Software, Hardware, Operating systems, Dock USB Type C.

I. INTRODUCTION

At the time of the invention of the electronic machines, the programmer finds out the computer but today's computers grown up to even operating of this machines by programs automatically. In the early 19th century the software starts with an algorithm later to written decision-making theory as programs and finally in 1946 it was developed as a rewritable program. And later development time bundling of software and hardware growth was struck by so many legal issues, the entry of 1970 UNIX and Microsoft software the digital technology growth rapidly by an individual as software and hardware.

The windows 1.0 have run by black and white of two color display monitor only with support of some

specific hardware components which is run by the support of PCB board, later the windows next versions the PCB board extended by supported of PCI slots with supports of extendable device like VGA display, audio, video, multimedia, modem etc cards and device these all are expandable and which are not essential hardware while the installation of operating system but the requirement of use orientation the applications can be extendable device run by after the installation of device drivers. So, up to this type of operating system are running by minimum volume of space using in the secondary storage and required by less speed performance but the latest running of a windows10 operating system is running by all device inbuilt with all supported PCB hardware & software without user required components. For example a high school student as per his curriculum of education he/she has not required the high definition of multimedia and 3D graphics cards of hardware and software but he/she is using without their knowledge as in their requirement. By the production of only latest hardware components, a high school's student is able to buy only this high quality as well as the high price of computers.

In recent days students are using instead of latest high technology of computers which are high capability speed and storage of computers the students are using operating systems like Android operating software by using mobiles with supports of APK apps and this less secondary storage of operating systems and software of mobile hardware are also running by good performance and useful for the students orientation by hardware name mobiles are also extended like of tab and mini-tab and mini laptops etc..

II. LITERATURE REVIEW

History of Software
Software: A set of instruction formed by as a program in memory of digital storage device by execution by running of a processor to instruct Hardware components by binary codes.

Before stored program digital computers
Ada Lovelace (19th century): Neither for use of analytical Engine Ada Lovelace used first piece software which is an outline(Algorithm) and this is the first either software nor analytical engine for it was ever created.

Alan Turing (1935), the first theory of software essay about computable numbers with an application in finding out decision problem. It became now as a computer since.

Prior (1946) created computer by stored programs in the digital device and did not yet exit the programs from the digital device.

Early day of computers software (1948-1979)
Tom Kilburn (1948) very first time invented a stored program held a piece of computer software in an electronic memory and it was executed successfully on 21 June 1984 at 11 am in the University of Manchester it is called as a baby computer. It was performed for the large division and large subtraction in the calculation part.

Bundling of software with hardware
Original equipment manufacturers (1969), such as Data General, Digital equipment and IBM are coming by the name of minicomputers did not come pre-installed software but needed to install those sold engineers at the time of manufactures of minicomputers and these court as per violation of US antitrust regulator.

Bill Gates, co-founder Microsoft (1976) against software piracy and started the commercial software.

Data General (1985) also faced legal problems to bundling when introduced data general Nova, a

company called Digidyne to using RDOS Operating system.

In 2008, Psystar Corporation enters to the market with unauthorized Macintosh clones with OS X pre-installed software to the manufacturing time of hardware and violated the rights of Apple Inc by leaking of Apple technology and defunct Psystar Corporation by us court in the year 2012.

Unix (1970-2017) was the earlier operating system and very popular and even still today the operating system running successfully on Mac OS(previous OSX and Mac OS X)

Linx (1991) Linx operating system or a Kernel is very similar to UNIX operating system.

Software (1980) before entering into the Microsoft company software programs were sold up to 1000units at $50000-$6000o but after Microsoft, it was decreased to cost around the $ 50-700 and companies like Microsoft, Micro Pro and Lotus Development had almost ten million US dollars of sale per annual. Recent software development

Apps stores: In recent years applications for mobile devices have been termed apps, the Apple company funnel iPhone and iPad apps sales through their own Apple App stores only. Apple company mobile apps don't support java or flash virtual machines but the Android platform used mobile device have to option to get multiple app stores.

