

# The Chameleon

Managing non-reusable hospital waste

The A-Team

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*Shivam, Nikhil, Simra,  
Ravikiran, Sukrit, Abhay*

in India 1.89 (62.9%) are unsafe.<sup>13</sup> In Gujrat, unsafe injections have been identified as the main risk factor responsible for outbreak of hepatitis B in the community.<sup>14</sup> According to the IPEN study, the proportion of unsafe injections was highest at the immunization clinics (74.0%) followed by government (68.7%) and private (59.9%) health facilities. Rural areas have marginally higher likelihood of unsafe injection than urban areas<sup>9, 15</sup>. The risk of unsafe injection when administered at



World Health  
Organization  
COUNTRY OFFICE FOR India

GUJARAT



## INDIA INJECTION SAFETY IMPLEMENTATION PROJECT

2016-2018

# NEEDLES AND SYRINGES

The New York Times

## Mass Injections Spread Hepatitis Across Egypt

By Agence France-Presse



Singapore-India Hackathon 2019

people have been screened for  
cent (719/876) of these were  
below the age of 15 years. During the screening, several risk factors were identified,  
including: unsafe intravenous injections during medical procedures; unsafe child  
delivery pr unsafe intravenous injections during medical procedures; nted infection  
control programs; and improper collection, storage, segregation and disposal of  
hospital waste.

PAKISTAN



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### HIV cases–Pakistan

Disease outbreak news  
3 July 2019

# WHO Solution: Auto disable syringes



Brand	Nicro
Body Material	Plastic
Diameter	0.5-1 inch
Capacity	3 ml and also available in 100ml,10ml,5ml,2ml
Color	Transparent
Needle material	Stainless Steel

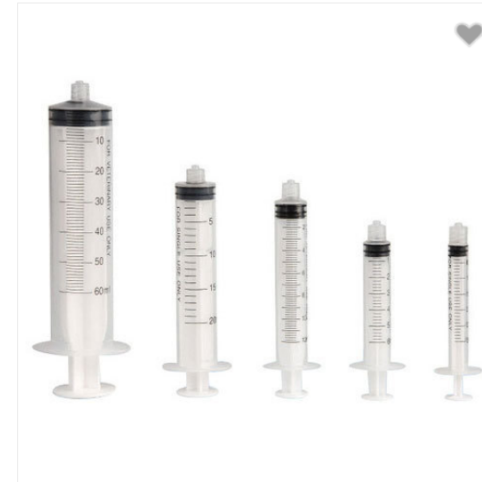
[View Complete Details](#)

Fill the quantity to get latest price!

Quantity  Select a Unit

**Get Latest Price**  
Request a quote

**INR 11**



## Disposable Syringe, for Laboratory Use

लेबोरेटरी उपयोग के लिए डिस्पोजेबल सिरिंज

**Rs 1.26/Piece** [Get Latest Price](#)

Wall Type	Thin Wall
Application	Laboratory Use, Medical/surgery
Condition	Sterile
Price Range	Rs 1.26-5 Per Peice
Minimum Order Quantity	2000 Piece

[View Complete Details](#)

Fill the quantity to get latest price!

Quantity  Select a Unit

**Get Latest Price**  
Request a quote

**INR 1.26**



# The Chameleon



## Color Changing Syringes

*Irreversible photochromic dye.*

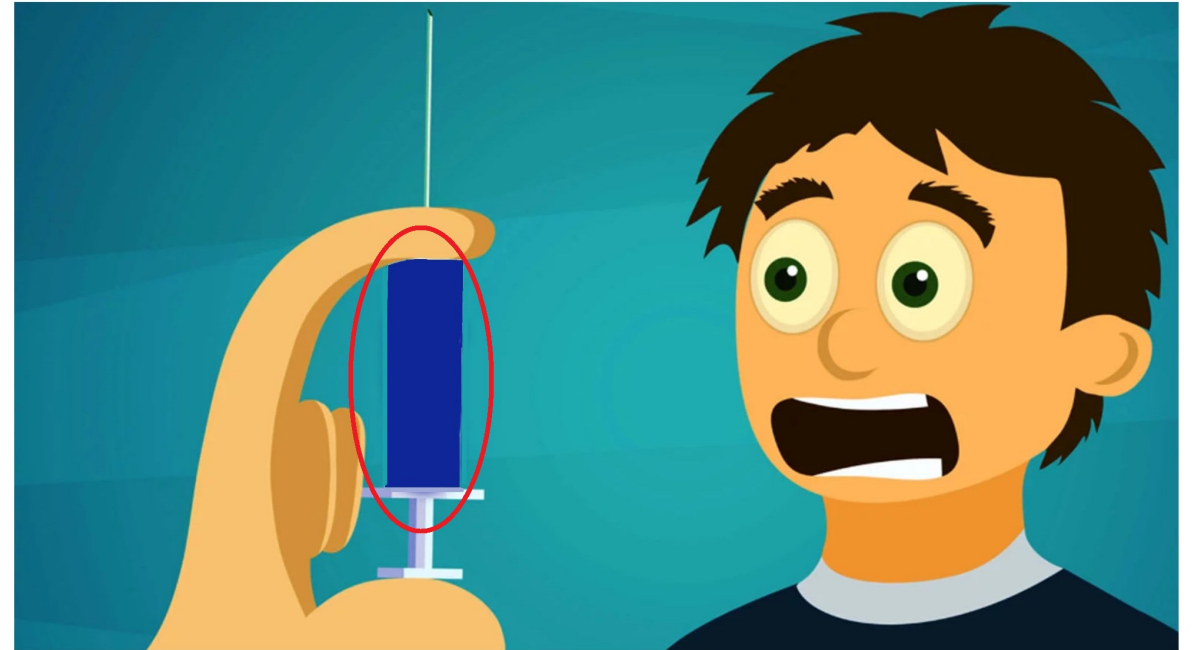
### Cost Analysis:

≈ INR 0.48/5 ml syringe

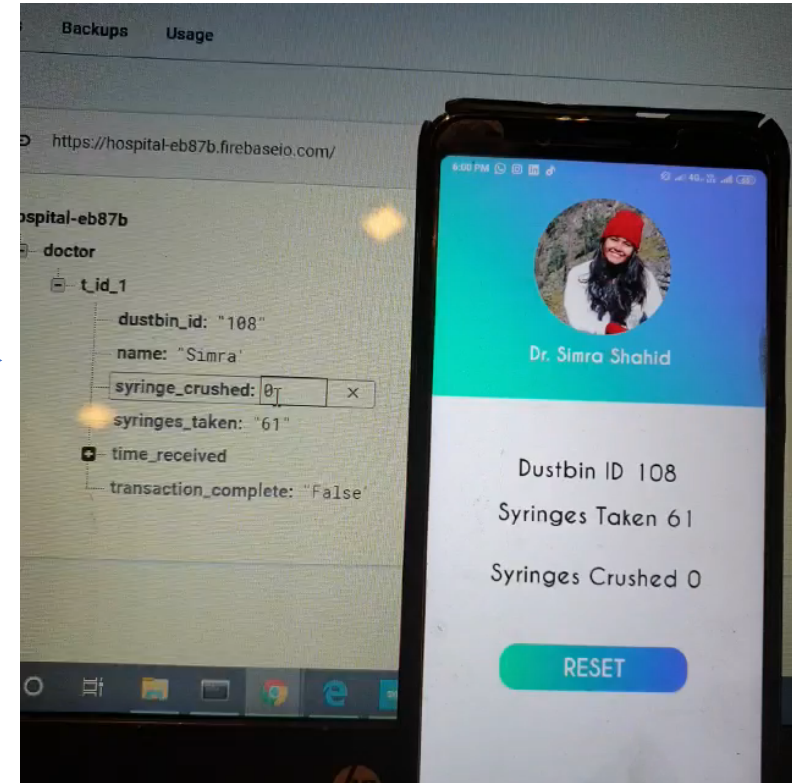
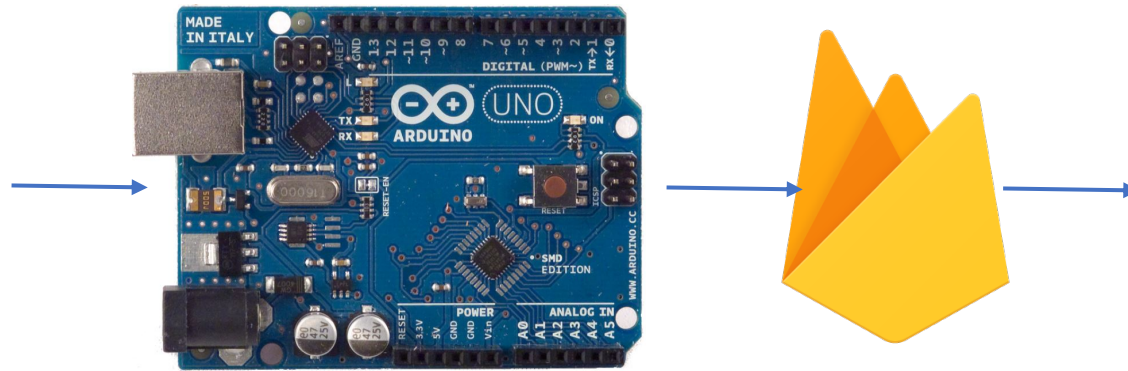
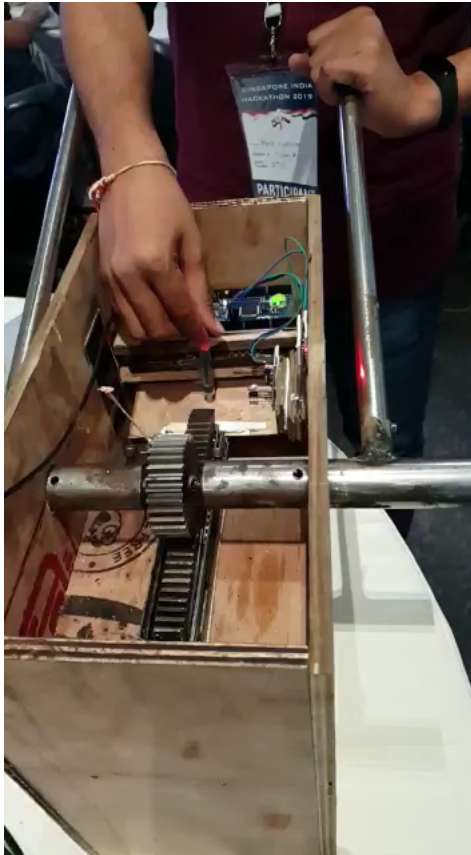
≈ INR 0.29/2 ml syringe



