AMRITA SeRVe
SELF RELIANT VILLAGE

श्रद्धावान् लभते ज्ञानम्

Live-in-Labs™

AN INITIATIVE BY AMRITA UNIVERSITY

Experiantial Learning in Rural India

AMRITA University

5 campuses, **15** schools, and **150+** programs

2000 Faculty and **18,000** Students with **1:10** faculty-student ratio

600+ Faculties hold PhDs/DMs

51 Patents, **3500+** Publications, **6800+** Citations

76 International University collaborations

20 Centers of Excellence in Research

Vision

"To provide value-based education and mould the character of the younger generation through a system of wholesome learning, so that their earnest endeavor to achieve progress and prosperity in life is matched by an ardent desire to extend selfless service to society, one complementing the other"

www.embracingtheworld.org

Mata Amritanandamayi Math

A UNITED NATIONS RECOGNIZED NGO

**Embracing the World is the global network of charitable projects initiated by renowned humanitarian and spiritual leader,
Amma (Sri Mata Amritanandamayi Devi).**

www.embracingtheworld.org

Empowering Women

Building Homes

Disaster Relief

Community Outreach

Fighting Hunger

Health Care

Green Initiatives

Research for a Better World

Amrita Institutions

Education for Everyone

Public Health

Care Homes for Children

Unique Opportunity for You

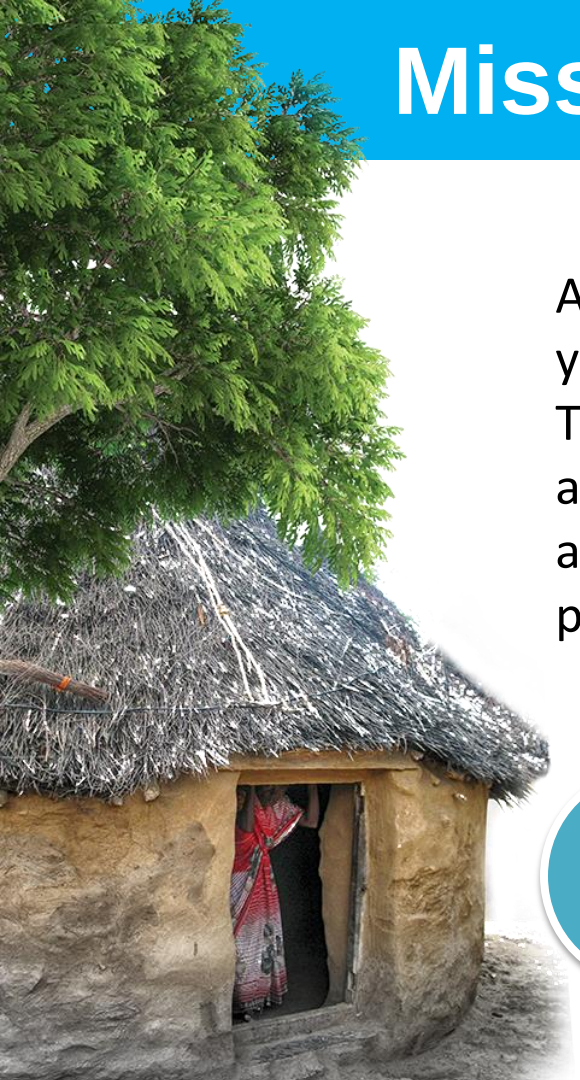
Live-in-Labs™
AN INITIATIVE BY AMRITA UNIVERSITY

A multidisciplinary theory–into–practice program that facilitates the research, development, and deployment of sustainable solutions for current challenges faced by rural communities in India.

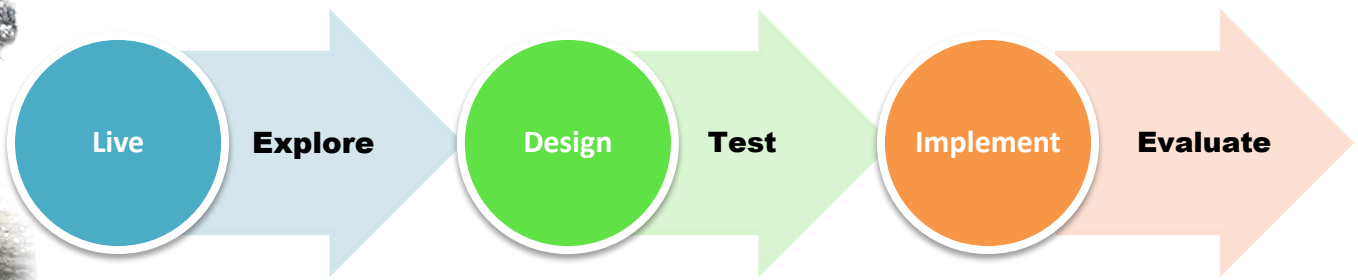
EXPERIENTIAL LEARNING
INTERDISCIPLINARY RESEARCH
INNOVATIVE IDEAS
SUSTAINABLE SOLUTIONS
LIFE ENRICHMENT TRAINING

