Usages of IOT in Smart Library

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Abstract:- Invention and development of Technology make positive and negative impact on our day to day life, things are rapidly changed , speedy lifestyle, information explosion Increases curiosity , creativity, and problem solving techniques . Each and every part of daily life trapped by technology, use of artificial intelligence, cloud computing, machine learning predictive analytics and business intelligence tools. Application now creating new methods to conduct operates and manages the business. Human invented technology to offer best life for future generation.

Electronic devices are part of life in today's era .smart phone ,mobiles which are increasingly become a part of modern living ,as everyone wish to connect with internet all the time ,this is possible because availability of broadband network , WI-FI System with reduced cost .affordability to access technology based services like made possible to find information ,booking ticket, online shopping, navigation of maps in routine work. not only in offices ,work places but also in daily life technology helps us.

Various app, shopping site , Messengers like E-Mail ,Instagram, telegram, software's to reduce human efforts, maps Skype, all this are things which are based on Internet .that is called "Internet of things "Internet changes the things within a second, less human efforts, time & money saver ,easy to access, and many more. Open sources software is refer to something that which can modify anyone ,because it is design publicly ,is type of computer software were source Code is released under License in which copyright user grant users the rights to study. User can modify it without any charges. Open sources software like Koha, D-Space, E-print, Open Bibliography, New Genlib, New reference management ect.

I. INTRODUCTION

A. What is IOT

IOT (Internet of things) is a system work without human interaction that is human to human or human to computer. Only any computing device, mechanical and digital machine object animals or people provide unique identifiers (UIDs) to communicate with each other, or transfer data. Library play vital role in modern society it is called as knowledge center also we can say librarian is a teacher. Libraries are essential to improve knowledge and term IoT consist with the network that can share ,transfer, store data in electronic form, by using internet or Wi-Fi one can use, share manipulate data in without barrier of time and place. Iot use connecting media such as wireless sensor network, and physical object to connect devices to each other. Cloud computing help to improve service efficiency, visibility of library collection, it provide a place invisible place to manage digital data in daily routine work. A server is a type of computer or device on which manage network resources .server categorized under many types that is proxy server, mail server, real time server, application server FTP server etc. Wi- Fi is network technology that uses radio waves to provide wireless high speed internet and network connection. This is technology savvy generation and every one want information without losing time. The libraries need to change its traditional system of work and should accept modern techniques to work.

II. IOT HISTORY

In modern world a wide range of information is disseminated in print form and it is impossible to have access all form of information without help of technology, also by using IoT in library we can justify here the fourth law of library science i.g.**save time of reader**, and library staff also. in early 20th century we use the books, maps ,dictionary ,periodicals in print forms to gain knowledge to find information. It is very time consuming procedure to find out particular information.

In middle age of 19th century microforms ,microfilms ,cassettes CD/DVD, PD''s, use to stored data in digital formats .The last one decade information explosion impact on each and every day to day part of life, various internal and external storages ,android technology, apps , search engines ,social networking sits ,shopping sites ,uses to find data ,to search information.

Louis Rosenfeld, founder of the clearinghouse for subject-oriented internet resource guide at the University of Michigan, edited a monographic series covering the area of health and science, humanities, social science, business, and law. There are also numerous web sites devoted to the "best of the web" in given subject area . The term "Internet of Things" was popularized by the work of the Auto-ID Centre at the Massachusetts Institute of Technology (MIT), which in 1999 started to design and propagate a cross company Radio frequency identification infrastructure. In 2002, its co-founder and former head Kevin Ashton was quoted in Forbes Magazine as saying, "We need an internet for things, a standardized way for computers to understand the real world" [10]. To date, the world has deployed about 5 billion "smart" connected things. Predictions say there will be 50 billion connected devices by 2020 and in our lifetime we will experience life with a trillion-node network which provides strong connection nodes .(Reference Mrs Ashwini Nag1 and Dr. Kaiser Nikam International Journal of Information Technology and Library Science. ISSN 2349-235X Volume 5, Number 1 (2016), pp. 1-7 © Research India Publications))

III. IMPACT OF IOT ON LIBRARY

In ancient period book are kept in bounded forms and librarian are storekeeper .but in today's situation library provide open access to readers this is due to information explosion, increasing printing technology, availability of information, without human interaction. Internet and Wi-Fi connect a person from one place of world to other, in seconds, the invention of new subject increase the need of information for research, and development purpose. Communication is possible using internet and mailing services.

