

An IOT based Framework for Project Management

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Abstract— The Internet of Things is transforming the world due to which organizations are facing many difficulties. The transformation due to these technologies is affecting several areas and project management is not an exception. The Internet of Things can help project managers to manage their projects as well as their types of equipment in an effective way. The connection between IoT devices and project management can allow businesses to achieve new innovations and services in a more effective manner while reducing the risk factor. In this paper, we proposed a framework for effective project management based on the Internet of Things (IoT).

Index Terms— Project Management, Internet of Things, cloud data, Project Manager.

I. INTRODUCTION

Organizations and businesses are experiencing changes in the past decades. The contribution of Information Technology (IT) can be seen in many ways to the changing drivers of today's world. With this expansion of global markets and organizations handling more projects at a time, it realized the necessity of the Internet of Things (IoT) technologies [1] in project management.

It points out that the association does not succeed only in taking the opportunities given by the digitization but not being able to adapt their business models in the terms of digitization.

It shows that Information Technologies (IT) is turning into a basic piece of the item itself. Implanted sensors, processors, programming, and networks in devices, joined with device cloud in which device information is put away and broke down and a few applications are run driven emotional improvement in devices usefulness and execution.

The Internet of Things (IoT) [2] includes the connection between two unique universes in which machines and the web are required to cooperate to make an item that will join both the advances. The IoT changes venture conditions, abilities, aptitudes, and standard practices.

A. Project Management

The project can be defined [3] as the proper schedule which has a definite beginning and ends time. Project management [4] is the practice of initiation, planning, executing, monitoring, and closing the work of a team to achieve a specific goal. Project feasibility [5] is being checked in the initiation phase. In the planning phase, goals are set up and the time frame is set for all the tasks that we will need to perform. In this, we make various milestones. In the execution phase, we execute all the tasks that we planned for we develop teams allocate resources modify projects if needed, and various other tasks [6]. In the monitoring phase, we keep track of the project to see whether the project is going on track or not. In the closure phase, the complete project is represented and a closure report is made.



Figure 1: Phases of Project Management

B. Internet of Things

The Internet of Things (IoT) can be described as the interconnection between physical objects and the internet and able to identify themselves with other devices [7]. The general architecture of IoT is shown in figure 2.

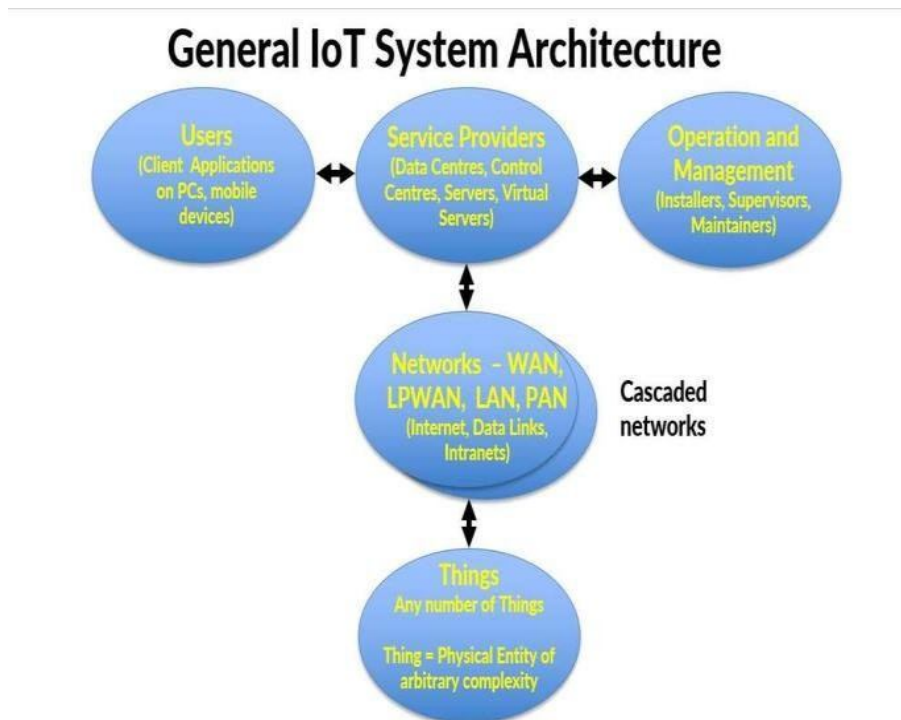


Figure 2: Architecture of IOT

The internet has changed our lives in various ways. Organizations can do their work more effectively with the help of the internet. As the internet came into this era, drastic changes are visible in the development of every organization [8]. A jump headed for the idea of “an organized smart object flooring its way”. So, this gives the developing concept of the “Internet of Things (IoT) [9]”.

C. IoT in Project Management

Information technology changes the learning environment as it provides useful means and sources to extend and enlarge interactive learning in the global environment [10]. It provides more flexibility in project management and enhances the communication for it [11].