Computer software and programming language timeline:

The following tables include year by year development of many different aspects of computer software including:

1. High-level languages
2. Operating systems
3. Networking software and applications
4. Computer graphics hardware, algorithms and applications
5. Spreadsheets
6. Word processing
7. Computer-aided design

Table 1. Details of Software in 1971–1975

	1971	1972	1973	1974	1975
Programming Languages	CDL KRL SUE	C INTERCAL PL/M Prolog Smalltalk SQL	COMAL LIS ML Speakeasy-3	BASIC FOUR CLU GRASS PROSE	ABC Altair BASIC CS-4 Modula Scheme
Operating systems	DEC RSTS-11	Data General RDOS	Soviet ALGOL 68	DEC DOS-11	CP/M
Computer Networks		Wozniak's Blue Box	Bob Metcalfe develops Ethernet		Telenet packet Switching
Computer Graphics		Newell & Sancha visible surface algorithm		Catmull & Straber develop z-buffer	EDS founded
CAD/CAM	MCS founded	ADAM	Auto-Draft	Tektronix 4014	Solid modeling

Table 2. Details of Software in1976–1980

	1976	1977	1978	1979	1980
Programming Languages	Mesa Plus Ratfor S SAM76 SAS Smalltalk-76	Blue Bourne Shell Commodore BASIC FP Icon IDL Red Standard MUMPS Yellow IDL	C shell HAL/S MATLAB RPG III SMALL VisiCalc SQL	AWK Icon Modula-2 REXX Vulcan dBase-II	Ada 80 C with classes CBASIC
Operating systems	Cambridge CAP	1BSD	2BSD Apple DOS	Atari DOS	86-DOS
Computer networks				Usenet	TCP/IP
Computer Graphics		Antialiasing			
Word Processors	Electric Pencil		AppleWriter	Wordstar	WordPerfect for DG Mini
Spread sheet				VisiCalc	
CAD/CAM	McDonnell Douglas buys Unigraphics	Forerunner to CATIA	Raster graphics display	IGES	VersaCAD

Table 3. Details of Software in 1981–1985

	1981	1982	1983	1984	1985
Programming Languages	BBC BASIC IBM BASICA	Draco PostScript Speakeasy-IV	ABAP Ada 83 C++ GW-BASIC Korn Shell Objective-C occam True BASIC Turbo Pascal	CLIPPER Common Lisp Good Old MAD (GOM) OPL Redcode RPL Standard ML Matlab	Paradox QuickBASIC
Operating Systems	MS-DOS 1 Acorn MOS	Commodore DOS	MS-DOS 2 Lisa Office	MS-DOS 3 System	MS-DOS 3 System

			SunOS 1	Software	Software
Computer Networks			ARPANET splits off MILNET	Novell Netware Research In Motion founded	NSFNET connects 5 Supercomputers
Computer Graphics		Silicon Graphics Founded			ATI founded
Word Processors	Bank Street AppleWriter II	WordStar 3.0 WordPerfect for DOS	Word 1 for DOS	Word 1 for Mac	WordPerfect 4.2 for DOS
Spreadsheet		Lotus 1-2-3			Excel for Mac
CAD/CAM	Dassault Systems	Autodesk founded	Autodesk releases AutoCAD 1.2,1.3,1.4	AutoCAD 2	Bentley Systems Parametric Technology

Table 4. Details of Software in 1986–1990

	1986	1987	1988	1989	1990
Programming Languages	CorVision Eiffel GFA BASIC Informix-4GL LabVIEW Miranda Object Pascal PROMAL	Ada ISO 8652 Clean Erlang HyperTalk Mathematica Oberon occam 2 Perl Self Turbo Basic	A+ Hamilton C shell Object REXX Octave RPG/400 SPARK STOS BASIC Tcl Mathematica	Bash LPC Modula-3 PowerBASIC Turbo Pascal OOP VisSim FL	AMOS BASIC AMPL EuLisp Haskell J Object Oberon Z Shell Operating
Operating Systems	AIX 1	Windows 2.0	MS-DOS 4 Windows 2.1x OS/2 A/UX	EPCO	Windows 3.0
Computer Networks			Morris worm	World Wide Web Starts	HTML
Computer Graphics	Intel 82786 Coprocessor	JPEG and GIF	Pixar's *Tin Toy* wins Oscar	AutoDesk 3D Studio	
Word		Microsoft	*PC Magazine*	WordPerfect	Microsoft

processors		Works for DOS	Reviews 55 Packages	5.1 Word for Windows	Office for Windows
Spreadsheet		Excel for Windows	Quattro Pro		
CAD/CAM	AutoLISP	Deneba releases Canvas X AutoCAD 9	CATIA 3 AutoCAD 10	Parametric T-Flex	Visionary Design Systems founded AutoCAD 11 ACIS 1

