Second United Nations World Geospatial Information Congress
TP3D - Innovative Geospatial Services, Platforms and Systems

GEOSPATIAL INFORMATION AND VIRTUAL TOUR

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SVNIT

This Institute was established in 1961 as one of the RECs.
It has been declared as Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat with the status of "Deemed University" from 4th December 2002.
The Institute has been granted the status of 'Institute of National Importance' w.e.f. Aug. 15, 2007
Currently, the Institute is offering Six UG Programmes, Nineteen PG Programmes, and Three M.Sc. Five Years Integrated Programmes including doctoral programmes in all above branches.

Dept. of Electronics Engineering

The department was established in the year 1982
one undergraduate program in Electronics & Communication Engineering: intake of 180 students
two postgraduate programs with specializations in Communication Systems and VLSI and Embedded Systems: 30 students in each program
67 research scholars
27 permeant faculty members
10 B.Tech And M.Tech Laboratories
05 Research Laboratories

Flow of Presentation

- Introduction
- Objective of virtual tour
- NavIC
- Geospatial data collection
- Results

Introduction: Current Situation

- Do we have easy village accessibility?
- Where do we get solutions/culture/art available in villages on a common platform?
- How do they get exposure to their skills and credit?
- Moving a young generation to cities...in a way we are losing true assets of villages

Solution ...

Smart

Connected

Virtual Tour

Reduce cost

Sustainable

Interconnectivity

Increases productivity

GIS

NavIC

What do we propose?

- With geo-enabled tagging, virtual tours of the villages can be viewed globally
- The village talent is brought to the foreground through this initiative
- It can provide publicity for their developed art and culture
- Virtual visits to the villages can attract tourists to visit the place and open the possible earning doors
- example,
  - there are many such villages with beautiful beaches which are unexplored/undeveloped

Continue...

- Government can merge this information with the schemes like Unnat Bharat Abhiyan and SVAMITVA, etc
- Unnat Bharat Abhiyan works for the betterment of villagers
- SVAMITVA aims to provide the ‘Record of Rights’ to village household owner
- Merging of UBA + SVAMITVA + Virtual Tour = the informative digital twins of Villages
- True information on land records useful for better future planning
- Indigenous tagging like using NavIC for India

Proposed Vision & Mission

No one should left behind

Every Indian village should be visualized on a digital platform to get equal opportunities for growth by keeping the tradition alive

Indigenous geo mapping

Indian satellite navigation-based location data will provide more accurate location as well as security of data to create an indigenous mapping

virtual tour

- A virtual tour is an attractive tool for discovering spaces without being at the place in person.
- Such services are mainly used for real estate, gaming, college campuses, etc.
- A virtual tour is part of the digital world where everyone wants to go and explore.
- The same experience we would like to apply to the villages of India.

NavIC: Navigation with Indian Constellation

- NavIC is India's own satellite navigation system, like the GPS, which is of the US.
- The system's heart is seven satellites positioned above India. These satellites form the 'Indian Regional Navigation Satellite System' or IRNSS.
- NavIC is regional and can be used in India and up to 1,500 km from India's borders.

Is NavIC as good as GPS?

- In some respects, better. GPS can take you within 20 meters of your target, while NavIC is more precise — it will take you within five meters of the target.

NavIC: Navigation with Indian Constellation

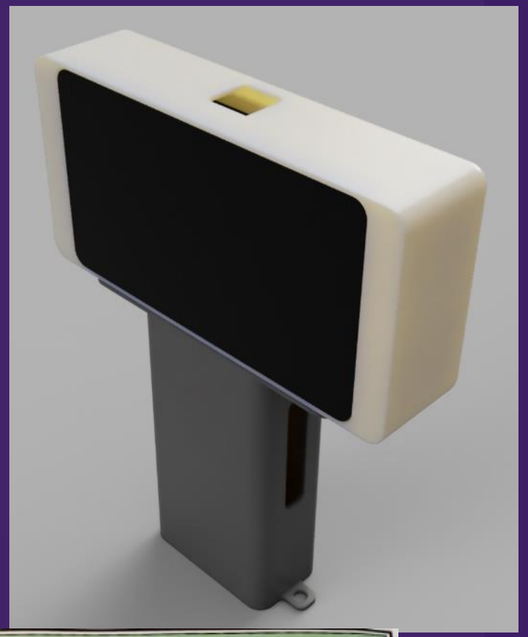
How come NavIC is more precise than GPS?