IoT technology will upgrade the interrelated system and the sharing capacity of the new network [12]. The real-time update feature can enhance the project management process. It will ensure tangible benefits for the business, environment, society, and individual [13]. The availability of interactive IoT devices will provide more variation and it will change the approaches adopted by the organizations. Internet of Things (IoT) also may provide a more effective way for a project manager to analyze the data and manage the project [14]. It will be helpful for the organizations to improve their responsiveness toward changing business needs [15].

II. LITERATURE SURVEY

Borgia et al. [2] describe the concept of wireless sensor networks. IoT characteristics have been identified as future challenges of IoT. Atzori et al.

[1] Discussed the Internet of Things, integration of several technologies, and communication solutions. Enabling technology has been reviewed for IoT. Falkenreck et al. [6] discuss changes and challenges in industrial business due to the Internet of Things. It describes and tests a research framework for an IoT marketing project. It also reviewed the factors that can influence the IoT framework. Akyildiz et al. [7] describe the concept of sensor networks which has been made viable by the junction of micro-electro-mechanical systems technology, wireless communications, and digital electronics.

III. PROPOSED WORK

In this paper, an IoT device is proposed that has a project management tool kit. It consists of the following software:

- i) Microsoft project
- ii) Wrike
- iii) Project management tool

A. IoT device for Project Management

The Internet of Things (IoT) is a physical device that has internet connectivity. These devices can interact and communicate with other devices over the internet and they can be controlled and monitored [16]. In this research, we proposed an IOT-based framework for project management [17].

The device will have three major components that will be cloud service for the device, skill implementation tool kit, and developer. The main feature of the device is that the user can work through the voice recognition concept [18]. The additional feature can be added by the user in the skill implementation toolkit [19].

A1. Components of the device

The major components of the device are as follows: -

- *Device*: - It will be a tabular shape device that will consist of software for project management like MS office and scheduling tools [20]. It will have a microphone and speaker to recognize the user's voice and to give verbal output. It will have internet connectivity and voice communication.
- *Cloud*: - It is a platform that takes massive data generated by devices, sensors, websites, applications, and customer data and it initiates actions for real-time response [21]. It will consist voice assistance service which will understand what the user wants and will return a voice response for it.
- *Skill implementation kit*: - It will be like the brain that will return something useful to the user. Skills are like codes that will perform a task in the device [22]. There will be an option through which you can great your skill and add it to the kit. You could also interact with the developer for desired skill and the developer will add that skill to your kit and will charge for that.

A2. Working model of the proposed device

The block diagram of the proposed device is shown in figure 2. It consists of the Write software that will add tasks and assign that tasks to a team member. The device will notify the project manager of the start and end date of the project.

Step 1: The user will give the requirement in form of a task.

Step 2: The query will go to the cloud system.

Step 3: It will be search in skill implement toolkit.

Step 4: If it exists

The device will get a voice message (the task has been started).

Else

It will send a voice message (There is no required skill to perform the task).

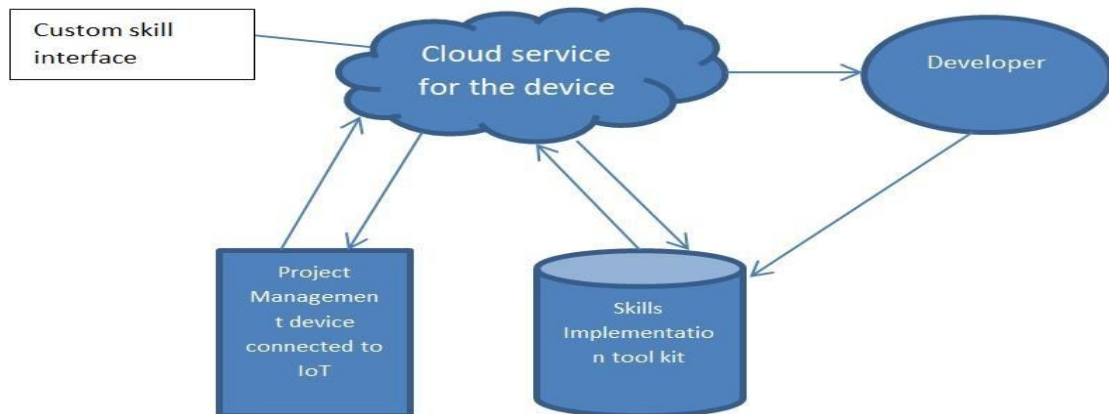


Figure 3: Block diagram of the proposed device

Advantages of the proposed system

- Reduce risk factors as we are coordinating through a voice system and the manual mistake reduces.
- The project manager can access the project from anywhere.
- The project manager will be notified for each task regarding the project.
- Project managers can work fast and effectively using the device
- Project managers can access project details even after many years as it will be saved on cloud service.
- Repetition of data will be allowed due to the IoT device.
- Management will be more open and flexible with the client

III. CONCLUSION

Internet of Things (IoT) is transforming the world and project management is a part of that transformation. There are changes in a project environment, skills, and abilities. The project manager can work effectively by using IOT based device. An IoT-based framework is introduced for making project management efficient. A project manager can have effective team collaboration. The management system will have enhanced security and can reach a high standard.

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