Table 5. Details of Software in 1991–1995

	1991	1992	1993	1994	1995
Programming Languages	GNU E Oberon-2 Oz Q Visual Basic Python	Turbo Pascal Dylan	Ruby Lua AppleScript Brainfuck K Lua NewtonScript R Transcript Self ZPL	CLOS ANS Forth ANSI Common Lisp Claire Pike RAPID	Ada 95 Borland Delphi ColdFusion Java JavaScript LiveScript PHP Ruby
Operating Systems	MS-DOS 5 Linux	Windows 3.1x 386BSD	MS-DOS 6 Newton OS Solaris	AIX 4.0, 4.1	Windows 95 Digital UNIX
Computer Networks		Mosaic web browser	Netware 4	Netscape Navigator	The research proposal for Google was formed.
Computer Graphics		OpenGL	Nvidia founded		Pixar Goes Public after *Toy Story*
Word Processors	Microsoft Works			Novell buys WordPerfect	Word 95 for Windows
CAD/CAM	EDS buys Unigraphics	CADAM & CATIA begin unification	AutoCAD 12	Simple Vector Format	MicroStation Advanced solid modeling

Table 6. Details of Software in 1996–2000

	1996	1997	1998	1999	2000
Programming languages	Curl Lasso NetRexx OCaml Perl Data Language WebDNA	Component Pascal E ECMAScript F-Script ISLISP Pico REBOL Squeak Smalltalk Tea Rebol	M2001 Open Source Erlang Pikt PureBasic Standard C++ UnrealScript	D GameMaker Language Harbour XSLT	ActionScript C# Ferite Join Java Joy XL Visual Basic .NET
Operating Systems	Windows NT 4.0 Palm OS	Inferno Mac OS 7.6 Mac OS 8	Windows 98 Solaris 7 64-bit	Mac OS X Server 1.0 Mac OS 9	Windows 2000 Windows ME Mac OS X Public Beta
Computer Networks	Mosaic web browser Inter@ctive Pager	NetWare 4	Netscape Navigator	BlackBerry 850	
Computer Graphics	3Dfx Voodoo	ATI Rage Pro	Voodoo Banshee	S3 Savage 4 GeForce 256	Radeon DDR (R100)
Word Processors	Corel buys WordPerfect from Novell			Sun buys StarDivision	
CAD/CAM	Canvas 5	ISO 13567 AutoCAD 14	Dassault Systems buys Matra Datavision Products	Pro/Engineer 2000	AutoCAD 2000

Table 7. Details of Software in 2001–2005

	2001	2002	2003	2004	2005
Programming Languages	AspectJ GDScript Processing RPG IV	Gosu Io	Factor Falcon Nemerle Scala Squirrel	Alma-0 Boo FreeBASIC Groovy Little b Subtext	F# Seed7
Operating Systems	v10.0 Cheetah v10.1 Puma Windows XP	Windows XP 64-bit Edition 10.2 Jaguar	v10.3 Panther Red Hat Enterprise Linux	v10.4 Tiger Ubuntu 5 Windows XP Professional	

			Windows Server 2003	x64 Edition	
Computer Networks	Netware 4	Netscape Navigator	802.11g Apple Safari	Gmail Facebook founded Mozilla Firefox	
Computer Graphics	Nvidia Kyro II GeForce 3				Adobe buys Macromedia
Word Processors				Writely	
CAD/CAM	EDS buys SDRC	Unigraphics NX Autodesk buys Revit	Dassault integrates VBA	EDS PLM Solutions goes private	UGS buys Tecnomatix