- because NavIC uses two frequencies instead of one — the L5 (1176.45 MHz) and S-band (2492.028 MHz). This improves accuracy by enabling the receivers on the satellites to correct any atmospheric errors through the simultaneous use of the two frequencies.

- The system's uptime is better than GPS because either frequency can serve the positioning requirement equally well.

- It's better to use a system that provides more accurate mapping

NavIC Device for Mapping



NavIC Device

- Handheld battery-operated mapping device
- Supported with NavIC+GPS
- Design patent is received
- Device patent FER received

Working

- Discrete Mode
- Continuous Mode

ORIGINAL

No. 106620

भारत सरकार
GOVERNMENT OF INDIA
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THE PATENT OFFICE

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Date 18/11/2021 11:59:59
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Country

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 10-04 in respect of the application of each design to POTABLE LOCATION MEASURING DEVICE WITH TOUCHSCREEN in the name of 1.DR. MEHUL DESAI, LECTURER, E & C DEPARTMENT, GOVERNMENT POLYTECHNIC FOR GIRLS, ATHWAGATE, NANPURA, SURAT – 395001, GUJARAT, INDIA 2. DR. SHWETA N. SHAH, ASSISTANT PROFESSOR, DEPARTMENT OF ELECTRONICS ENGINEERING, SARDAR VALLABHBHAI NATIONAL INSTITUTE OF TECHNOLOGY, ICHCHHANATH, SURAT – 395007, GUJARAT, INDIA 3. DR. DARSHNA JAGIWALA, PROJECT FELLOW, DEPARTMENT OF ELECTRONICS ENGINEERING, SARDAR VALLABHBHAI NATIONAL INSTITUTE OF TECHNOLOGY, ICHCHHANATH, SURAT – 395007, GUJARAT, INDIA

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Unnat Bharat Abhiyan

Vision UBA

UBA is inspired by the vision of transformational change in rural development processes by **leveraging knowledge institutions to help build the architecture of an Inclusive India.**

