# OBJECTIVES AND DESCRIPTION OF PROJECT

- The basic motive of the project is to provide a cheap remote real-time patient monitoring system using latest IoT technology for communication
- Doctors can send and receive data for monitoring as well as guiding the rate of assessment of the patient
- A defined format could be used to send timings required for medical consumables, drip reminders and imaging timings
- Doctors could also view the real-time physical situation of the patients using the data from the inbuilt pulse, pressure and temperature sensing unit and interval of assessment could also be set by the doctor.
- The variations in the data received could be used to assess the impact of medicine on patient and proper instructions could be given to caretakers remotely
- The system is transferrable among patients and hence could be one of the most viable option even for financially weak patients .
- The hospitals themselves can moderate the transfer of equipment so that they can provide it to patients at an affordable price

# REMOTE-MEDICAL ASSISSTANCE SYSTEM
# BROAD-LEVEL ARCHITECTURE

## PATIENT SIDE
(The side where patient is resting)

TEMPERATURE SENSING UNIT

PULSE RATE EVALUATION UNIT

BLOOD PRESSURE MONITORING
(Optional)

MANUALLY ACTIVATED ALERING UNIT
(In case an imaging/medicinal alert required at patients side)

**ZIGBEE DATA TRANSFER UNIT**

(Xbee Shield could be used to transmit or recieve data from IoT Gateway to Arduino Interface)

**COMMON DATA TRANSFER INTERFACE**

(Can be an arduino system)

(Interfaces with the external sensors to collect data, cordinate it and sends it to IoT gateway whenever required)

## CARETAKER'S SIDE
(The place where care taker is located any where in the range of WIRELESS TRANSMITTER)

**ALERTING UNIT AT CARETAKER SIDE**
(For medicinal as well as Imaging alert)

NXP

IoT Gateway Solution

**ONLINE DATA TRANSFER UNIT**

(This unit sends real time data to the concerned doctor using WEB CONNECTIVITY)

(This unit can be within IoT)

**ONLINE DATA TO DOCTOR**

**IMAGING UNIT**

(Can be a connected mobile camera used by caretaker to take images of infected skin/organs ,Bottom lid of eye,Toungue etc

**ZIGBEE DATA INPUT FROM INTERFACE**

# IMPLEMENTATION STRATEGY / TENTATIVE PLAN

- Keeping in mind the limitation of available resources, cheap as well as available sensing units are used for taking pulse, temperature as well as blood pressure readings.

- Arduino Uno board can be used as one of affordable interfacing source for taking analog data from the formerly mentioned sensing units to be sent to IoT gateway located away from the patient

- Further Zigbee (Bluetooth) data transfer could be performed using cheap commercially available Xbee shield or any other equivalent transmission unit in case where isolation of IoT becomes a necessity.

- As an alternative of Zigbee transfer, usb data transfer could also be used in case a separation between caretaker and patient is not a neccessity.

- Using  cloud connection facility of NXP IoT gateway solution, Smartphone could be connected used for imaging purposes shown in block diagram

# ADVANCED PROSPECTIVES OF THE DEVICE

- Multiple such devices could be connected to web so that the concerned doctor could assess multiple patients while being far from them

- In places where quality medical services are unavailable, advanced medical units like ECG,X-ray etc could be interfaced with gateway so that multiple number of experienced doctors can simultaneously get real-time medical status of patients and collectively make a judgment and send required data to Iot so that required operations could be initiated and the mechanical operations could be controlled by a partially skilled labor.

- Further advanced technologies could be implemented to make smart technology enabled wearable for caretakers to receive messages and alerts from doctors while the care taker is treating several such patients in a remote clinic having several medical assistance devices connected.

- Looking further into future side, where artificial intelligence is growing, the real-time data as well as prescription from doctors could be used for an initial judgment of a medical situation in case of an emergency.