IoT in Library reshaped the function of services of library the activity which carried out manually are now done with the help of technology .various library software help to reduces human efforts and provide excellent services.ICT has change the way of daily working that is acquisition ,technical processing ,periodical subscription and circulation activities. it is possible to satisfy reader and in such way reader can get desired information and effective services in shortest time with less man power. This is information age and libraries changing their role and function according to the new trends in society. It can say that without help of technology library cannot satisfy the user need.

IV. IOT IN LIBRARY

Internet of thing rapidly changes the working system in day to day life .Each and every part of life influences by the technology. The journey of Library and its services also changes rapidly, in ancients era where the Dharmagranta's, like Bhagwatgeeta,Vedas, kept in written form very few people can access this learning resources but in computer era it is easily available in digital format, therefore the intellectual level of people increases and they try to learn.

V. IOT BASED SERVICES IN LIBRARY

Proposed method is Iot Based smart library system is shown below its helps to provide smart services in less time. to automate the library and reduce the time to avail services the following devices are help to librarians .

- **Kiosk:** A device provides hardware and software support for managing the library issue return operation. The IISER Pune facilitates this service to its users it's save the time of readers and reduces human efforts in library services the device is very helpful.

Fig. 1: Kiosk

- **3m System in Library**: 3m security solution are designed to protect valuable print material in library. COEP Central Library facilitates this service for security of books.

Fig. 2: 3m System in Library

- **Mobile based library services:** The mobiles and smart phones   made a unsought changes in day to day life many it opens the door of world to last the person, now the each and everything is depend on smart phone or various mobile application .We can say the world is in pocket now. The shopping, travelling, the hotel booking, groceries, hospital services all are depending on smart phone. **So why not library?** Library facilitates various mobile based services to users mobile computing is a golden opportunity to connect users anywhere anytime.

Fig. 3: Mobile based library services

Example of Mobile Based Library services:
- QR Code/ MOPAC
- SMS alert services
- Library maps and new arrivals
- CAS/SDI
- Library news, Events, Blogs
- E- Thesis, E-journals, Directory

QR codes is helpful in each and every library operation mentioned above .also the today's generation is technology savvy and it's not necessary to teach them the access of this enhanced facilities.

- **RFID:** The acronym of RFID as radio frequency identifier. it uses electromagnetic fields to automatically identify and track the tags attached with object .in library where thousands of books, periodicals CDs DVD contained it is challenge for librarians to manage such huge collection RFID is small device which can receive

and transmit radio signal it can store information .Use of RFID is make a circulation job simple and useful to track valuable asset (book) in library.

Software in Library: Various software use in library .Software for circulation, Software for data preservation, plagiarism check software for PG, Ph.D Student, here we see open source software in library

VI. IOT BASED AUTOMATION AND MONITORING SYSTEM

What is Open Source Software?
Generally we can define A open source software is the software which is computer based freely available to install in your machine with a code that anyone can inspect, modify and reshaped .programmer can manipulate how a software can piece. (OSS) Open source software in which source code is released under a license in which copyright holder grant users the rights to study,change and distribute the software to anyone and for any purpose .

Open Source Software in Library:
In today's era Library uses various software for its routine work like circulation acquisition, storage of data in digital form, ect. Free library management systems or LMS is used to work in a smarter way.

Benefits of Digital Library software
- Record maintenance
- Time saving and cost saving
- Secure and reliable
- Increase employee efficiency
- Easy to use

Example of Open Source software : KOHA , New Genlib, Evergreen, D-Space, Green stone digital library software. E-Prints Ect.

VII. CONCLUSION

This study provides the concept of internet of things in brief, what is IoT and how it work in libraries need of IoT in modern society, impact of IoT ect. Internet of things is an ideal emerging technology to influence the patrons by providing new evolving and efficient services faster and more convenient. The proposed technologies, RFID, OPAC, through wireless sensor networks can increase profitability by improving resources Internet of Things Applications in Libraries utilization and development of management services in the academic libraries. The proposed system is expected to enhance user convenience, and will be utilized effectively in the near future.

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