Table 8. Details of Software in 2006–2010

	2006	2007	2008	2009	2010
Programming Languages	Cobra Links OptimJ Windows PowerShell	Clojure Fantom Fortress LOLCODE Oberon-07 Vala	Genie Pure	CoffeeScript Go Idris Parasail	Chapel RPG Open Access Rust
Operating Systems		Windows Vista v10.5 Leopard	Android	Windows 7 v10.6 Snow Leopard Android 1.5 "Cupcake" Android 1.6 "Donut" Android 2.0–2.1 "Eclair"	Android 2.2 "Froyo" Android 2.3 "Gingerbread"
Computer Networks	BlackBerry Pearl 8100		Google Chrome Chromium	Wi-Fi 802.11n	
Computer Graphics	AMD buys ATI Disney buys Pixar		*Assassin's Creed*	*Up* Cloth Simulation	*Avatar* wins "Best Picture"
Word	Google buys		Oracle buys	Oracle releases	

| Processors | Upstartle | | OpenOffice from Sun | OpenOffice to Apache Software Foundatio006E | |
| CAD/CAM | SolidWorks 2007 | Siemens buys UGS | | | |

Table 9: Details of Software in 2011–2014

	2011	2012	2013	2014
Programming Languages	Dart	Elixir Julia TypeScript		Hack Swift
Operating Systems	v10.7 Lion Android 3.x "Honeycomb" Android 4.0 "Ice Cream Sandwich"	Windows 8 v10.8 Mountain Lion Android 4.1.x–4.2.x "Jelly Bean"	v10.9 Mavericks Windows 8.1 Android 4.3 "Jelly Bean" Android 4.4 "KitKat"	v10.10 Yosemite Android 5.0 "Lollipop"
Computer Networks		802.11ac		
Computer Graphics	*Hugo* wins Oscar Visual Effects			

III. PURPOSE OF THE STUDY

Firmware is a software program on hardware device typically stored in the flash ROM, these set of programs of an embedded system may be the only program that will run on the system and provide all of its functions, firmware such as the ROM BIOS of personal computer may contain only elementary basic function of the device and only provide the service to the higher level of software. As more and more programs enter now in the firmware the hardware its self smaller, cheaper and faster but to comparing earlier bundling and individual hardware and software the speed reducing in some of the particular requirement unnecessary software &hardware applicable by force able so finally the results of cost will be raising as the performance of instrument speed also will down. At the year ending of 2017 launch of Kaios operating system supports powerful features like 4G/LTE, NFC and Qwerty keyboard and it is based on open standard HTML5 and allows CSS and Javascript. In fact, KaiOS is so light that it can run on phones with an only 256MB run of internal memory of phone device. But the same qualities of facilities are providing other mobile operating systems are taking more than double space of volume with comparing of Kaios In earlier time a PDF adobe reader 2 software to take installation space volume 1.37MB only now recently the PDF adobe reader 11.0 full version software takes more than 70MB but according to the user orientation, both work same indeed the development of hardware and software varies necessarily much of value is in the installation of software.

Finally, the main purpose of this study from the above data taken by using latest hardware with considering old versions of software and operating system with reducing are unnecessary hardware and software using we can achieve good performance in less price of production of computer or mobile or tab or any other electronic instrument.

IV. METHODOLOGY

Formalization of software development

The development of curricula in computer science has improved in software development of these components of

  a. Structured and objective Oriented Programming
  b. Data structures
  c. Analysis of Algorithms
  d. Formation languages and compiler construction
  e. Computer Graphic Algorithms
  f. Sorting and searching
  g. Numerical methods optimization and Statistics
  h. Artificial Intelligence and machine learning

How software has affected hardware: Moore's law predicted that as more and more programs enter the real of firmware and the hardware itself becomes smaller, cheaper and faster, an increasing number of types of functionality of computing first carried out by software, have joined the ranks of hardware, as for the example with graphics processing units. (However, the change has sometimes gone the other way for cost or other reasons, as for example with soft modems and microcode.)Most hardware companies today have more software programmers on the payroll than hardware designers, since software tools have automated many tasks of printed circuit board (PCB) engineers.

- In India telecommunication Reliance company released bundling CDMA mobile which developed Palm Operating System and networking with full signal strength, higher performance even of least converge area also providing full clarity of communication with less price to comparing these facilities other than CDMA networks like GSM mobile networking mobile running device the only CDMA mobile device has taken very less value of firmware and effectively.

