

# IoT Architecture and Application

Akash Iyer

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## 1 Summary

IoT is the study of interconnection of things or objects where the objects can be systems, devices or any other physical entities, they are connected with the help of information transfer through the internet. IoT architecture deals with studying the different layers that go into building an IoT system such that it can function as expected. the paper dwelt with the different layers of an IoT architecture. The layers are :-

Buisness layer - It deals with building buisness models and plans using IoT devices that can be a viable revenue option for a company.

Application layer - It deals with building application using IoT devices that could in theory satisfy customer requirements and provide customer support.

Middleware layer - It deals with the abstraction of network layer and providing service to the Application layer. It contains functions such as Database provision, Service management, Data Processing and Ubiquitous computing.*etc.*

Network layer - It deals with information transferring across networks and devices. It contains functions such as handling service attacks, maintaining reliable data fusion, transmission, mining and communication.*etc.*

Perception layer - This layer is the lowest abstract-able level of IoT composed of sensors, smart devices and other physical entities that pick up on information from the ground level.

The paper also delves with technologies used at every layer to come up with IoT products. Other than basic technologies such as Wi-Fi and Bluetooth, Some of the notable ones are :-

**AMPQ Service** - It is an application layer protocol that provides security while data exchange using XMPP and XML technologies.

**NFC** (Near Field Communication) - It is a wireless technology that transfer information through high frequency waves ( $13.5MHz$ ) in very short ranges ( $< 1mtr$ ).

**LPWAN** - It is a low power wireless technology that cover high ranges through low frequency waves with the help of long range network transmitters.

**RPL Protocol** - It is a network layer protocol which provides routing solution to overcome low and lossy power networks.

**CoAP** - It is a specialized application protocol for constrained devices between devices wirelessly like RPL.

**MQTT** - It is a standard messaging protocol allowing transfer of information between devices.

**DDS** - It is a middleware layer protocol providing service for Data distribution.

The paper finishes with details regarding components of IoT and the challenges that you may face while working with technology related to IoT.

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## 2 Key Contribution from Author

The author was able to bring a comprehensive look into the stages revolving staging an IoT Application. The author brought in a flavour and comprehensibility to IoT architecture that non tech related people might appreciate while also be informative enough that they understand the basic picture of the industry. The section regarding the challenges of IoT should be referred for an effort in error less implementation in an IoT product.

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## 3 Personal View

On a holistic level the paper essentially can be taken as a beginner's guide onto the IoT world. The paper in my view can be taken as a hitchhiker's guide while working in an IoT project and brings a clarity into the stages in

which the project should be taken forward for a smooth development period. The paper gives you options for technology you can use at every level in a very modular way for individualising your project to your needs. The paper is a first step into the IoT world hence it can be a hard pass if needed for people who are not a novice to the industry yet it is an interesting read nonetheless.

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## **4 Agreement, Pitfalls and Fallacies**

Eventhough the concept is generic and comprehensible that I can get the gist behind it, the paper falters because of laziness. Going past the fact that the layers showed in this paper are far the general consensus, the paper doesn't delve into the different models that can be explored during development of an IoT project and leaves very less space for adaptability in its approach and in some cases come off as outright dated. If taken into consideration that the paper is only a few years old, the technologies discussed seem centuries old and the recent innovations in IoT and the new trends are nowhere to be seen or mentioned.

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## **5 Reference**

\* A Comprehensive Study Of Architecture,Protocols And Enabling Applications In Internet Of Things (Iot) by Srinivasa A H, Dr.Siddaraju