



SMART INDIA  
HACKATHON  
2022

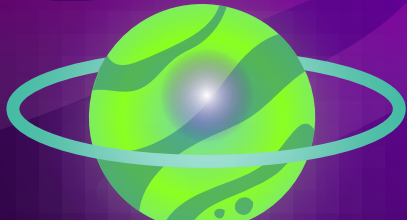
MINISTRY OF CULTURE  
PS: **GM-751**

# 3D PLANETORIUM BY SPACEPLATO

From



L.D. COLLEGE OF ENGINEERING  
Ahmedabad, Gujarat



# ABSTRACT

Over the last decade, hundreds of planetariums worldwide have adopted digital “full dome” projection as their primary projection and presentation medium. This trend has far-reaching potential for science centers. Digital 3D planetarium capabilities extend educational and cultural programming far beyond night-sky astronomy. These “digital domes” are, in essence, immersive visualization environments capable of supporting art and live performances and reproducing archeological sites, as well as journeying audiences through the local cluster of galaxies. Their real-time and rapid-update capabilities set them apart from giant screen cinemas. Studies suggest that well-designed immersive mediums communicate concepts better, create a greater interest in learning, and are more effective than a movie screen or television at conveying scientific concepts. This approach introduces digital domes as a new medium, then discusses ways in which the potential of these environments might be tapped in the future to meet scientific and cultural needs in VR planetarium of all types.

# TABLE OF CONTENTS

01

## PAST SURVEYS

Existing or Past  
System Surveys

02

## APPROACHES

Approaches to solve  
Problem

03

## PROPOSITIONS

Our Proposed  
System

04

## OUTCOMES

Most Possible  
Outcomes

# TABLE OF CONTENTS

**05**

## **TOOLS USED**

Tools and  
Technologies used  
and needed

**06**

## **CHELLANGES**

Limitations and  
Challenges to be  
faced

**07**

## **FUTURE SCOPE**

Conclusion and  
Future Scope of  
System

**08**

## **OUR TEAM**

Team Members and  
Mentors to  
Accomplish

The background is a vibrant purple space scene. It features several stylized galaxies with concentric spiral lines in shades of purple and pink. Scattered throughout are numerous small white stars. In the top left, there is a yellow planet with blue and white swirling patterns. In the bottom left, a pink planet with blue horizontal stripes is shown with a blue ring. On the right side, a colorful rocket ship with a blue nose cone, yellow body, and pink accents is depicted flying towards the right, leaving a long, bright orange and yellow trail behind it.