- A LED, LCD, CRT monitor device to comparing all the CRT monitor running with a fixed firmware and working regularly without the requirement of updating. But the updating processes of the establishment firmware which are taking some of the patches through online downloading and it becomes heavy data of firmware so finally the performance of device not performed well as per the technical engineering thoughts sometimes the instrument device will also not working because of lack of knowledge of updating and installation software.

- In India telecommunication JIO testing signal are launched in LYF mobile devices and continues updating through the internet downloading frequently finally better signal strength possible but here the processes of testing signal so many times of patches required for the operating system of mobile Android software, to compared that the time of released versions and updated versions mobile device faced heavy burden by the large value of android firmware software. Who are not updated latest updated software the mobile-facing heat, radiation problem and signal problem by this technical method so many people are facing a problem who have lack of technical knowledge.

- An internal decorated vehicle with special bundling software and hardware device are the best entertainment for the traveling passengers and these working device very less usage of an operating system with inbuilt of hardware.

- Apple Company released laptops by bundling operating system Mac OS and this device is not

supported with Android apps into this mobile device because the operating system uses less data with less usage of battery and provides high performance when to compare Android and Apple mobile runs the only iOS supported apps.

* Many of mobile are inbuilt pre-loaded application is running with user requirement of

his interest and wastage of mobile internal storage by this problem sometimes the user doesn't have a chance to his requirement application or apps as per the firmware software.

Table 10. Sample of different type of mobiles with its Hardware & Software using average of 2000amphs battery details in India

Mobile Device type and model	Operating system	OS required space of volume in MB	RAM originally Required for the booting the device	Mode of RAM required as per the booting device	Communication network Single burden/ Radiations/ mobile heating problem	Stand by battery time
Apple iPhone 16 GB internal storage	iOS	1.5GB	8GB	POST (Power On Self Test)	1 to 1.6watts/kg	10 days
Samsung	Android version	2-4GB	1.3GB	Power On System Startup	0.655 to 1.5watts/kg	12days
Microsoft	Microsoft windows	1.4GB	1GB	By UEFI	1.6watts/kg	10day
Jio LYF	KaiOS	256MB	512KB		0.362 to 0.560watts/kg	15days

From these all the example considering taking a new type of bundling hardware and software with the latest hardware and earlier least space of usage inbuilt software, here the software an option to expand to the latest version if required the user orientation method is the best salvation of this method. By these, all above working all devices are running either bundling software or updating required software with fixed /expandable hardware devices.

So from these calculation taken and to develop in the coming years the latest hardware have inbuilt firmware software at the time of 2000 which are main required operating devices for the using every one hardware with less volume of usage by firmware software and later the user orientation of the requirement of extra updated in the hardware and also a system of auto jumping software switching can be designed and providing extra slots.

USB-C

Technically is known as USB Type-C which is a 24-pin USB connector system, distinguished by its rotationally-symmetrical connector. The USB Type-C Specification 1.0 was published by the USB Implementers Forum (USB-IF) and was finalized in August 2014. It was developed at roughly the same time as the USB 3.1 Specification. A device that implements USB-C does not necessarily implement USB 3.1, USB power delivery, or alternate mode. The USB-C connectors connect to both hosts and devices, replacing various USB-B and USB-A connectors and cables with a standard meant to be future proof. The 24-pin double-sided connector is slightly larger than the micro-B connector, with a USB-C port measuring 8.4 millimeters (0.33 in) by 2.6 millimeters (0.10 in). The connector provides four power/ ground pair two differential pair for non-super speed data (though only one pair is populated with USB C cable) four pair for super speed data (only pairs are used in USB 3.1 mode)

two "sideband use" pins, V_{CONN} +5 V power for active cables, and a configuration pin used for cable orientation detection and dedicated biphase mark code (BMC) configuration data channel. Connecting an older device to a host with a USB-C receptacle requires a cable or adapter with a USB-A or USB-B plug or receptacle on one end and a USB-C plug on the other end. Legacy adapters with a USB-C receptacle are "not defined or allowed" by the specification because they can create "many invalid and potentially unsafe" cable combinations.

