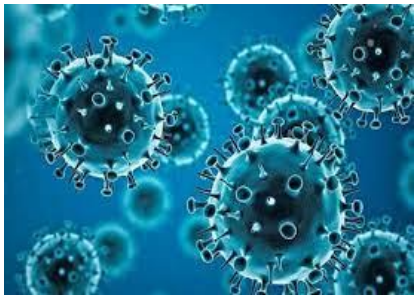
PROBLEM STATEMENT- The Whole world ,all are facing COVID Problem and its changing and upcoming variant like the latest variant Covid BF.7 Variant which This is a sub-variant of Omicron's BA.5 variant. Omicron's BA.5 variant has the highest number of reported cases worldwide. About 76.2% of the total cases. However, the BA.4 and BA.5 sub-variants did not spread much in India.



The corona virus (**COVID-19**) is mutating and mutations can create many variants and sub-variants. This process is called convergent evolution. These sub-variants have been given names like **BA.2.75., BF.7** and **BQ.1.1.** These names are determined by the fact that which sub-variant is derived from which variant.is spreading now, the Covid variant problem will never controlled and completely finished, because of High spreading rate of virus it may not comes in control so I think Technology play a major role to detect and Track the Problem using IOT with Technology demand.As an Engineer I can give my suggestion to make this problem easy to track and trace them.

Solution/ Architecture

As an Engineer, I can give my contribution to provide the solution of this Existing problem as using **Internet of Things**, or IoT-Devices, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

- **Remote patient monitoring using Printed Electronics Technology**
- **Data Lake Storage**
- **Databricks**
- **Event Hubs**
- **Machine Learning with IOT**
- **Synapse Analytics**
- **Power BI**

Health systems, hospitals, and large physician practices are shifting to hospital-at-home initiatives (also known as remote patient monitoring). Remote patient monitoring and Tracking which is a subset of clinical care where patients activity and its past medical Covid infection data can be accessed and delivered using remote health devices in accordance with individualized care plan parameters with IOT.

Technical Details and Implementation of solution

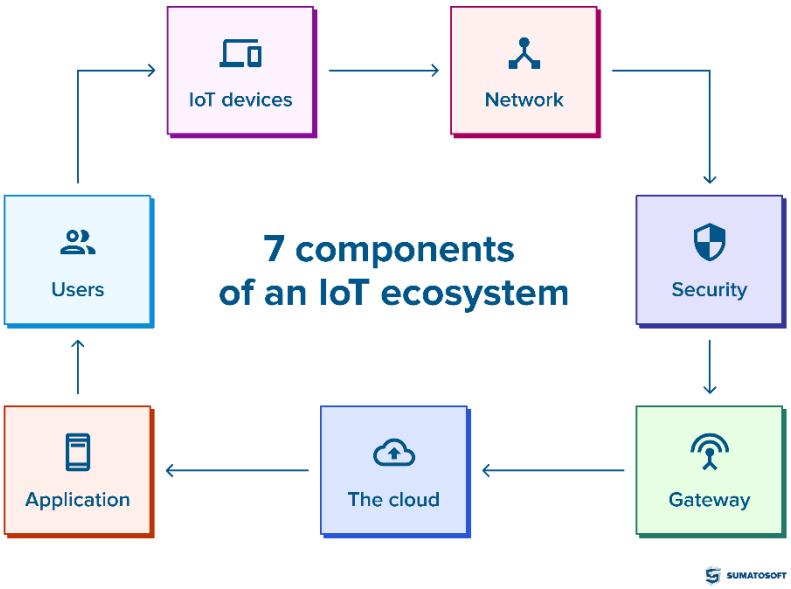
I am try to work or make a small bandage using Printed Electronics Technology with IOT circuity fabrication with **Flexible Electronics Technology** and Use to Track those Infected people or patient which have mild level infection of Omicron variant and its latest variant diagnosis latest **BF.7 variant patients only** and for future .

Hybrid- IOT sensor which to make them the IOT sensor which two different technology to interlink them and make a unique sensor and track them.

