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Review on Industrial Internet of Things (IIOT)

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Abstract: ***The Conventional Industrial Automation System follows Prolonged Industrial architecture which were designed in earlier days, Adoption of internet technologies in control system applications such as Distributed Controls led into patternization of Industrial control network to modern architecture, However Industrial Automation and Control System (IACS) will be integrated with firewalls and security to minimize the network vulnerabilities, This paper reviews the Industrial Internet of Things and its key components such as Cyber Physical System (CPS) , Computing technologies and Industry 4.0***
Keywords: IACS, CPS, Industry 4.0

I. INTRODUCTION

Industrial Control System (ICS) is managed by computational systems referred as Operational Technology (OT), manufacturing sectors such as Cement, Minerals, Oil and gas uses continuous process control systems where Cyber Physical Systems plays a vital role for regulating and monitoring of process control loops

The introduction of Internet of Things (IOT) in 1999 led a significant research in commercial applications, Industrial connectivity and eventually smart devices used for health monitoring, The usage of IOT influenced and led into fourth industrial revolution termed as Industry 4.0

The industry 4.0 preliminarily focused on smart factory concepts where factory machines can handle decision making activities such as predict failures, forecasting productions, self-preventive process, machine to machine communication and many more

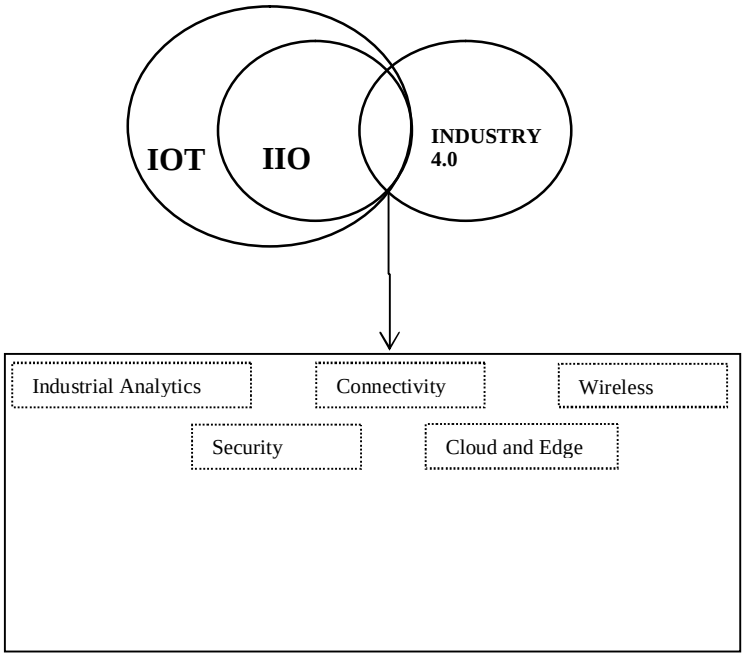

Fig-1 Set diagram of IOT, IIOT and Industry 4.0

As per above Relation ,The IIOT is a apart of IOT Where the applications are Excessively used in enhancing of Manufacturing Sectors , The Introduction of Industry 4.0 led into leaper growth of Industrial Internet of Things

II. INDUSTRIAL INTERNET OF THINGS

Industrial Internet of Things is First Coined by General Electric (GE) and described as,

"Industrial Internet includes two key Components; The Connection of Components to Local Processing and to Internet; Ahead to Other industrial Network that can be independently generate Values"

The Consumer Internet and Industrial Internet are clearly distinguished by above definition, where internet is used to provide wide area networking