Devices may be hosts (DFP: Downstream-facing port) or peripherals (UFP: Upstream-facing port). Some, such as mobile phones, can take either role depending on what kind is detected on the other end. These types of ports are called Dual-Role-Data (DRD) or Dual- Role Port (DRP), which was known as USB On-The-Go in the previous specification when two such devices are connected the roles are randomly assigned but a swap can be commanded from either end, although there are optional path and role detection methods that would allow devices to select a preference for a specific role. Furthermore, dual-role devices that implement USB power delivery may independently and dynamically swap data and power roles using the Data Role Swap or Power Role Swap processes. USB-C devices may optionally provide or consume bus power currents of 1.5 A and 3.0 A (at 5 V) in addition to baseline bus power provision power sources can either advertise increased USB current through the configuration channel, or they can implement the full USB power delivery specification using both BMC-coded configuration line and legacy BFSK-coded V_{BUS} line.

Figure1. USB C

All USB-C cables must be able to carry a minimum of 3 A current (up to 60 W @20V) but can also carry high-power 5 A current (up to 100 W). All USB-C to USB-C cables must contain e-marker chips programmed to identify the cable and its current capabilities. USB charging ports should also be clearly marked with capable power wattage.

Audio Adapter Accessory Mode

USB-C plug supports analog headsets through an audio adapter accessory with a 3.5 mm socket providing four standard analog audio signals (Left, Right, Mic, and GND). The audio adapter may optionally include a USB-C pass-through plug to allow 500 mA devices charging. The engineering specification states that a 3.5 mm analog headset jack should not replace a USB-C plug. Analog signals use the USB 2.0 positive differential pair (Dp) and the two side-band use pairs. The presence of the audio accessory is signaled through the configuration channel and V_{CONN}.

Alternate Mode

An Alternate mode dedicates some of the physical wires in a USB-C 3.1 cable for direct device-to-host transmission of alternate data protocols. The four high-speed lanes, two side-band pins, and (for a dock, detachable device and permanent cable applications only) two non-Super Speed data pins and one configuration pin can be used for alternate mode transmission. The modes are configured using

vendor-defined messages (VDM) through the configuration channel.

Table 11. USB Type-C Specification 1.0

| Pin	Name	Description	Pin	Name	Description
A1	GND	Ground return	B12	GND	Ground return
A2	SSTXp1	SuperSpeed differential pair #1, TX, positive	B11	SSRXp1	SuperSpeed differential pair #2, RX, positive
A3	SSTXn1	SuperSpeed differential pair #1, TX, negative	B10	SSRXn1	SuperSpeed differential pair #2, RX, negative
A4	ᵛBUS	Bus power	B9	ᵛBUS	Bus power
A5	CC1	Configuration channel	B8	SBU2	Sideband use (SBU)
A6	Dp1	Non-SuperSpeed differential pair, position 1, positive	B7	Dn2	Non-SuperSpeed differential pair, position 2, negative[a]
A7	Dn1	Non-SuperSpeed differential pair, position 1, negative	B6	Dp2	Non-SuperSpeed differential pair, position 2, positive[a]
A8	SBU1	Sideband use (SBU)	B5	CC2	Configuration channel
A9	ᵛBUS	Bus power	B4	ᵛBUS	Bus power
A10	SSRXn2	SuperSpeed differential pair #4, RX, negative	B3	SSTXn2	SuperSpeed differential pair #3, TX, negative
A11	SSRXp2	SuperSpeed differential pair #4, RX, positive	B2	SSTXp2	SuperSpeed differential pair #3, TX, positive
A12	GND	Ground return	B1	GND	Ground return
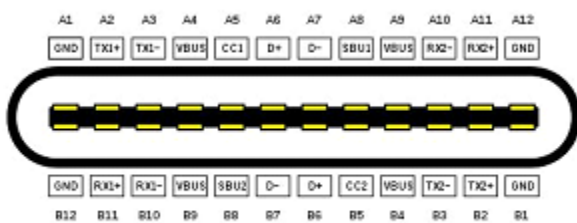
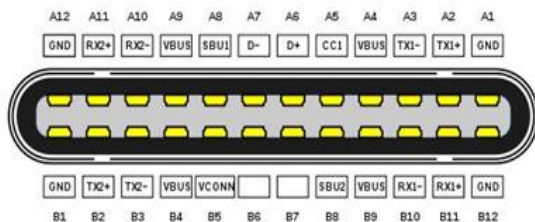**Figure 2**. USB-C receptacle pin out end-on view