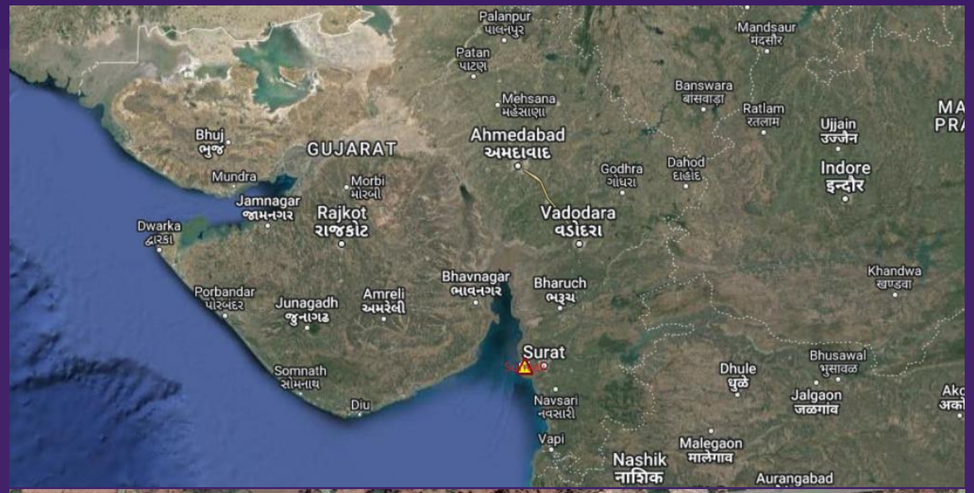
Mission UBA

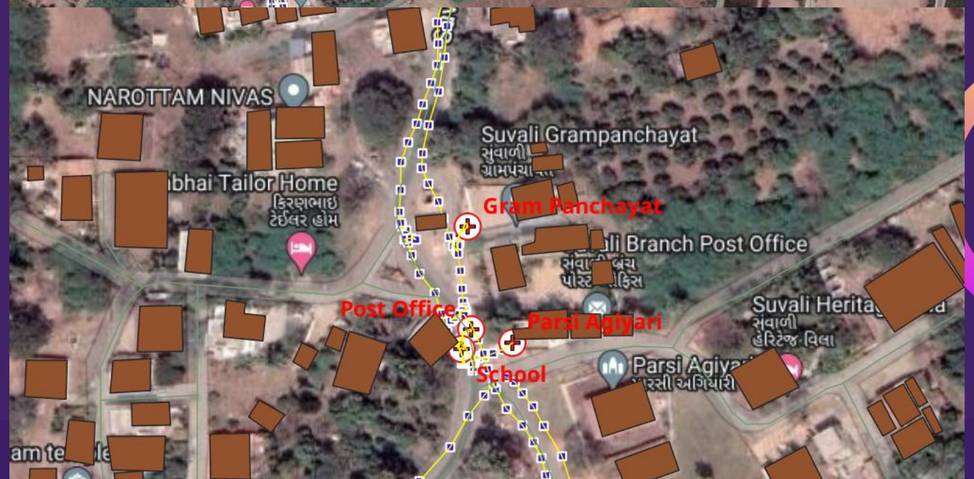
enable higher educational institutions to work with the **people of rural India** in identifying development challenges and evolving **appropriate solutions** for accelerating **sustainable growth.**

- **Suvali**
- Mora
- Rajgari
- Bhatlai
- Junagam

Geospatial data collection

- For geospatial data collection, our team traveled to the Suvali village and recorded the data in latitude and longitude.
- Data has been recorded in discrete and continuous modes.
- The recorded data is plotted on the map via the QGIS platform on the Indian map available based on GPS data





Geospatial data collection

- Continued data got recorded every second hence the number of data points was sufficient to capture the details of the road traveled.

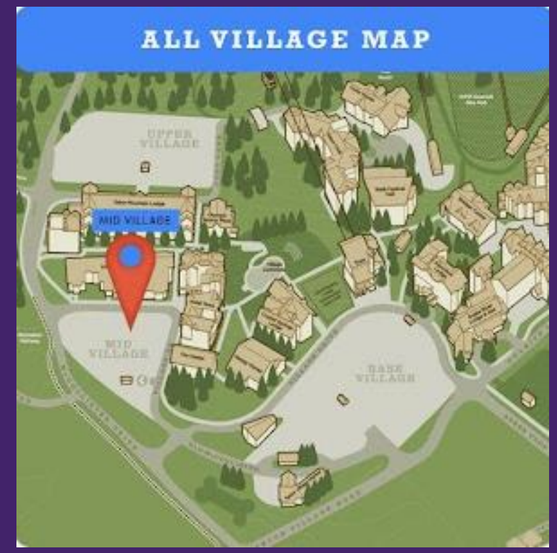
- At every important discrete location a 360 image is clicked and geotagged.

NavIC: Navigation with Indian Constellation

Position accuracy is a byproduct of NavIC
Real data is mapped and not from the satellite images

Results

Virtual Tour of Village



Digital kiosk for a village

- Virtual tour will help to provide all the relative information in a different way like population, household, the area covered, facility available