01

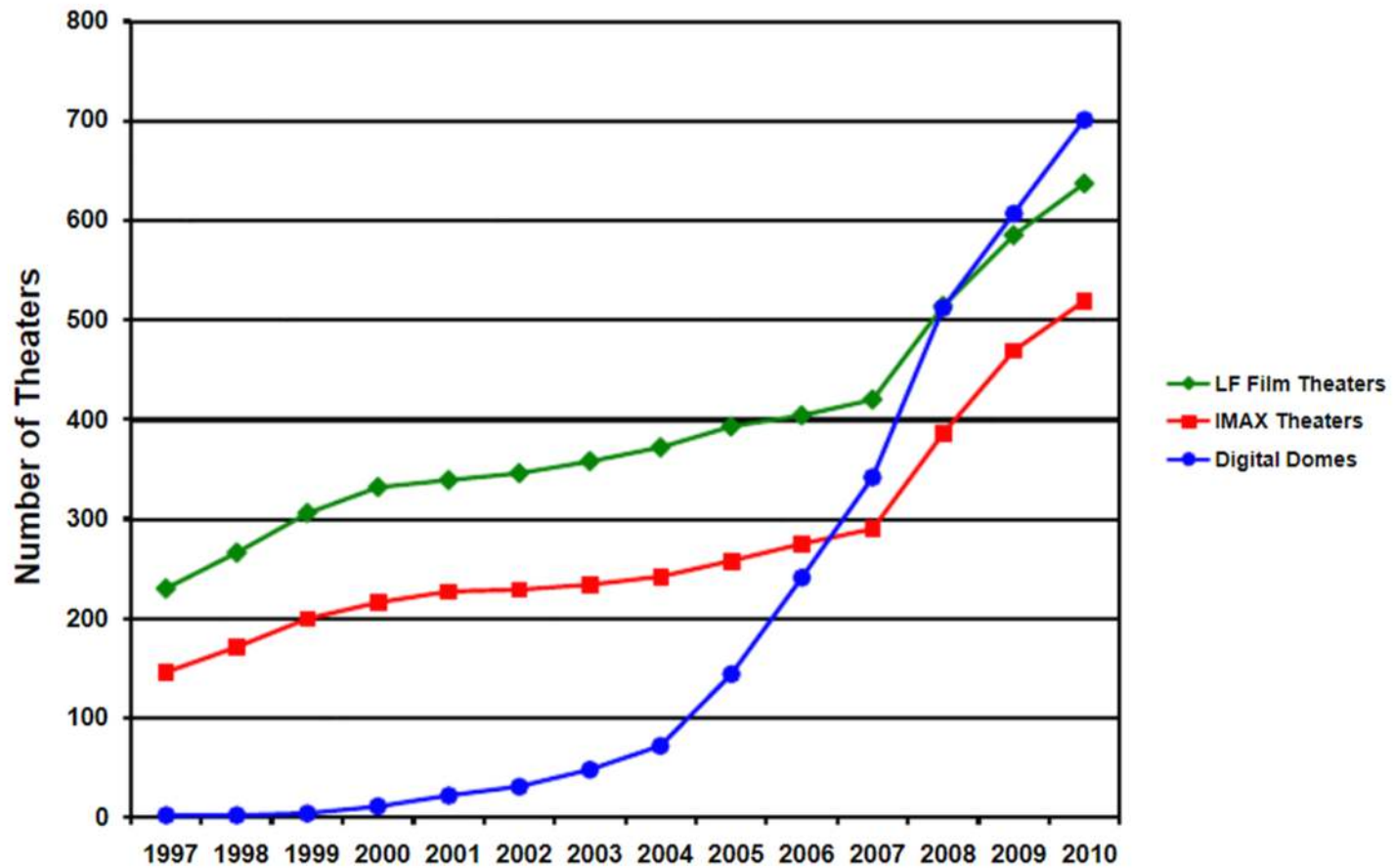
# PAST SURVEYS

Surveys and Stats of Existing Systems





Planetariums are in the midst of an unprecedented transformation that is not only changing the underlying technology used to deliver planetarium programming, but also promises to radically expand the role of the planetarium in the modern museum and science center. Over the past decade, digital planetariums, also known as full dome theaters, have rapidly grown in number



The background is a vibrant purple space scene. In the top left, a yellow planet with blue and white patterns is partially visible. In the bottom left, a pink planet with blue rings is shown. A colorful rocket with a green engine and yellow fins is flying from the right towards the center, leaving a long, bright orange and yellow trail. The background is filled with various celestial elements like galaxies, nebulae, and small white stars.