Figure 3. USB-C plug pin out end-on view

USB 2.0 Billboard Device Class specification

USB 2.0 Billboard device class is defined to communicate the details of supported alternate modes to the computer host OS. It provides user-readable strings with product description and user support information. Billboard messages can be used to identify incompatible connections made by users. They are not required to negotiate alternate modes and only appear when negotiation fails between the host (source) and device (sink).

USB Audio Device Class 3.0 specification

USB audio device class 3.0 defines powered digital audio headsets with a USB-C plug. The standard support for the transfer of both digital and analog audio signals over the USB port.

Software support

- Linux has supported USB 3.0 since kernel version 2.6.31 and USB version 3.1 since kernel version 4.6.
- Windows 10 and Windows 10 mobile support USB 3.1, USB-C, alternate modes, billboard device class, power delivery, audio accessory, and USB dual-role support.
- Windows 8.1 added USB-C and billboard support in an update.
- OS X Yosemite supports USB 3.1, USB-C, alternate modes, and power delivery.
- Android Marshmallow works with USB 3.1 and USB-C.
- Chrome OS supports USB 3.1 and USB-C starting with the Chrome book pixel 2015 and supports alternate modes, power delivery, and USB dual-role support.

Hardware support

An increasing number of motherboards, notebooks, tablet computers, smartphones, hard disk drives, USB hubs and other devices released from 2014 onwards feature USB-C receptacles. Currently, display port is the most widely implemented alternate mode and is used to provide video output on devices such as the Mac Book, Chrome book pixel, HTC U11, Samsung Galaxy S8, Samsung Galaxy Tab Pro S, Microsoft Lumia 950, and Nintendo switch. A USB-C multiport adapter converts the device's native video stream to display port/HDMI/VGA, allowing it to be displayed on an external display, such as a television set or computer monitor.

Examples of devices that support high-power charging according to the USB power delivery specification include the Mac Book, Chrome book Pixel, Dell Venue 10 Pro, Lenovo ThinkPad X1, Nintendo Switch, Nexus 5X, Nexus 6P, Google Pixel, Samsung Galaxy Tab Pro S, Samsung Galaxy S8, Samsung Galaxy Note 8, LG G6, and Moto Z.

Audio output compatibility

As described above, it is possible to use the Audio Adapter Accessory mode to provide an analog audio signal connection over USB-C plug however it is not mandatory to support the mode. The USB-C port on some devices might only support the digital audio output mode, which makes it necessary to use a digital-to-analog converter in order to send audio output toward earphone or speakers that can only accept an analog input.

Compatibility with other fast charging technology

In 2016, Benson Leung, an engineer at Google, pointed out that quick charge 2.0 and 3.0 technologies developed by Qualcomm are not compatible with the USB-C standard. Qualcomm responded that it is possible to make fast charge solutions fit the voltage demands of USB-C and that there are no reports of problems. However, it did not address the standard compliance issue at that time. Later in the year, Qualcomm released quick charge 4 technology, which cited – as advancement over previous generations – "USB Type-C and USB PD compliant".

During in cooperating the old operating system to the latest firmware system for increase in speed and to reduce power consumption by this the system has the defaults that the latest firmware system doesn't support the operating system for additional application to avoid this the system must be connected to the dock C i.e., USB type C is desired above which is used to connect the required system with required patch up file to this initially USB type C driver must be in build within the firmware so when required dock C can be used to connect other devices

A. Hypothesis

- By low volume of firmware software supporting hardware as well as operating system increasing working speed very effectively.
- By this method only required latest updates only updates

- User orientation devices only manufactured
- Less price high performance of required device
- Not required for the internet or download feature.
- The expandable software by bundling hardware and software
- Reducing power usage

B. Limitation of the study

- The study has taken only the extra feature requirement of the different user orientation
- The research takes except form the part of high price rate of and high-value operating system.

