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IOT-5G-Exploring next-generation media consumption in the area of Journalism

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Abstract: ***The most common buzzwords in the world is "The Internet of things" (IoT) and IOT describes the network of physical objects, so known as, "things" those are rooted with sensors in the devices, application software, technologies that is used for the resolution of connecting one end to another end and exchanging information with other devices and systems over the Internet. The IoT 5G technologies can also be used in journalism and the primary focus is to increase M2M interaction of mass communication devices. One way it is "ubiquitous computing" can occur using any device, in any location, and in any format. The Internet of Things (IoT) is all about small cost sensors grabbing data to communicate with one device to another device using cloud solutions. Coming to the 5th generation mobile network. We have already started using 4G networks and as we know that, start with 1G, 2G, 3G, and 4G networks. The 5th generation network is going to enable an upcoming new network that will associate virtually every person globally connected and everything organized including IoT devices, objects and machines.***

Central communication and Journalism is the activity of gathering right information, evaluating, generating, and presenting broadcast information. It is high time to start using IOT Technology using 5th generation high-speed network connectivity devices to communicate or data transfer in the area of journalism.

Keywords: IOT – Internet Of Things, 5G- Fifth Generation in data network, JMC – Journalism and Mass Communications, M2M – Machine to Machine, Cloud , Artificial intelligence and Machine Learning.

I. INTRODUCTION

Right now, exponentially the IoT is growing year on year in billions worldwide and the Internet of Things, or IoT, is fundamentally an ecosystem of physical IoT devices, IoT vehicles, IoT appliances, and other things that have the capability to connect, accumulate and exchange information over a wired network and wireless network, with little or no human-to-human or device-to-device or human-to-computer intervention. The new of authorizing incorporation and data interchange between physical IoT devices and the computer, this new tendency of technology emphases on making social lifecycle more simplified and comfortable with the right mix of Technical efficiency and productivity.

To start with, 5th Generation wireless mobile technology is intended to transport forward-thinking multi GBPS peak information speeds, ultra-low potential, more reliability, massive network capacity, increased availability, and an identical user familiarity to more users. Advanced performance and improved efficiency authorize new user involvements and connect new industries like journalism.

Unquestionably, IOT with 5th generation network has brought important deviations to the broadcasting landscape since the turn of the 21st era. It has shaped a move in the consumption of existing print media broadcasting channels, as public increasingly consume newscast through personal electronic devices, smartphones, e-readers, as opposed to the more old-style formats of magazines, newspapers, or television news channels. News channel organizations are confronted to totally monetize their new digital wings, as well as extemporize on the context in which they broadcast in print. Journalists have seen print incomes sink at a quicker pace than the rate of progress for digital revenues.

II. COMPONENTS

Use of sensors to monitor by applying the concepts of sensing, computation, and communication more broadly. All comprehensive IoT systems are the same in that they signify the integration of four distinct components: IoT sensors/ IoT devices, information processing, connectivity, and a user boundary.

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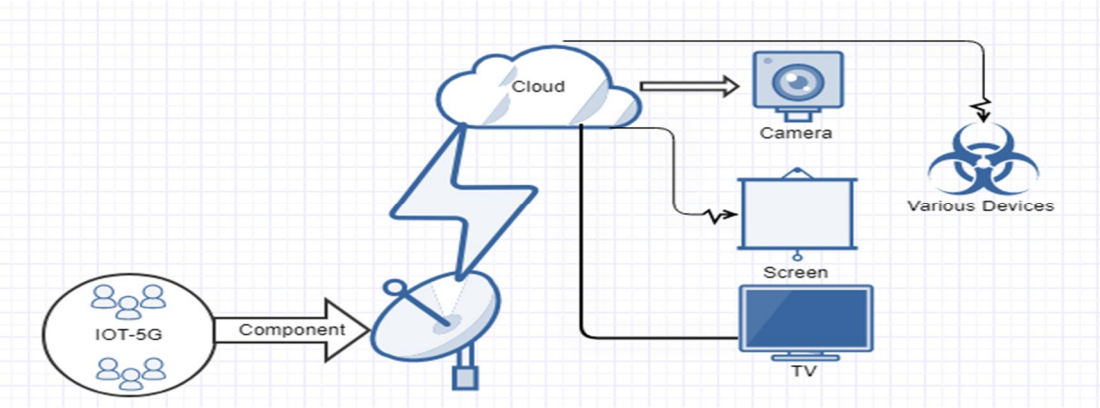
There are four main components of Internet of things works