# BLUE IS YOUR CLUE



# SMART DUSTBIN - IoT



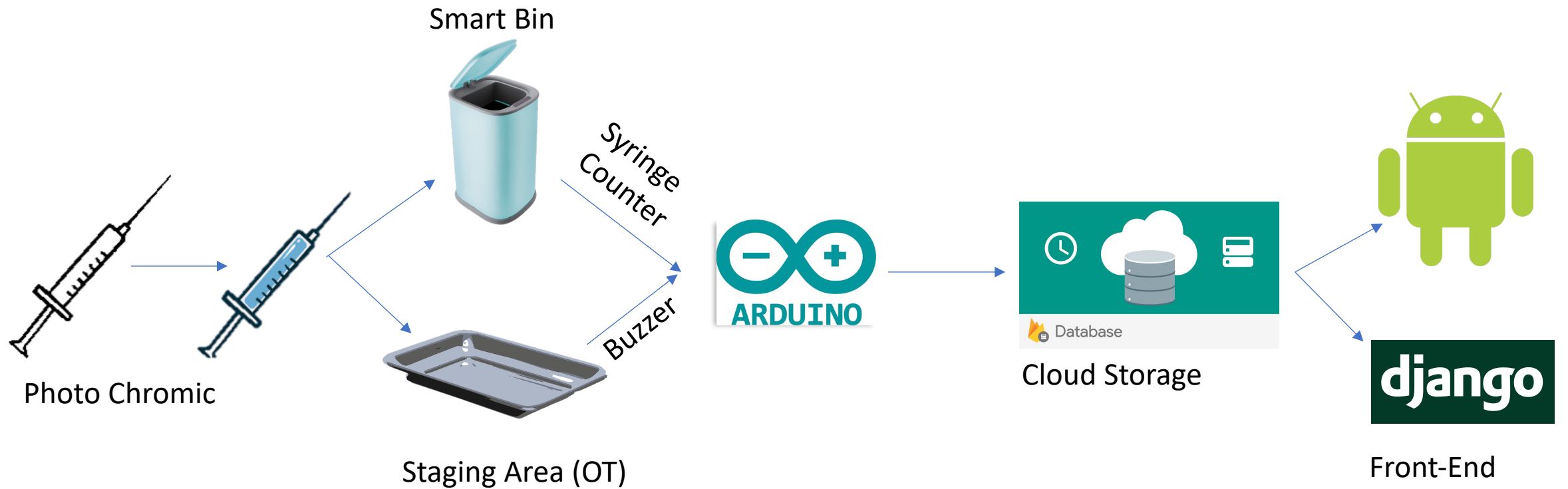


# SMART STAGING AREA - AI



- ✓ **Detect foreign objects (Deep Learning)**
- ✓ **Identify used and unused syringes (Segmentation)**

# Chameleon Architecture





# COST ANALYSIS

SMART DUSTBIN  
Rs. 1500

PHOTOCHROMIC  
SYRINGE  
Rs.0.28/Syringe

STAGING AREA  
Rs. 500



# Unique Selling Points



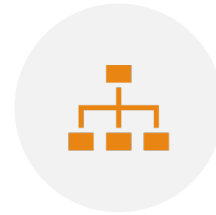
Cost effective and intuitive color changing solution.



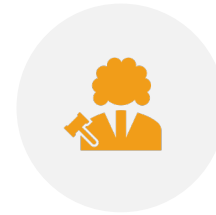
Portable & tamper proof disposal of syringes.



Reduce complications and errors by hospital staffs.



Macro and Micro level Accountability.



Deterrence against malpractice by unscrupulous elements.



Real Time Monitoring.



# Future Work



**Security Authentication  
via Blockchain**



**Use of Solar Cells for  
Power.**



**Use of Nano-Technology  
in Syringe Coating**



**Dynamic Intelligence,  
Evolutionary Learning**



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