Basic Details of the Team and Problem Statement

Ministry/Organization Name/Student Innovation: Govt. of Kerala

PS Code: 1323

Problem Statement Title: Development of smart toilet.

Team Name: INNOVATE INDIA

Team Leader Name: SUMIT KUMAR

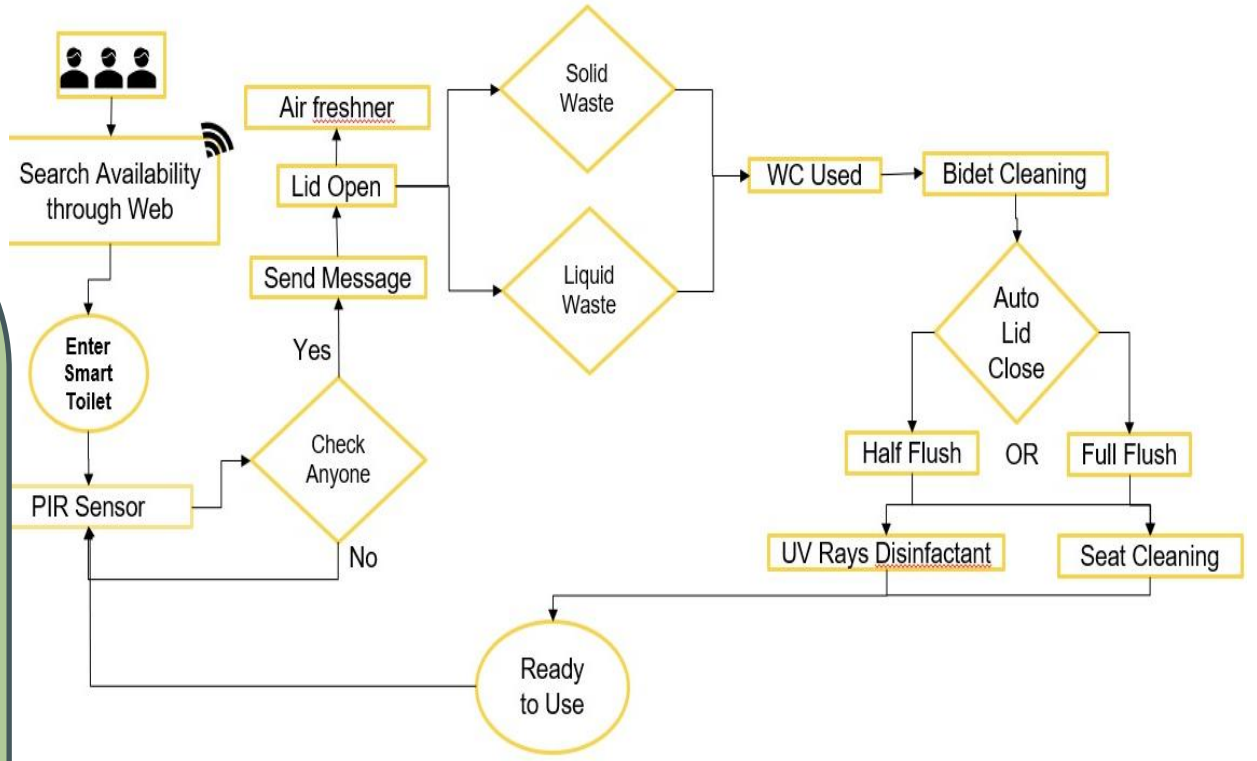
Institute Code (AISHE):U-0493

Institute Name: NIT- AGARTALA

Theme : MED-TECH/BIO-TECH/HEALTH-TECH

Idea/Approach Details

- The smart toilet is equipped with ***PIR sensors*** that detect a person's presence and automatically open the lid while releasing ***air freshener*** at the same time.
- The ***cleaning process*** involves using high-pressure flush water that rotates in the bowl to clean it, and an automatic bidet cleaning system that adjusts its water thrust area according to the weight of the person on the seat. A ***single-use, biodegradable fiber layer*** is used as a seat cover, which is replaced after every use. The seat is then disinfected with UV rays.
- The entire smart toilet system comes with a companion ***web-based application*** that displays the location, availability, and cleanliness of the smart toilet. This application can be used to ***commercialize the smart toilet as a pay-and-use system.***
- ***Water-saving***: The smart toilet is water-saving, using flush water to clean the bowl and providing two types of flush options: a half flush that uses less water for peeing and a full flush. The system also reuses used water using bio-toilet technology and chlorination of water, similar to the Indian railways.
- ***Additional features include*** an Adjustable ***footrest*** to obtain foot posture most suitable to empty our stomachs easily.



Technology used :

- PIR MOTION SENSOR.
- UV LIGHT .
- ARDUINO UNO , MOTORS , MOTOR DRIVERS, IOT.
- GPS- BASED WEB APPLICATION USING GOOGLE MAP API.
- BIO-DEGRADABLE FIBER

Idea/Approach Details

Use Cases :

➢The Development of smart toilets is a boon for the public toilet system in our country. It can **improve the hygiene**, **convenience**, and overall bathroom experience of a user either in a public place or at home.

➢***Hygienic cleaning*:** It provides a hygienic cleaned toilet for every individual user, using UV light, people will get ***an untouched single-use biodegradable fiber layer to sit on***, providing a fully hygienic and healthy toilet.

➢***Sustainability***: Sensors to detect any failure in tech, unavailability of water, water clogging in the washroom, operation of the exhaust fan till the person is using the toilet

➢***Toilet Finder App***: An accompanying mobile app helps to locate nearby public toilets and provides information on availability and cleanliness and also helps in ***implementing a pay-per-use system to cover maintenance costs directly from the application***.

Dependencies / Show stoppers :

Dependencies:

- ***Technological Advancements***: The development of smart toilets relies on advancements in various technologies such as sensors, Arduino UNO, etc.
- ***Software Development***: Developing the software and firmware for smart toilet functions, including sensors, control systems, and user interfaces, is a significant dependency.

Show Stoppers:

- ***Hygiene***: Bio-degradable single-use fiber is used, which ensures a complete hygienic toilet.
- ***Fully automated***, zero-touch, ensures water saving, is ***easily accessible for all age groups,*** and a boon for old-aged people by providing additional footrest.

Team Member Details

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