1) *Mobile app / Tab / System with Internet Connection:* It is a User Interface through which they can actively check on their devices. Also, the end user mobile app / Tab / system may get the data from the device triggering alert notification through messages or emails.
2) *Internet Communications:* Connectivity is an option to choose to send the data to cloud infrastructures. Device sensors can be communicated to the cloud networks to send various data outputs to IOT systems.
3) *Storage Platform:* Set of API will be used in IOT software to data generated the values in IOT devices.
4) *Sensors will help to Collect Data of the Devices:* Any one device can have more sensors that can bundle together to do more actions as per instruction feed.

IoT Operating systems- are embedded operating systems to communicate to IoT devices, cloud services, IoT applications over global networks. Just let you know that, we should be using separate operating systems for IoT devices designed to perform within the size constraints of smaller Internet of Things devices, and with connectivity need to take care. The following Operating systems are remarkably powerful, each having benefits as well.

A. *List of following IoT Operating System Are*

1) *Contiki NG:* It is Open-source, free and Networked memory-constrained systems
2) *Free RTOS:* It is Open-source, free, uses AWS IoT Core Devices with tiny amounts of memory
3) *Mbed OS:* It is ARM-based, high-grade security and for portable code
4) *Micro Python:* It is uses standard Python, easy to learn, C++ and rapid deployment
5) *Embedded Linux:* It is Linux kernel, free and versatile - can be used for various use cases
6) RIOT: It is open-source, full multithreading and can be run as MacOS process
7) *Tiny OS:* It is C language, open-source and portability across similar devices
8) *Windows 10 IoT:* It is proprietary, high-grade security and ideal for heavy-duty industrial use cases
9) *Open Wrt:* It is open-source, Linux-based and primarily used in routers
10) *Other IoT OS Are:* Android Things, Ubuntu core, Fuchsia OS and so on.

The following features should have an IoT operating system: 1. IDE-IoT, 2. Device and component support, 3. Developer development tools, 4. IoT device Management softwares, 5. IoT Security softwares, 6. IoT Implementation services and 7. Managed IoT services. IOT Cloud integration - Cloud Computing is an easy portable system for the large number of data packets produced by the Internet-IoT. While using cloud integration only there are millions of IoT devices that send and receive data to end users by using any messaging protocols. Coming to, transport Layer Security-TLS protocol can able to provide delivers security to workstation based communications networks. The key difference between DTLS- Datagram Transport Layer Security and TLS-Transport Layer Security is that DTLS uses UDP- User Datagram Protocol and TLS uses TCP- Transmission Control Protocol. It is used from corner to corner mail, instant messaging, web browsing and VoIP. To add on here MQTT is an Organization for the Advancement of Structured Information Standards-OASIS standard messaging protocol for the IoT- Internet of Things. It designee as an extremely insubstantial print or contribute messaging transport that is perfect for connecting remote devices with a small code footprint and minimal network bandwidth. MQTT currently is used in a general variety of manufacturing, such as oil & gas, automotive, engineering, telecommunications, and Journalism etc.

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B. It Software's Around Ten Development Software Tools To Start With

1) *Git:* Distributed version control system
2) *GitHub:* Web-based Git repository hosting service.
3) *GitLab:* Integrated software product contains - CI, CD, code review, Version control systems and management issue connecter.
4) *Intellij IDEA:* Developers can use Integrated Development Environment as an IntelliJ to code, editor, compiler debugger and indexed source code.
5) *Stack Overflow:* Web based tool free code to learn, share your code and solutions provider for most of developers all over the old.
6) *Docker:* CI -continuous integration tool, CD -continuous delivery tool or continuous deployment tool platform for software developers as well as network administrators to create new builds, it can route dispersed applications and ship.
7) *Jira:* It's an agile methodology to track software development and plan release software's as per project management progress with a lot of reports that can be allowed to generate.
8) *Jenkines:* Continuous integration - Developers can use their code for integration on server and it is open source continuous integration automation server.
9) *Binfire:* To manage different software projects tools available online - interactive whiteboard, charts, status updates, task management, issue management or bug tracking and PDF document functions are there.
10) *Slack:* Reduce email communication and different teams are able to communicate easy ways to share jokes, organization news and focus on devops talks.

