

# Intelligent Hospital Rooms

Intelligent Hospital Rooms, IoT prototype depicts the sophisticated intelligent rooms of the future hospitals. This IoT prototype speaks about the day in a life of "Chief Caretaker" of a hospital.

In any typical hospital, a patient when suffering from any severe ailment will be put into a special room for the proper care and observation. The patient will be rigged with so many devices and sensors to monitor, and the nurses would keep taking rounds to the patient's room on timely basis to observe the patient.

The observation ideally consists of checking the heart rate, body temperature, urine bag status, blood pressure level etc and these ratings will be recorded in a sheet, with which doctors can draw the status of the ailment, if it's curing or worsening, and these sheets will be maintained later even after patient is discharged from the hospital.

Now, let's assume that this hospital has many nurses and head nurses who will take rounds on timely basis to the patient's rooms and all the recordings will be maintained in paper sheets, now if the patient is suffering from severe ailment, then that patient has to be provided with a dedicated nurse to take care of. And now think of other patients where they need some help from nurse immediately, but the nurse would see the patient only after some time and none of the family members are around, how would they approach nurse?

Thinking of all these scenarios and for the better personal care for each of the patient, which is the basic necessity of human being for the health concern, Intelligent Hospital Rooms will help both the nurses and patients for easy communication, intuitive ways to maintain the records of the patient and more importantly alert the necessary people during the times of emergency situations.

This Intelligent Hospital Rooms IoT prototype would require only one "Chief Caretaker" for the whole hospital, who is sitting front of the desktop with this application, will be monitoring every patient of

the hospital and during the situations, would call up Nurse/Floor Manager/Doctor/Family Member right from the same desk to attend the situation of the patient.

## PERSONA

### **Christina**

Chief Caretaker

"I like taking personal care and observation of every patient"

#### **About**

- 45, Divorcee with 2 kids, 8 years of Head Nurse with experience of understanding operations and calibration of the hospital equipments.
- I work with staff of nurse to coordinate with them to take care of every patient in the hospital.

#### **Responsibilities**

- I'm responsible for ensuring that all the equipments connected to the patient are functioning in a good condition.
- I'm responsible for monitoring every equipment a patient is connected.
- I'm responsible for alerting nurse/doctor when the patient is going to abnormal situation by knowing from monitoring the equipments.
- I'm responsible for directing a nurse/doctor whenever a patient needs help.

#### **Main Goals**

- Being the person who is responsible for every patient's personal care, I want to monitor every patient health status right away from my desk and the equipments will help me doing that.

- Record abnormalities when patient sees a situation.

### **Needs**

- To understand the critical situation of a patient, I need to understand all the recordings of the equipments, when the patient is not in a situation to speak.
- I need to dispatch the nurse/doctor to the particular patient when the he/she is in a critical condition immediately.

### **Pain Points**

- At times, patients cannot alert the critical situation.
- Will not be able to monitor every patient constantly.

## **Point of View(PoV)**

As a Chief Caretaker I need a way to see and monitor all the patients health status right at that point of time and every moment so that whoever is in need of any help would be attended immediately.

## **UX Journey**

Actions	<ul style="list-style-type: none"> <li>- Enter the patient room.</li> <li>- Speak to the patient.</li> </ul>	<ul style="list-style-type: none"> <li>- Monitor all the equipments connected to the patient</li> </ul>	<ul style="list-style-type: none"> <li>- Record all the equipment readings</li> </ul>	<ul style="list-style-type: none"> <li>- Providing medicines</li> </ul>	<ul style="list-style-type: none"> <li>- Go out of room</li> </ul>
Mindset	<ul style="list-style-type: none"> <li>- I need to get out of this room as quickly as possible, I have others to attend.</li> </ul>	<ul style="list-style-type: none"> <li>- Oh! What this reading shows now! I need to understand more.</li> </ul>	<ul style="list-style-type: none"> <li>- Oh no! Again! I have to record so many devices reading.</li> </ul>	<ul style="list-style-type: none"> <li>- Oh patient! Please swallow these pills without asking any questions!</li> </ul>	<ul style="list-style-type: none"> <li>- One more done!</li> </ul>
Feeling	:  (Normal)	:( (Sad)	:( (Sad)	:  (Normal)	:  (Normal)
Touchpoints	<ul style="list-style-type: none"> <li>- Room door</li> </ul>	<ul style="list-style-type: none"> <li>- All the equipments connected to the patient</li> </ul>	<ul style="list-style-type: none"> <li>- Observation Sheet and pen/pencil</li> </ul>	<ul style="list-style-type: none"> <li>- Tablets/Syrups , Water. Changing Urine Bags etc</li> </ul>	<ul style="list-style-type: none"> <li>- Room door</li> </ul>