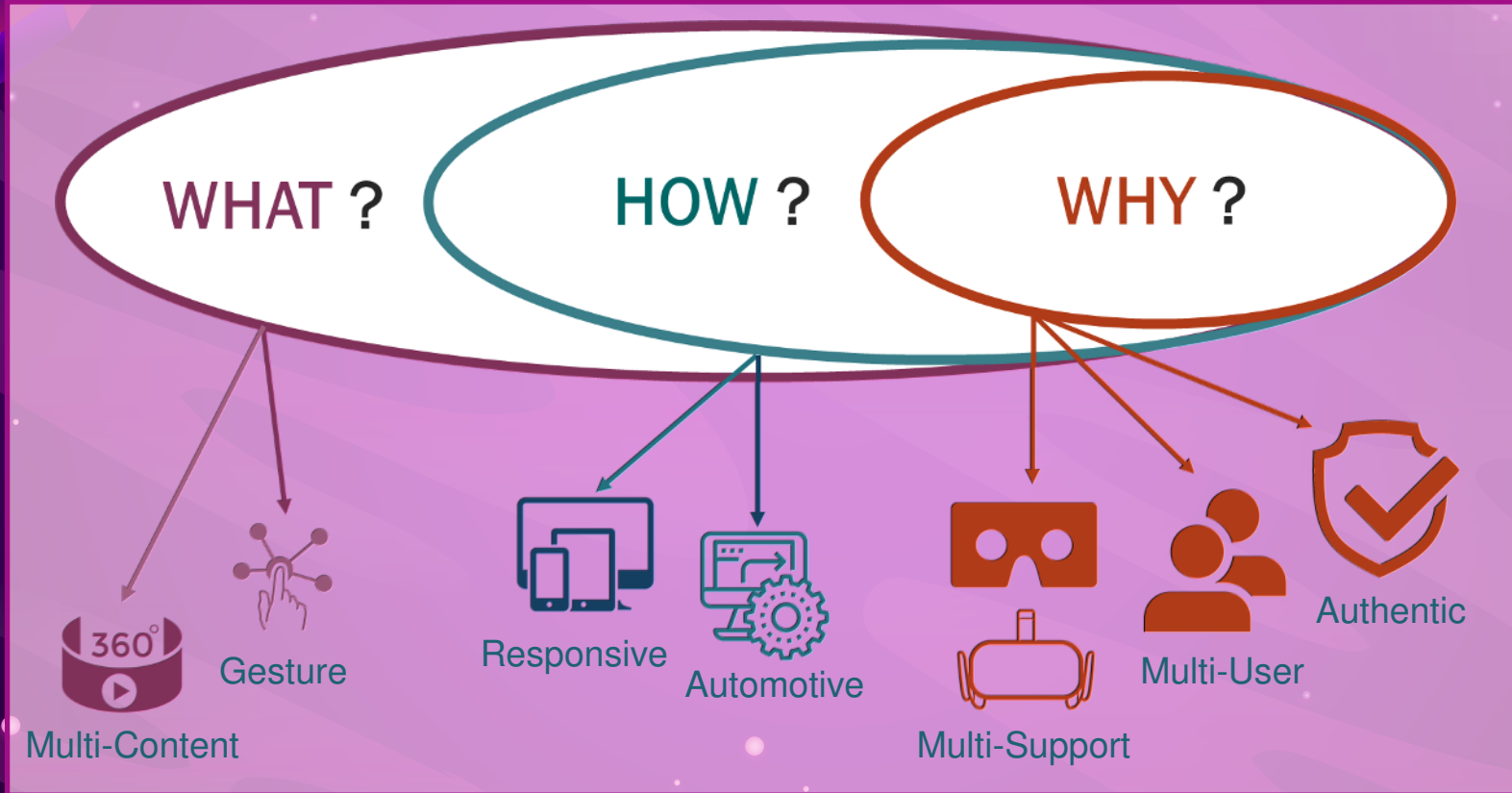
# 02

# APPROACHES

Approaches to solve Problem



# Purpose and Approach



# OUR PHILOSOPHY

CURRENT TRENDS SUGGEST THAT DIGITAL DOMES MAY EMERGE AS A KEY COMPONENT IN A FUTURE DIGITAL INFRASTRUCTURE DESIGNED TO AGGREGATE AND DISSEMINATE EXPERIENTIAL DATA, INFORMATION, KNOWLEDGE, SIMULATIONS, ART, AND PERFORMANCES ACROSS A RANGE OF DISCIPLINES IN SCIENCE, ART, AND THE HUMANITIES