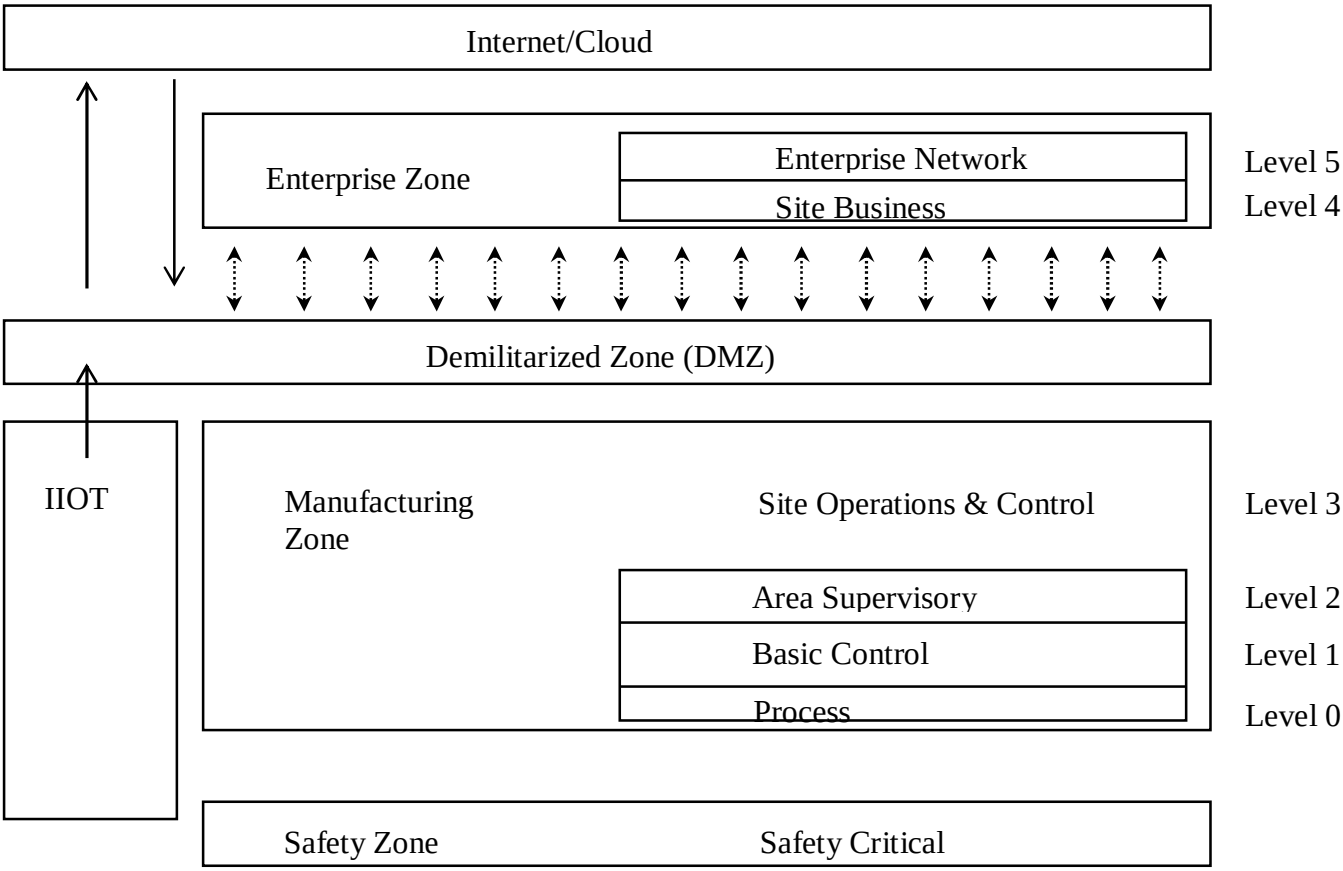

Fig-2 IIOT Purdue Model for Operation Technology

The Model refers to modern industrial network and data access architecture where Manufacturing zone can communicate with enterprise network with specified security ports to illustrate a detail process layout of the plant and operation so that enterprise network can forecast the process flows accordance with current data analysis

The access of data from manufacturing zone is a crucial part of the IIOT development because it may lead in to data breaching and eventually to cyber-attacks, To protect data from malicious activities adaption of cyber security builds the trust in usage of technology

IIOT development depends upon two major factors,

1) The Technology used for establishment
2) The purpose of the using the technology

The major technology used for development includes,

a) Python
b) PHP
c) Javascript
d) Java
e) Swift programming languages

III.PURPOSE OF USAGE

A. Digital factory

The IIOT enabled machinery communicates with OEM and field engineers this will results in pioneer observation and optimization of particular machinery

B. Decision Making Activities

The usage of IOT sensors will automate the process of actively monitoring the machines, machine to machine communication
And alerting the deviation of configured parameters, this can automate the process of optimization and reducing downtime of the Machine hence improving the operational efficiency

C. Production analysis

The of IIOT plays a vital role in enterprise level, in this zone the data should be articulated so that further production planning can be carried out, IIOT devices will results in statistical information of plant operational parameters