Sensors Which are printed on the bandage which helps to track them patient location through Sensors and Transreceivers inside the Sensor and Micro-chip with flexible to print and Fabricate them

This picture shows that how this sensor can use as a bandage and implement on skin

ABOUT **INTERNET OF THINGS**



The Internet of Things (IoT) is a network where every object has its own identity and can be accessed through the internet. The IoT ecosystem consists interconnected devices that work together towards one goal, such as creating an intelligent Devices with all its facilities or providing convenience in your home by connecting multiple devices.

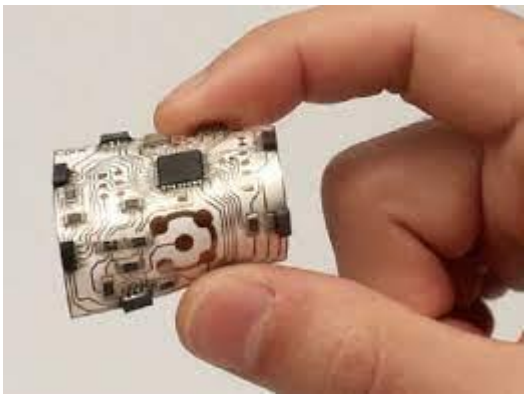
Components of the IoT ecosystem

The IoT ecosystem consists of multiple components that allow businesses, governments, and consumers to connect to their IoT devices. These components include:

- **Sensors and actuators** – sensors and actuators are at the centre of the entire IoT network. Sensors are connected to assets in the form of a physical micro appliance, embedded into an IoT device. These sensors are responsible for collecting and gathering data in order to send signals or commands to the actuator. The actuator then responds to the signal or command and “acts” or makes something happen based on this signal. As an example, your office may make use of a smart air conditioning system that is set to a specific temperature. Sensors are used to monitor any changes in temperature in the office environment. If a change is detected, they send a signal to the actuators, which will then automatically adjust the airflow.
- **Connectivity** – this is largely referred to as the network layer and talks about how data is transferred and processed to ensure seamless communication between connected devices, sensors, the cloud, and actuators. For this to work efficiently, these elements need to be interconnected in order to understand the data and respond with the appropriate action. This is where IoT protocols and IoT gateways come in. IoT protocols provide a medium of transport for data collected from sensors. Data

then goes through an IoT gateway that collects and translates the data being received via the protocols.

- **IoT Cloud** – once the data has travelled through the IoT protocols and gateway, it moves to the cloud. The cloud is a high performance compute and storage ecosystem that is used for processing and data storage and brings all the different components of IoT together. In the cloud, data is filtered, managed, and stored. The data is then used to provide real-time analytics for fast decision making about what action should be taken in response to the data collected and signals received.
- **IoT analytics and data management** – this is used to make sense of the large amounts of data being processed. IoT technology can compute all raw data, being collected and transported, into data analytics which provides actionable insights and real-time solutions that can be used for effective decision making.
- **Devices and interface** – this is the visible component that an IoT user can use to control the system and set their preferences. This interaction is usually conducted on the device itself or remotely via smartphones, tablets, and laptops.