03

# PROPOSITION

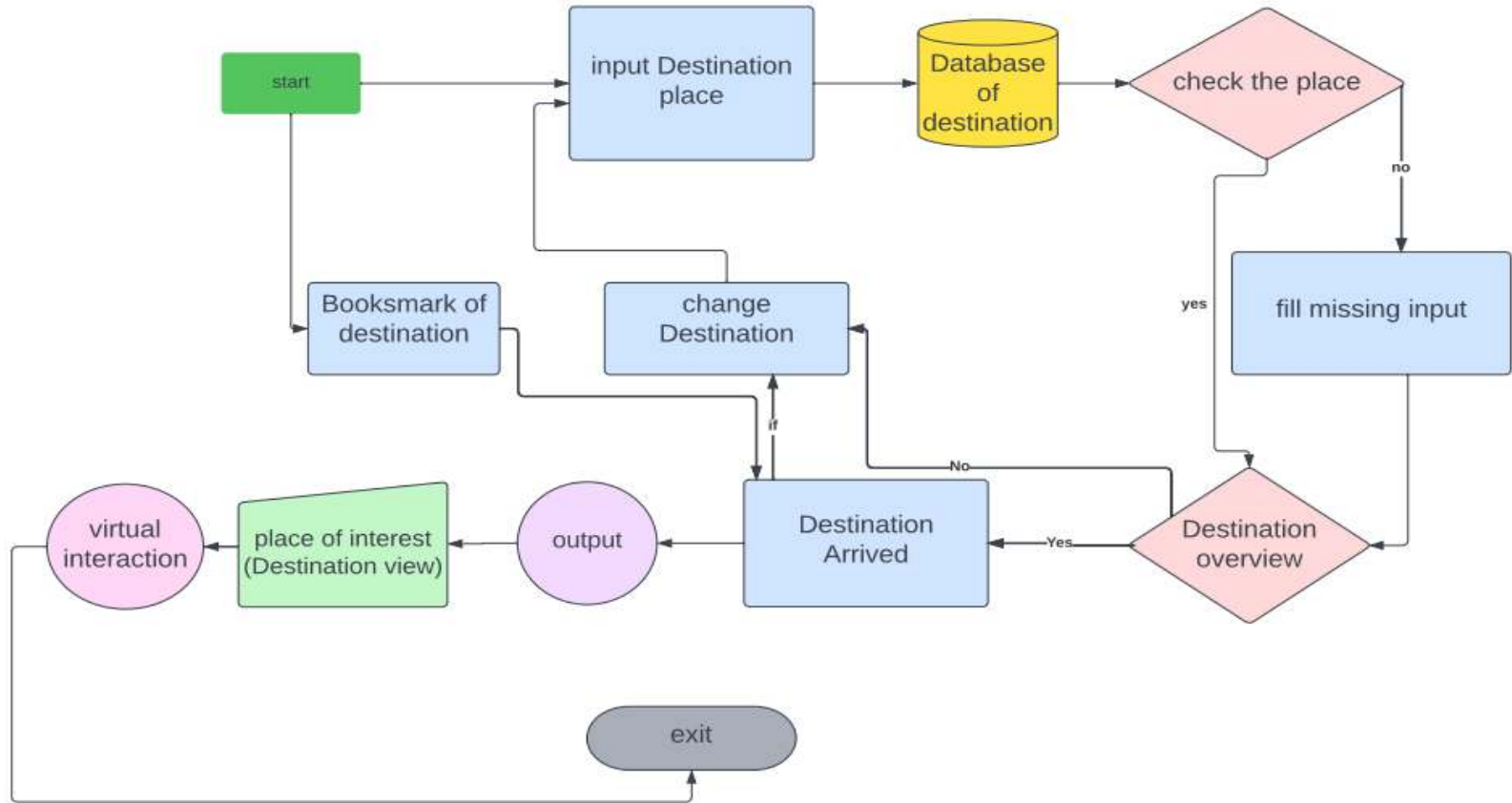
Our Proposed System for Problem & Innovation