## Prototype

The below prototype shows the application connected to all the equipments for a particular patient which are sorted floor wise. The Chief Caretaker can sit front of this app and monitor all the patients of the hospital and dispatch nurse/doctor whenever emergency.

Each scenario in this prototype is detailed out with minute details relevant to the hospital situation along with the specifics of the patients suffering from particular ailments.

### Screen 1

Scenario of patient in emergency

The screenshot displays a medical dashboard with two main sections: 'Floor wise rooms list' on the left and 'Room Details' on the right.

**Floor wise rooms list:**

- Select Floor: [Dropdown]
- Search Patient: [Search Bar]
- Room #15: Patient X, Floor #3, Status [Alert]
- Room #16: Patient XA, Floor #3, Status [Warning]
- Room #16: Patient CC, Floor #3, Status [Info]
- Room #17: Patient DS, Floor #3, Status [Mute]
- Room #18: Patient RE, Floor #3, Status [Info]
- Room #18: Patient RE, Floor #3, Status [Info]

**Room Details (Room #15):**

- Room #15
- Name - Patient X (Age - 78)
- Disease: Cardiac Arrest
- Address: 2nd cross, Earth
- Navigation: DETAILS, DOCUMENTS (3), PRESCRIPT... (3)
- Vitals:
  - Heart Rate: 92 PER MINUTE (High)
  - Body Temperature: 45 CELCIUS (High)
  - Room Temperature: 30 CELCIUS (Normal)
  - Oxygen Cylinder Pressure: 45 (Normal)
  - Urine Bag: 55 ML (Filling Fast)
  - Blood Pressure: 80/120 MM HG (Normal)
  - Sugar Level: 5.0 MMOL/L (Normal)
  - Panic Button (Normal)
- Contact Buttons: Nurse, Floor Manager, Doctor, Family Member

- Left panel has all the list of rooms and patients admitted in the room, sorted floor wise.
- If at all a patient requires a attention, that attention of the Chief caretaker is sought through symbols, which are present on the bottom right corner of each item.
- This particular patient has High Heart Rate, High Body Temperature, and the Urine Bag is filling fast, so the caretaker is shown the alert with Hazard symbol on the bottom right of the item with **Patient X** name.
- The detail page shows up once you click on the item in the left pane list, every detail of the patient which is immediately required for the Chief caretaker to know about the patient, all

the documents(scanning reports, x-rays etc) and prescriptions given by the doctor.

