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## Internet of Things and Libraries

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### ABSTRACT:

*Libraries have revolutionized themselves by applying the latest technology components based on information technology. Internet of Things (IOT) is such a leading technology which prevails libraries to collect data and disseminate it to absolute destination without human interventions and hindrances. Multiple areas of libraries have under influence of IOT and eased the library resources and services. This article explores the concept of IOT, Technical components of IOT, professional and technical skills required for IOT, application of IOT in libraries. Article also reveals the models of IOT and challenges for application of IOT.*

**KEYWORDS:** Internet, resources, services. Education system

### INTRODUCTION:

Internet has impressed almost every field of life and its expansion is progressing faster day by day. Internet is providing the greatest development of human race. This development has eased the human life and services. Internet has certainly changed scenario of the education system by bringing the myriads of information sources to system. It has leveled academic system to next step. Internet has rejuvenated teaching- learning and its related services and witnessed tremendous change in traditional knowledge barrowing and delivery of system.

Libraries are assisted in administration, information sources and services, development of information communication technology and collection development. Internet based technology has boosted the capacity library administrator by supplying information guide for decision making, surveillance system like CCTV, modules for library staff etc. Products of internet have potential to

perform multiple things at time for librarian to solve the issues related to the library. Library software have made easy the task of circulation and acquisition task of library resources. The technological gadgets based on internet helped maintenance activities of the library. E-resources are marveled due to internet and information dissemination has reached its huge value.

### **THE CONCEPT OF INTERNET OF THINGS (IOT):**

According to Wikipedia Internet of Things (IOT) means physical objects that are embedded with sensors, processing ability, software, and the other technologies that connect and exchange data with other devices and systems over the internet or other communication networks. IOT includes the multiple technologies, ubiquitous computing, commodity sensors, increasingly embedded systems and machine learning.

### **Technological aspects of Internet of Things:**

#### **1 Cloud Computing:**

Cloud computing can be defined as the collection of software's and services that enables the users to get the access of data online rather than access from the desktop or internal server. Cloud computing allows to the access the information at time from single information destination. Libraries can use this technology to avail their users selected information through the internet and bestow the opportunity to store and reuse it by online mode. Cloud supports the backbone of library services managing and regulating the library resources and coordinate with library services.

#### **2 Magic Mirrors:**

Mirrors have technology based various applications which contains camera and sensor enabled with WI-FI. This technology assists people to connect with computers. Mirrors helps to search location, to comprehend the users review, to review the contents stored in the database. Mirrors are ideal for libraries to measure the users review and its variation, content diagnosis to inspect the efficiency of library resources and services.

#### **3 Pressure Pad Sensor:**

Pressure Pad sensor is WI-FI enabled thin sheet sensor pad connected with the processing unit that records and controls the system. The pad sensors count the movements of users and in particular reading area which helps libraries to acknowledge the use of collection and its movement. Pressure Pad sensor also records the user information seeking behavior in particular interest area/location. By linking pressure pad sensors with energy system, libraries can save energy in libraries.

#### **4 Wireless Sensor Network:**

Wireless Sensor Networks are perfect blend of wireless communication with low integrated power circuits which have low cost and portability with mini devices. This technology makes the

process of data collection, transformation into information, analyzing and dissemination to multiple doorstep from single window at time. Libraries can attend many users at a time using these sensors.

### **Application of Internet of Things in Libraries:**

Internet of Things can be applied in different areas of the library. IOT can locate the library resources and track the users accordingly. It can be used for to run the library applications, to organize training and consultation sessions, literature search infinite possibilities for researchers.

#### **1. IOT and location of Reading Resources:**

IOT is helpful in searching of books from the shelf and get misplaced report. It eases the library professionals from loss of books. The technology in IOT indulges facility of recording of users presence in library, his movements in reading resources and in – out process of users and the library staff. Libraries can connect to users phone via library server using this technology which assists library professionals to keep in touch with users and disseminate library services online.