# IDEA/ SOLUTION

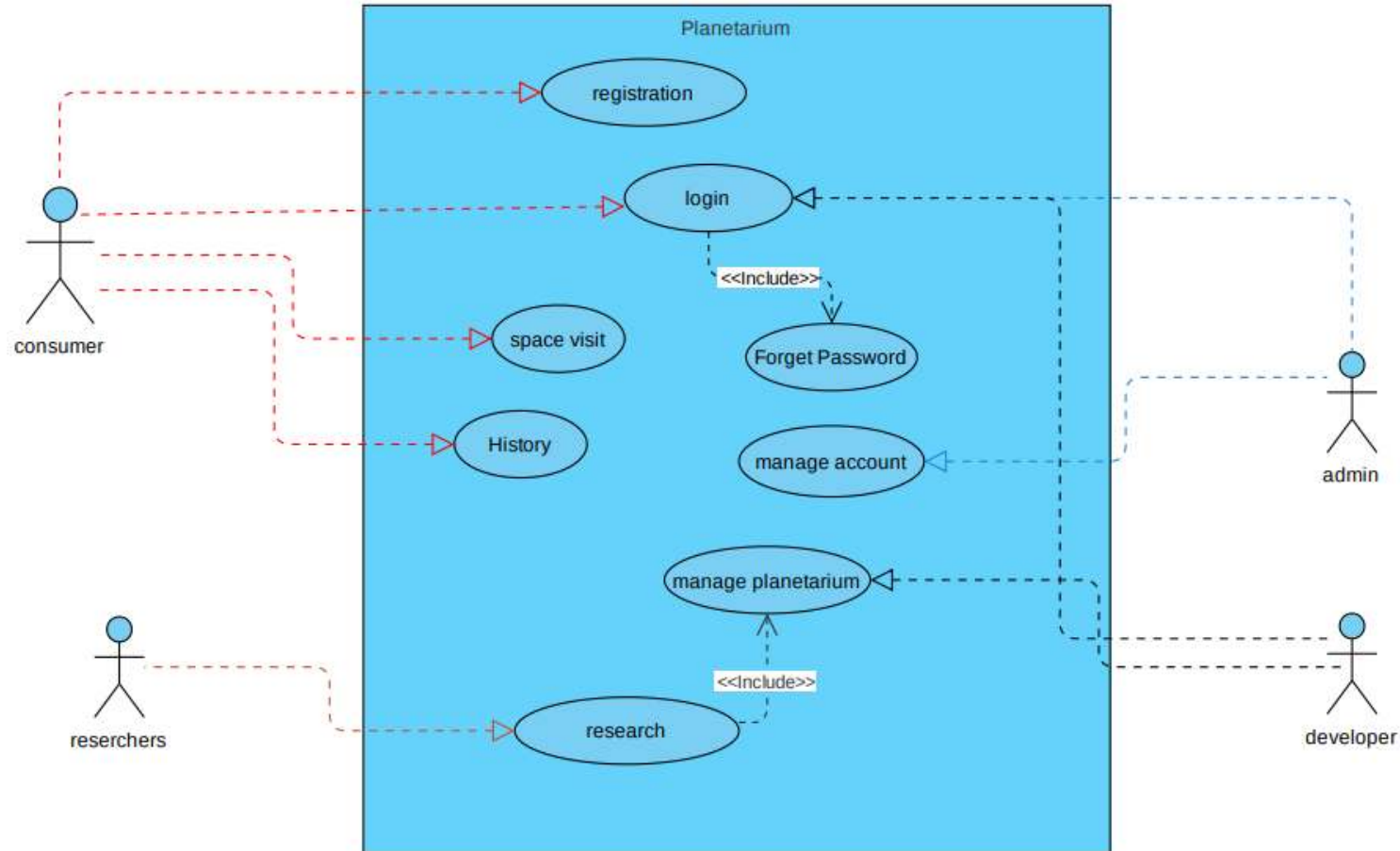
- 3D VR Planetarium App contains not only 3D models but also an immersive VR experience.
  - We will create whole ecosystem of space with its own realistic 360 VR celestials with spatial audio for best user experience and also input gestures and most sophisticated interface which makes users immersive experience to exploration.
  - We will able to create & develop interests of youth of age group from 10-40 years, towards space science and this can give them access to new technology with knowledge of Inventions, Discoveries, Hidden Sciences of our ultimate Space of Universe explored in Human History.
  - Approaches for innovative features like a self portrait picture on Celestial just like Neil Armstrong on Moon, Navigation from current location, Save Now Travel Later, Security ( PIN System ), Immersive Historical Events Experiences like Halley's Comet.
- 

# PROCESS FLOW DIAGRAM





# USE CASE DIAGRAM



The background is a vibrant purple space scene. In the top left, a yellow planet with blue and white swirling patterns is partially visible. In the bottom left, a pink planet with blue rings is shown. A bright yellow and blue rocket with green accents is flying from the right side, leaving a long, colorful trail. The background is filled with various celestial elements like galaxies, nebulae, and small white stars.