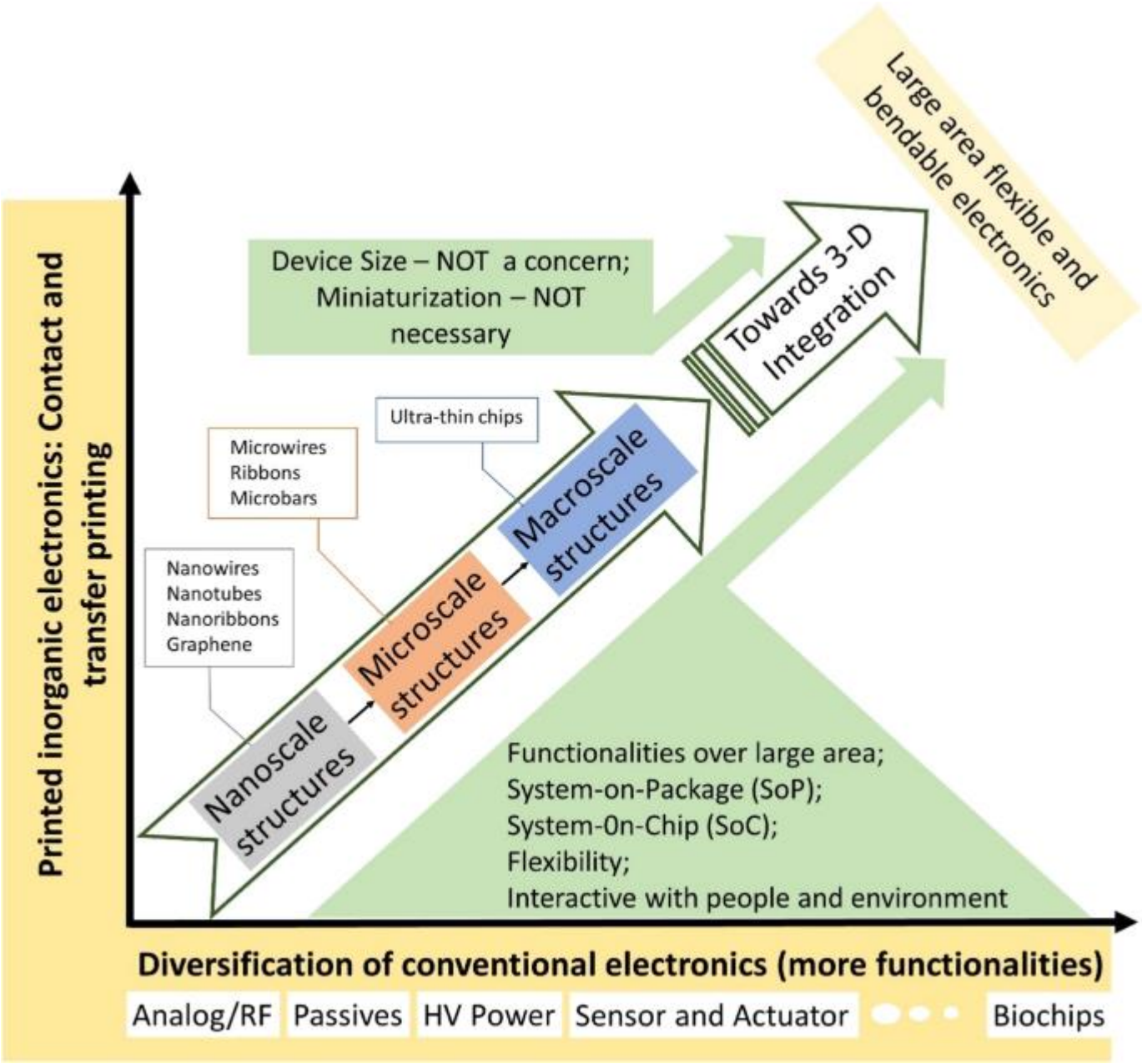


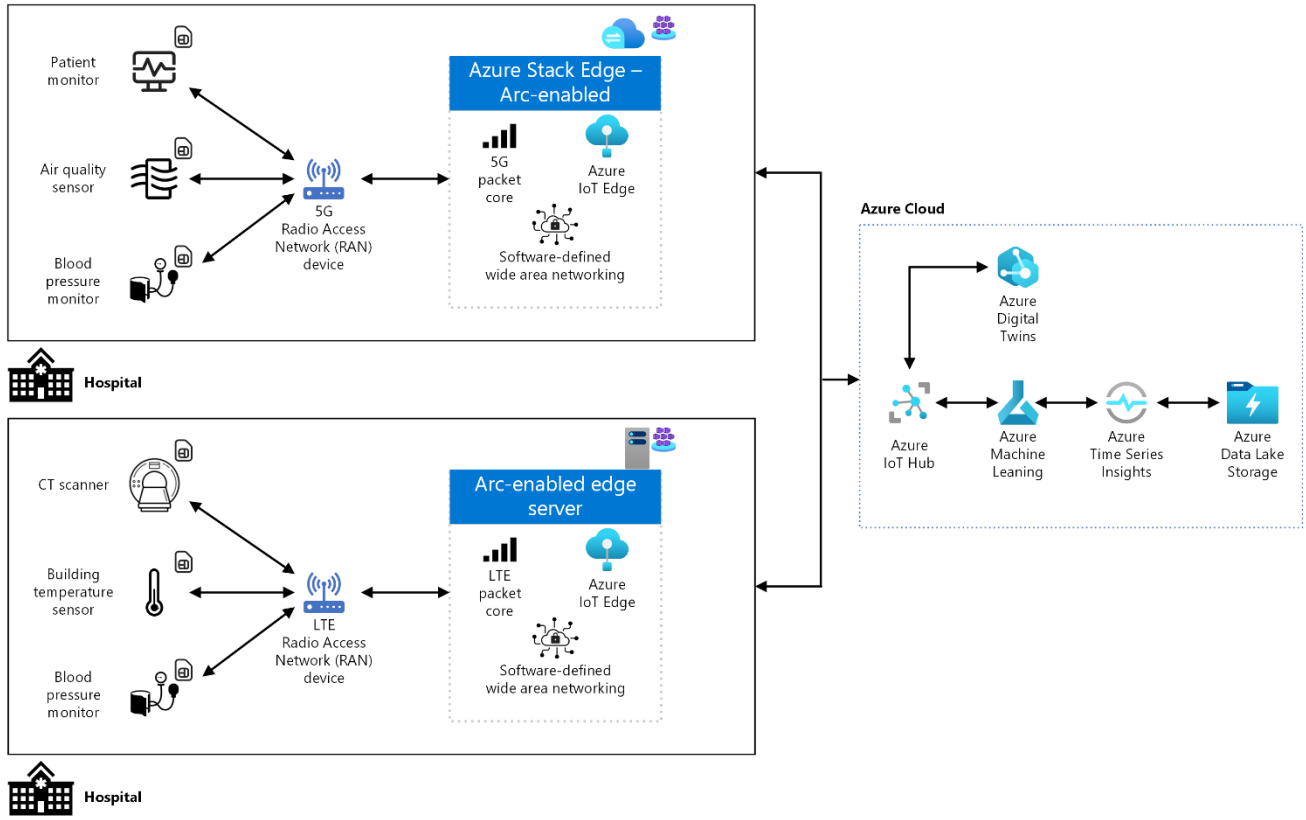
ABOUT **PRINTED ELECTRONICS**

Printed electronics (PE) is a rapidly growing technology that enables the fabrication of electronic circuits and devices through a printing process on flexible substrates. Radiofrequency identification (RFI-D and photovoltaic devices, various sensors and biosensors, diodes, displays, supercapacitors, batteries, and related electronics can be manufactured through PE technology by tacking the advantage of conducting, semiconducting or dielectric inks or printable functional materials.

Internet-of-Things (IoT) is another ever-growing technology that interconnects the digital world to the physical world with novel applications in healthcare, transportation, construction, leisure, sports, and so on. The IoT inevitably needs the incorporation of numerous smart electronic objects with communications capabilities to transfer acquired data through communication networks.