#### **2. IOT in Building Operations:**

Nowadays the concept like green libraries has good amalgamation with technology. This approach paved the way for internet based technology for building of libraries. IOT Components like fire safety standards, furniture saving equipments, database based hardware and software have changed the nature of library. IOT based fire sensors have guaranteed the libraries from the fire and avoids the human errors. Internet based technology become a measuring tools for use of library furniture and its placement and safety.

#### **3. Assistance in Library Resource Transaction Activities:**

Internet based applications alert the users about transacted reading resource from the library. Applications keep informing possible reading resources in future. The applications for the library staff itself denote the transaction status of reading resources to the library staff. This helps library staff to gauge the information needs of users. Library fines can be collected using library applications. Using of QR code applications one can access the library resources from the remote place and finds the desired book from the library.

#### **4. Promotion of Library Services:**

Mobile based applications are one of the best trends today to reach the users and promote the assets and services of the library. Mobile applications can orient the users about library services, its dissemination method and technology based gadgets in the library. Virtual library tours might be availed through IOT. Application can be useful for library staff to receive the feedback from users about library services. Information literacy programmes about library services and resources can be arranged from applications.

#### **5. Maintenance of Library Equipments:**



Use of library equipments can be measured using apps and gadgets based on internet services. Electrical equipments like fans, tubes, computers, cleaning equipments are easy to calculate the use pattern. It ease the librarian to review the equipments and maintain them regularly.

### **Challenges for Using IOT in Libraries:**

Every technology has its pros and cons. As use of IOT in libraries raises some issues which might be uncomfortable for library staff and users. It is disputed issue of privacy and rights of users and librarian has to differentiate between them.

#### **1. Technical failure in transactions of E-resources:**

Due to IOT e-resources are now delivered through this channel but failure of apps and technology or crash of server can lead to miss the information or information at urgency. Mobile applications without updates can cause the problems to users to get access to information.

#### **2. Privacy and Security of User Personal Data:**

Access of library data using mobile apps or internet based library websites may permits unauthorized access to users mobile or to reach personal details of users such as bank account details, PAN Card, Aadhar Card details, transactions and familiar information. Every time it is not possible for library administration to prevent these malpractices regarding users.

#### **3. Users Understanding of Information Needs:**

Internet based services had only semantic value. It has no any literal expansion value. It becomes obligatory for the users to place the right terminology for searching of information unless it becomes waste time and efforts. Information literacy about search engine terminology is very essential. It lessen the interest of the user.

#### **4. Expenditure and Maintenance of IOT:**

IOT based equipments are expensive and libraries cannot afford single time huge investments. Maintenance is also another factor. These equipments are have recurrent maintenance and libraries need to allocate separate budget for maintenance. The expertise of manpower maintenance is another issue. In rural area this problems lurks more.

#### **5. Existing Challenges of Libraries:**

Libraries have existing challenges as issue of space, library budget, administrative problems, staff recruitment problems etc. these diverts the tendency of using IOT in the libraries and prevents form the enthusiastic services of library. For successful implementation IOT the sound atmosphere should be crated regarding the user and library staff.

### **Conclusion:**

We can summarize IOT as inseparable part of libraries these days. Technological advent has created huge scope for multiple IOT devices to be used in the library with its upgrading nature.

Libraries are trying to cope with IOTs but its not so much easy for the libraries carrying along with the problems of library budget, trained staff, the rate of information literacy among the users etc. But despite these problems use of IOT can come over the hindrance of information scarcity and management of information flow. IOT will provide unlimited access to information sources for users and library staff and reduce the gap between information haves and information have not. The benefit of IOT may be personalized and it has no any limitations of time space and efforts. The role librarian regarding the IOT is very pivotal to manage the human resources along with information resources with accurate use of present and upcoming technology for the library. IOT will certainly lead towards the today's libraries towards virtual libraries and mobile libraries and traditional role of librarian will be converted into reference librarian and splendid information manager of tomorrow.

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