C. In General There Are Ten Best Iot Development Tools Of 2021 Are Available For The Marketer To Use

1) *Node-Red:* Visual Editor can connect any cloud integration, Database integration and our set of API's along with Raspberry Pi hardware it will work.
2) *Eclipse IoT:* Developer Framework,
3) *Adruino:* Data can be input, Data can be output with help of discus and data can be saved. Most important point here is that multiple devices can be connected as well as regulated from any place.
4) *Kaa:* For IoT developers it has a wide range of functionalities like, full control on IoT devices, data visualization (Graphical UPI / REST API), data collection, device configuration management and analytics.
5) *Blynk IoT Platform:* Blynk App to create interfaces, Blynk Server to connect a thousand number of devices, cell or tabs can communicate to device hardware's and Blynk Libraries to process hardware models to communicate commands from server.
6) *IBM Watson:* Artificial Intelligence to work makes the work faster and credible.
7) Particle: Easy to develop IoT programmes and its reliable tools for IoT developers since 2013.
8) Things Board: Easy to do the millions of devices management, any cloud feasiblity, data processing, data visualization and MQTT, HTTP protocols of IoT.
9) Device Hive: It integrates to apps, devices connected to MQTT and develops analytical development tools.
10) Thing Worx: Developer can do the smart operations and IoT application capabilities and flexible to operations service quality.

a) *IOT Deployments:* The following steps need to follow: every endpoint's data should be data encrypted by directional as per encryption methods and cybersecurity protocol data encryption rules. Devices based on security keys and identify risk elements may depend on data stored. Storing the information on IoT device memory may lead to vulnerability. As per IoT cybersecurity practices will help end to end communications encryption process, long term plans for cloud deployments, make sure devices with strong password encryption policy and authentication level and authorization systems should be in place. Finally make sure IoT devices should be accessible 24/7 after deployments and send the latest patches for maintenance that can be handled anywhere and anytime.

b) IOT Testing Tools: All IoT devices require quality assurance testing life cycle a. Security testing of IoT devices. b. IoT devices connectivity testing does the strength of communications / transmit relevant data between IoT devices. c. Performance of the IoT devices - to ensure all circumstances IoT applications should not have any performance blocks and speed maintained in all conditions. Finally, we need to make sure performance testing with max and min load capacity tests need to go through. d. Functional testing of IoT devices - Do the revice of user interface, data storing in database, API's functionality at client side and server side communications.

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Best IoT Testing Tools for Software Testing are Wireshark, Tcpdump, Shodan and SOASTA CloudTest and coming to best IoT Testing Tools for Hardware Testing are JTAG Dongle, Digital Storage Oscilloscope, and Software Defined Radio

Coming to 5G – we need to start with 1st generation – First G (1G) start date is in 1980s: First Generation delivered analog voice. First Generation Technology having Voice only services. (14.4 Kbps speed)

Second generation - 2G-Early 1990s: 2G introduced digital voice (e.g. CDMA- Code Division Multiple Access). Second Generation Technology having Voice and Data services (SMS, pagers and messages with 171.2 Kbps speed)

Third generation – 3rd Generation in early years around 2000 era, 3rd Generation has carried mobile data (example Code Division Multiple Access -CDMA developed by International Telecommunication Union in the year of 2000). Third Generation Technology having Voice, Data services and Internet (SMS, Internet on mobile with 14.4 Mbps)

Fourth generation - 4G Long Term Evolution-LTE in the year of 2010, 4th Generation Long Term Evolution LTE ushered in the era of mobile broadband. Fourth Generation Technology having Voice, Data services, Internet and video calls (SMS, Internet on mobile and video calls with 100 Mbps).

Fifth Generation Technology having Voice, Data services, Internet and video calls (SMS, Internet on mobile, video calls and IoT with 10 GBPS).

1G-1st generation, 2G- 2nd generation, 3G-3rd generation, and 4G-4th generation all led to 5G- 5th generation, it has developed to provide more connectivity than was ever available before.

5G is a unified, more capable air interface. It has developed with an extended volume to enable next-new generation user experiences, permit new deployment models and transport new service area.

With great quickness, superior dependability and small latency, 5th Generation will enlarge the mobile environment into new kingdoms. Fifth Generation will have lot of impact every industry including journalism.

Media has a lot of advantages with IoT-5G technology usage like - Urgent information is broadly dispersed, News is instantaneous, News producers get instant feedback, highly data driven, cost efficient, accuracy, real time results, new amount of usage, use to customization and ease of presentation to end users.