BENEFITS OF PRINTED ELECTRONICS WITH THIS DIAGRAM





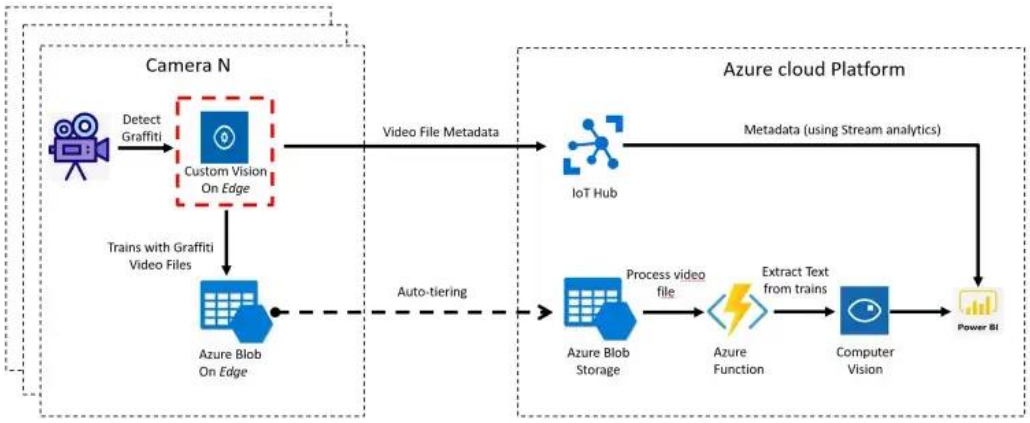
Microsoft Azure

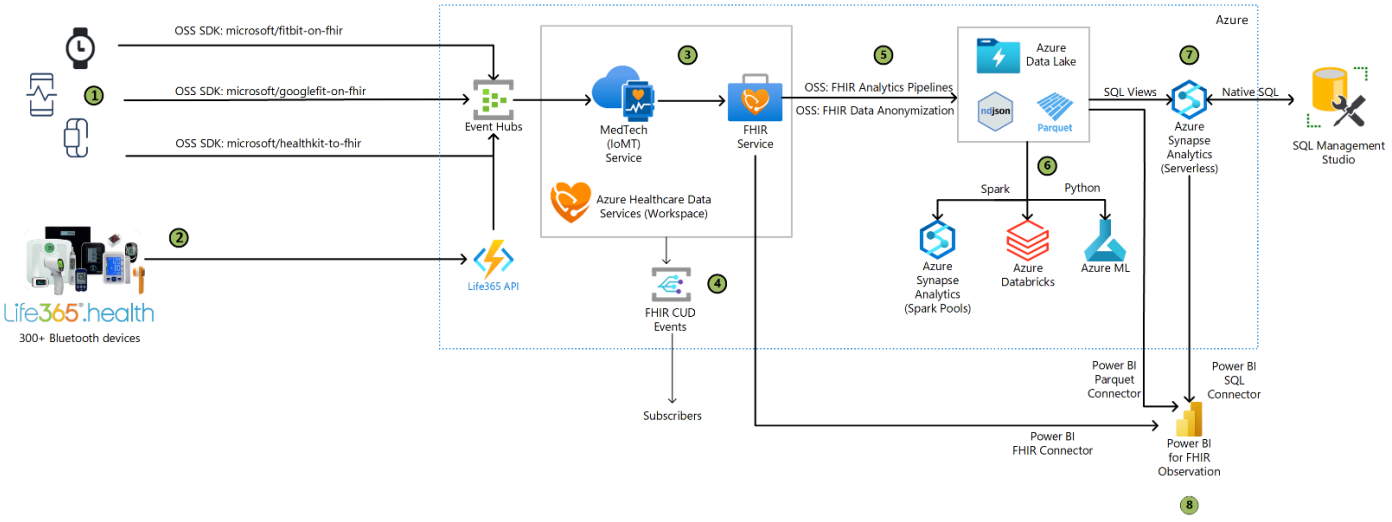
Cloud intelligence deploy on IoT edge devices

Azure IoT Edge is referred to as a cloud AI solution remotely configured on-premises to securely deploy and manage your cloud-native workloads on your locally implemented IoT Edge. Deployment of IoT Edge devices enables enterprises to optimize the locally connected environment, track equipment performance while preventing system failure, and reduce equipment downtime.

Azure IoT Edge Benefits

Streamline and manage your operational data deployed locally on Azure cloud. Manage your remotely configured and cloud-native workloads efficiently and enable execution directly on your locally hosted IoT Edge devices. Azure IoT Edge enables enterprises to measure and optimize device equipment and prevent system downtime while strengthening your device performance to respond faster when any sort of local change is applied along with maximized potentials and efficiency of the operating device.





Challenges in implementing the solution

- Short life span of the sensor.
- Tape size will be thick.
- Electrode gel is costier.
- High Data rate communication.

Business Benefit

- Easy and fast to track the Varient of Covid patients with IOT sensor Flexible tape.
- Create much more job opportunities for Diploma or Graduate candidates of printing Technology specially
- Controllable and tracking can be done faster as per spreading rate of Virus vatient.
- Cheaper in cost to build the product and easy to programmable.
- It can possible to create much more job opportunities with Biomedical Science and Medical electronics.
- Faster and easy to trace
- Azure AI tool can done more work and faster to give their contribution with IOT

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