## Screen 2

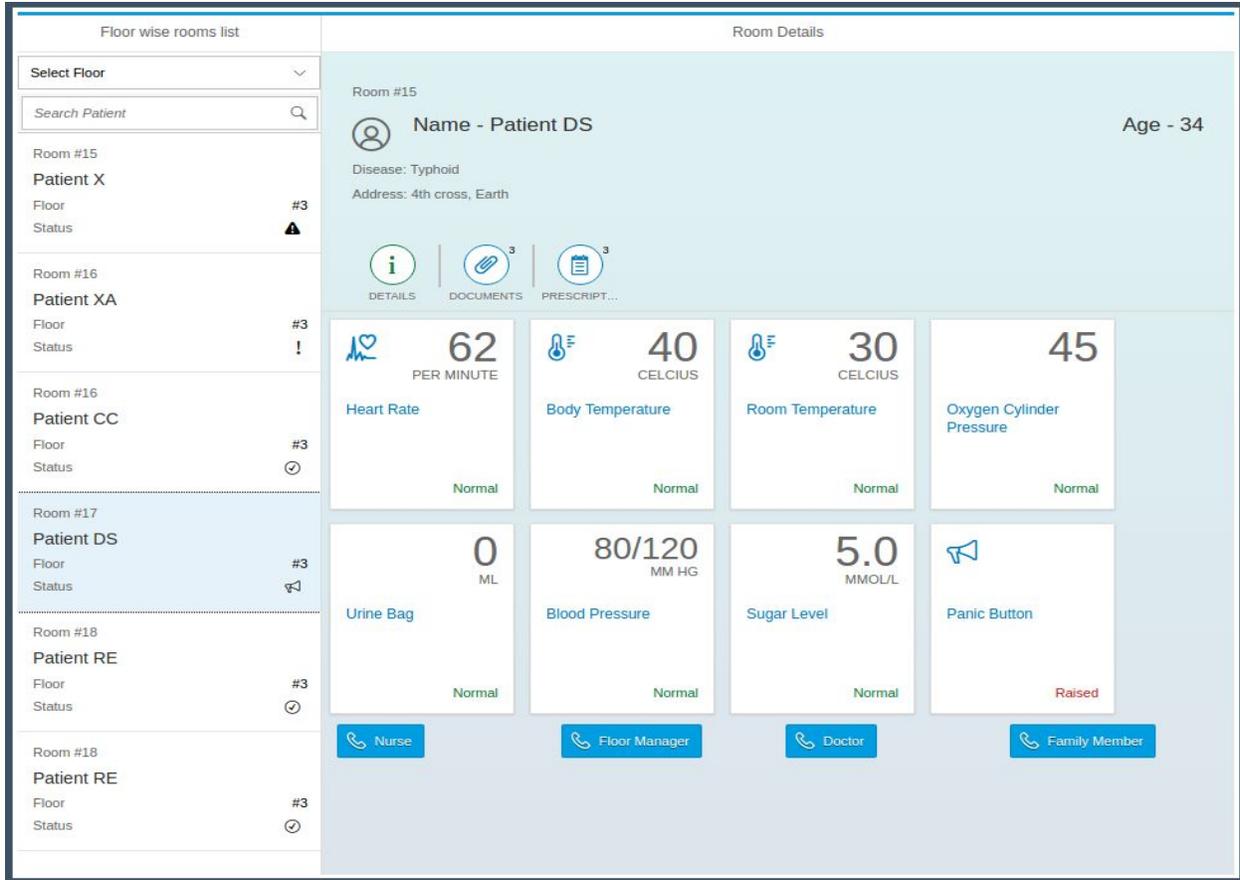
### Scenario of patient requires attention

The screenshot displays a patient monitoring interface. On the left, a 'Floor wise rooms list' shows several rooms, with 'Room #15 Patient X' highlighted. The main panel, titled 'Room Details', shows information for 'Room #15' and 'Patient XA', including 'Age - 80', 'Disease: Dialysis', and 'Address: 3rd cross, Earth'. Below this, there are icons for 'DETAILS', 'DOCUMENTS', and 'PRESCRIPT...'. The central area features eight vital sign cards: Heart Rate (60 PER MINUTE, Normal), Body Temperature (28 CELCIUS, Normal), Room Temperature (30 CELCIUS, Normal), Oxygen Cylinder Pressure (45, Normal), Urine Bag (55 ML, Filling Fast), Blood Pressure (80/120 MM HG, Normal), Sugar Level (5.0 MMOL/L, Normal), and a Panic Button. At the bottom, there are call buttons for 'Nurse', 'Floor Manager', 'Doctor', and 'Family Member'.

- This patient's Urine bag is filling fast, and requires nurse's attention to change it.
- Rest other things are normal.

## Screen 3

### Scenario of patient seeking nurse to attend when no one is around



- This patient has no one around to call out nurse, may be he/she is in need of something, so he has raised a panic alert by pressing the panic button.

This prototype is built using SAP Build tool. Below is the published link of the prototype, due to glitch in the tool, it is unable to navigate to other patient's details page on click of the item.

Link-

[https://standard.build.me/prototype-editors/api/public/v1/snapshots/4a33085daaa9d0a40e1a37f7/artifacts/latest/index.html#/master\\_page\\_1](https://standard.build.me/prototype-editors/api/public/v1/snapshots/4a33085daaa9d0a40e1a37f7/artifacts/latest/index.html#/master_page_1)