E commerce platform

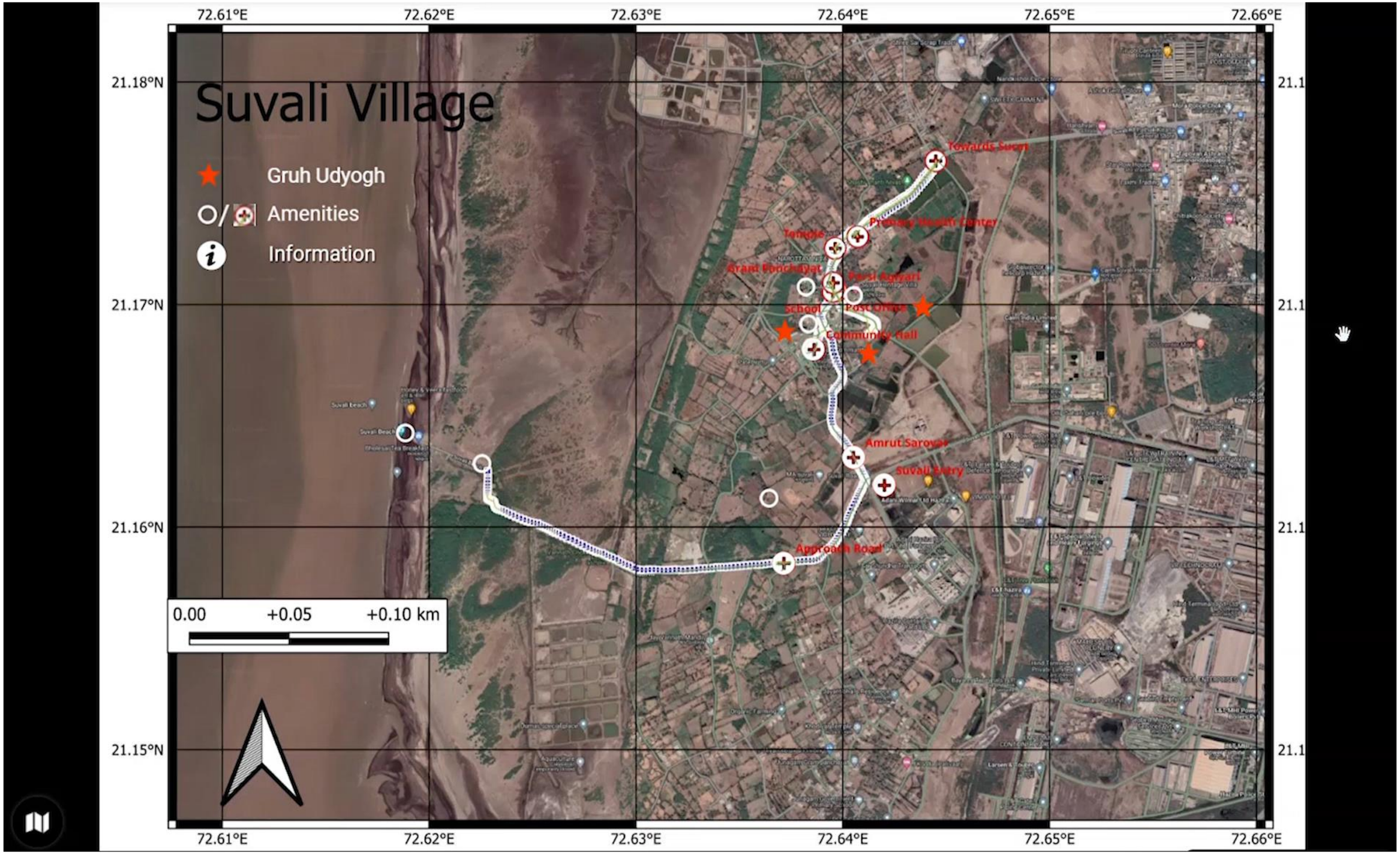
- Villager's product can be linked to a map for their global publicity
- They can get a market for better income

Village development progress

- The progress of village development can be observed in a virtual mode by the govt.
- This may require a regular update.
- However, it will provide near to real view to the authority

Global identity on map

- Various places like temples, special crop production, beaches, and archeological structures can have a global identity which can attract tourists for various studies


Suvali Village
Gruh Udyogh
Amenities
Information
72.61°E
72.62°E
72.63°E
72.64°E
72.65°E
72.66°E
21.18°N
21.17°N
21.16°N
21.15°N
Towards Surat
Primary Health Center
Temple
Gram Panchayat
Post Office
School
Community Hall
Amrut Sarovar
Suvali Entry
Approach Road
Suvali Beach
0.00
+0.05
+0.10 km

Pros...of merging 3 technologies

- Maintaining the abilities/uniqueness/ of the village and the experience of the villagers
- A detailed map of every village
- Villagers have more income options
- A Rich Government database
- “Something is developing everywhere”
  - *Remote monitoring of infrastructure development in villages*
- Developing villages based on their unique characteristics as tourist spots/ archeological sites/agricultural medicine locations/climates/vegetation etc.
- Better planning and development possible

Quotes Today

"Metaverse is a world in future technology that we will enter later."

- Alexander Aronowitz -

Our Team of Nirmaan

Founder: Ms. Nirali Brahambahtt
Co- Founder: Dr Mehul desai
Co- Founder: Dr. Darshna Jagiwala
Mentor: Dr Shweta Shah

THANK YOU

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