V. CONCLUSION

This research methodology results in the implementation of latest hardware technology with earlier software, firmware installation of operating system, with a special features of latest supporting updating software. While using the latest software and hardware device the end user can be operated with earlier OS and the latest hardware by the way of hardware jumper settings, before booting the device or by changing of the operating manual setting i.e., after the booting the device. Now a days the production, manufacture of systems can be produced with the unique model, each and every requirement of system which are operatable without their interest. The student, businessman, marketing organizations, multimedia users and like different type of people's requirement with different type of hardware and software device like of OTG operators in mobile device USB type C in systems so that this method of user orientation devices getting with less cost and with high performance and no need of unnecessary download of latest software ultimately this reduce in power consumption

VI. REFERENCES

[1]. Aaby, Anthony (2004). Introduction to Programming Languages.

[2]. Aho, Alfred V., Sethi, Ravi, and Ullman, Jeffrey D. (1988). Compilers: Principles, Techniques, and Tools. Addison-Wesley.

[3]. Baron, Michael. (2006) Probability and Statistics for Computer Scientists.

[4]. Brad Lockwood (13 October 2008). Bill Gates: Profile of a Digital Entrepreneur: EasyreadSuperLarge18ptEdition(https://books.google.com/books?id=7J_EBQuPxAgC&pg=PA25). ReadHowYouWant.com. pp. 25-. ISBN 978-1-4270-9149-9.

[5]. Booch, Grady (1997). Object-Oriented Analysis and Design with Applications. Addison-Wesley.

[6]. Caruso, Denise (1984-04-02) "Company Strategies Boomerang" (https://books.google.com/books?id=kC4EAAAAMBAJ&lpg=PA80&pg=PA80#v=onepage&q&f=false). InfoWorld. pp. 80-83. Retrieved 10 February 2015.

[7]. Cormen, Thomas H.; Leiserson, Charles E.; Rivest, Ronald L. & Stein, Clifford. (2001) Introduction to Algorithms, MIT Press and McGraw-Hill.

[8]. Ferguson, R. Stuart. (2013) Practical Algorithms for 3D Computer Graphics.

[9]. G. David Garson (January 2006). Public Information Technology and E-governance:ManagingtheVirtualState (https://books.google.com/books?id=OwYnTHQC4e0C&pg=PA229). Jones & Bartlett Learning. pp. 229-. ISBN 978-0-7637-3468-8.

[10]. Hally, Mike (2005). Electronic brains/Stories from the dawn of the computer age. London: British Broadcasting Corporation and Granta Books. p. 79. ISBN 1-86207-663-4.

[11]. Hopcroft, John E. and Jeffrey D. Ullman, (1979) Introduction to Automata Theory, Languages, and Computation.

[12]. Justice WHITE, with whom Justice BLACKMUN joins, dissenting. (https://supreme.justia.com/cases/federal/us/473/ 90 8/).

[13]. Knuth, Donald. (1998) The Art of Computer Programming: Volume 3: Sorting and Searching.

[14]. Kurose, James; Ross, Kieth (2005). Computer Networking: A Top-Down Approach. Pearson.

[15]. Mitchell, Tom. (1997) Machine Learning.

[16]. Narayan, K. Lalit (2008). Computer Aided Design and Manufacturing. Prentice Hall.

[17]. Peter Brass. (2008) Advanced Data Structures, Cambridge University Press.

[18]. Press, William H., Saul A. Teukolsky, William T. Vetterling, Brian P. Flannery. (2007) Numerical Recipes 3rd Edition: The Art of Scientific Computing.

[19]. Russell, Stuart J. and Peter Norvig (2009) Artificial Intelligence: A Modern Approach (3rd Edition).

[20]. Shirley, Peter. (2009) Fundamentals of Computer Graphics-3rd edition.

[21]. Stallings (2005). Operating Systems, Internals and Design Principles. Pearson.

[22]. Tying Arrangements and the Computer Industry: Digidyne Corp. vs. Data General. JSTOR 1372482 (https://www.jst or.org/stable/1372482).

[23]. Wayne Carlson (2003) A Critical History of Computer Graphics and Animation.

[24]. Wexelblat, Richard L. History of Programming Languages.

[25]. (https://www.cnet.com/i/ne/p/2008/Psystar_anti trust_dismissal.pdf).