D. Security

Commonly IOT implementation leads into vulnerable cyber-attack which may cause economic concern for a industry, the adaption of IIOT will increase in secure platform against threats by usage of resilient architecture, encryption, authentication and specialized crypto locked devices

IV.CONCLUSION

In conclusion, the paper illustrates the basic of IIOT model and some of the certain usage of implementation, However usage of technology is not yet became a practice since its having economic and security constraints.
The accessing information from manufacturing zone through DMZ is one of the major concerns and hence high level of cyber security is required to ease the process
In recent development , The usage of IIOT is converged for data analytics where the data is used to predict the production and to increase economic stability

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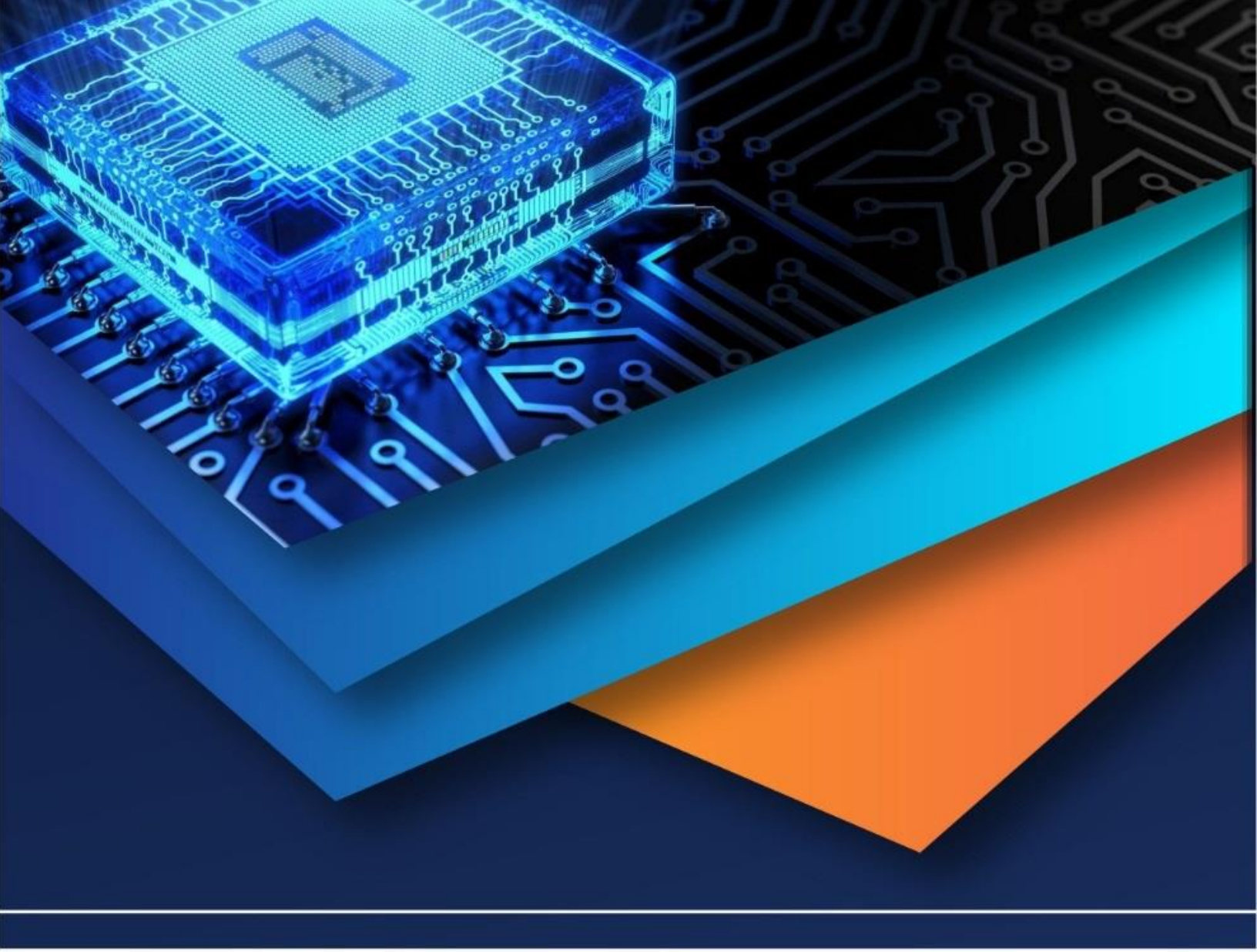

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