04

# OUTCOMES

Possible Growth and Outcomes



**ENJOYMENT + INVOLVEMENT**

**MOST AUTHENTIC INFORMATION**

**EXPLORATION + EDUCATION**

**PUBLIC AWARENESS IN SPACE VR**

**HIGH QUALITY EXPERIENCE**

**LESS SERVICE COST**

The background is a vibrant purple space scene. In the top left, a yellow planet with blue and white swirling patterns is partially visible. In the bottom left, a pink planet with blue rings is shown. On the right side, a colorful rocket with a green nose cone, yellow body, and pink fins is flying towards the right, leaving a long, bright orange and yellow trail. The background is filled with various celestial elements: white stars of different sizes, pinkish-red spiral galaxies, and abstract, flowing purple and blue shapes that suggest nebulae or gravitational wells.

# 05 TOOLS

Technologies and Tools been used

# STELLARIUM

## UNITY3D + WEBGL

- C# SCRIPTING
- 3D MODELS (AUTODESK, BLENDER )
- SPATIAL SOUND (AUDACITY)

## ANDROID STUDIO

- FLUTTER
- DART
- JAVA



The background is a vibrant purple space scene. In the top left, a yellow planet with blue and white swirling patterns is partially visible. In the bottom left, a pink planet with blue rings is shown. On the right side, a colorful rocket with a green nose cone, yellow body, and pink fins is flying towards the right, leaving a long, bright orange and yellow trail. The background is filled with various celestial elements: white stars of different sizes, pinkish-red spiral galaxies, and soft, glowing nebulae in shades of purple and blue.

06

# CHELLANGES

Limitations and Challenges to be faced



# MAIN PROBLEMS



## Affordability

Affordable for Heavy Data to maintain and Complex Big Web System



## Lacks options

Not very much options available to develop as it is developing technology





# COMPLEX TECHNOLOGY



## File size

Database to store & process  
big files



## Resolution

Responsive to display in  
different resolution



## Video quality

Video and Image quality of  
360 / 3D contents



## space

Storage Space to store and  
host





# HEALTH ISSUES



**Anxiety**



**Dizziness**



**Eye strain**



**Radiation**



**Headache**

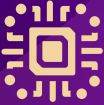


**Isolation**





# VR EXPENSES

  
**Device**

Mobile /  
Computer

  
**Glasses**  
VR Headsets

  
**Gloves**  
Haptic Devices

  
**Spot**  
Space to  
locomote





07

# FUTURE SCOPE

Future Scope and Conclusions

**SPACE METAVERSE**

**AI BOT SPACE GUIDE**

**SPACE EXPERIMENTS IN VR**

**SPACE DIVING USING HAPTICS**



# OUR TEAM

NEERAJ VERMA

STUDENT – IT (MCA)

DEVVRAT SHUKLA

STUDENT – IT (MCA)

MEENAKSHI DEVI

STUDENT – IT (MCA)

ASIFUL SHAIKH

STUDENT – IT (MCA)

NIRMAL PATEL

STUDENT – IT (MCA)

NIYATI VASHISTHA

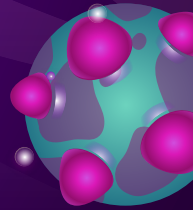
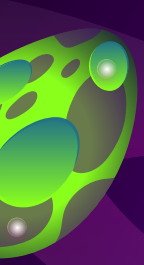
STUDENT – IT (MCA)

PROF. NIRJARI DESAI

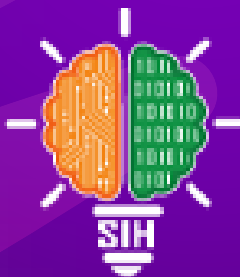
MENTOR – IT (MCA)

PROF. ANKIT PATEL

MENTOR – IT (MCA)



# THANKS !



SMART INDIA  
HACKATHON  
2022

75  
Azadi Ka  
Amrit Mahotsav