III. CONCLUSION

The IOT-5G network is designed to Increase operational efficiencies, Improve the customer experience and impact service IoT in Journalism kinds of use cases from day 1, unlike 4G and 5G. All your gadgets will become handhold aides, each chatting with one another to communicate, and working to serve you a better life for the society. This will enable new kinds of journalism, new prototypes and much larger implementation of wireless connectivity in a broad diversity of IoT applications.

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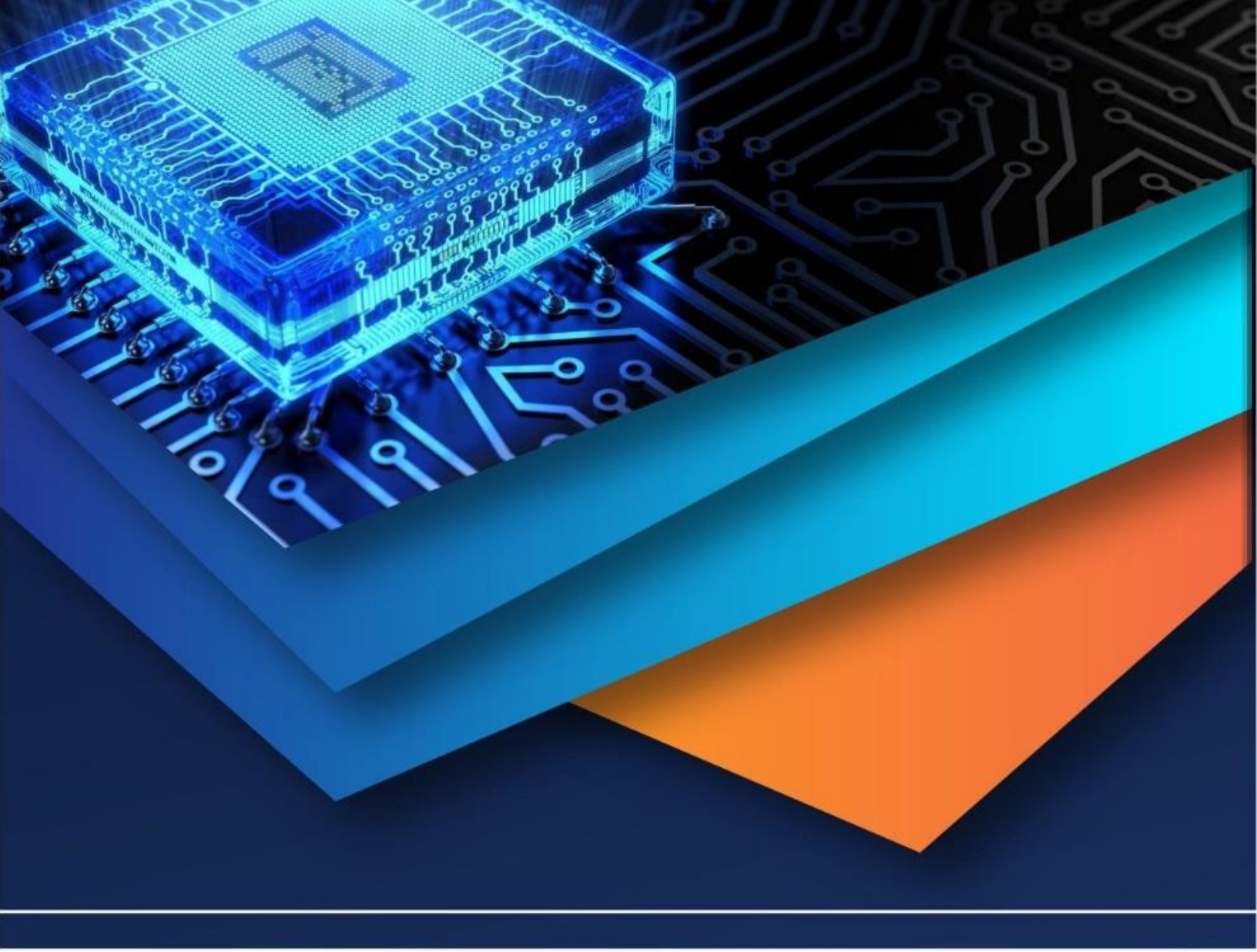

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