Mission

Live-in-Labs™
AN INITIATIVE BY AMRITA UNIVERSITY

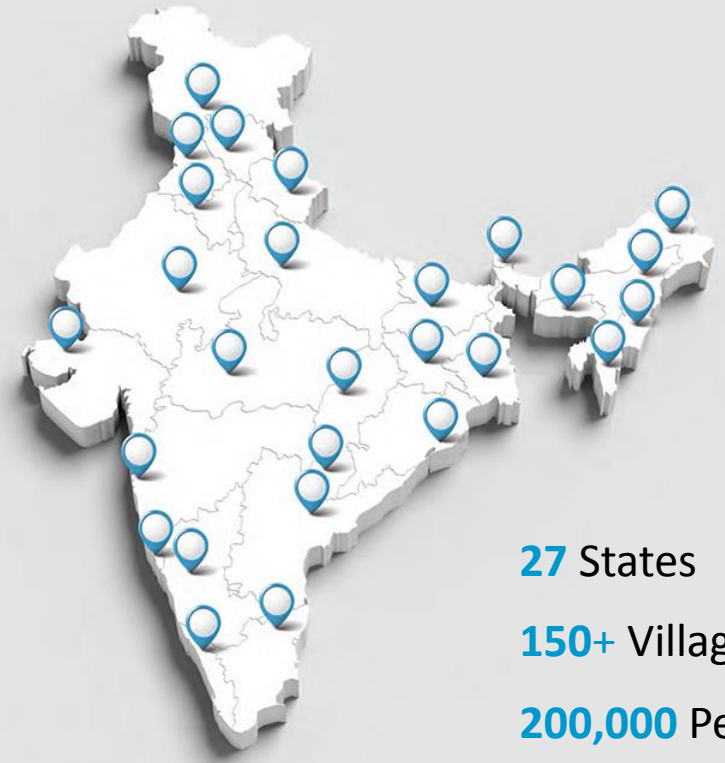


Amrita University's **Live-in-Labs™** is designed to expose youth to problems faced by rural communities in India. Through experiential learning opportunities, the program aims to inspire innovation through empathy and the application of knowledge while developing collaborative problem solving abilities of participants.



Locations

Live-in-Labs™
AN INITIATIVE BY AMRITA UNIVERSITY



27 States

150+ Villages

200,000 People

Objectives & Goals

Live-in-Labs™
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Education

Skill
Development

Healthcare

Infrastructure
- Energy

Water/Sanitation

Income Generation
& Empowerment

Thematic Areas

Live-in-Labs™
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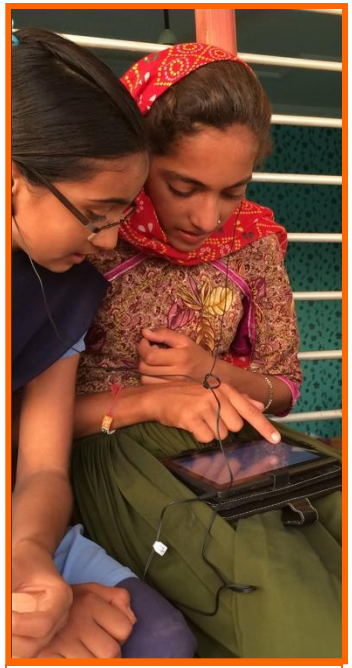
Environment & Farming



Education & Technology

Infrastructure & Facilities

Energy

Health & Livelihood

What's in it for you

Live-in-Labs®
AN INITIATIVE BY AMRITA UNIVERSITY

❖STUDENTS-

Encourages a strong passion for developing innovative, applicable, and comprehensive solutions that address problems faced by rural communities in developing nations

❖RESEARCHERS-

Provide a unique environment for applied research, with a strong focus on the invention's journey from research to market

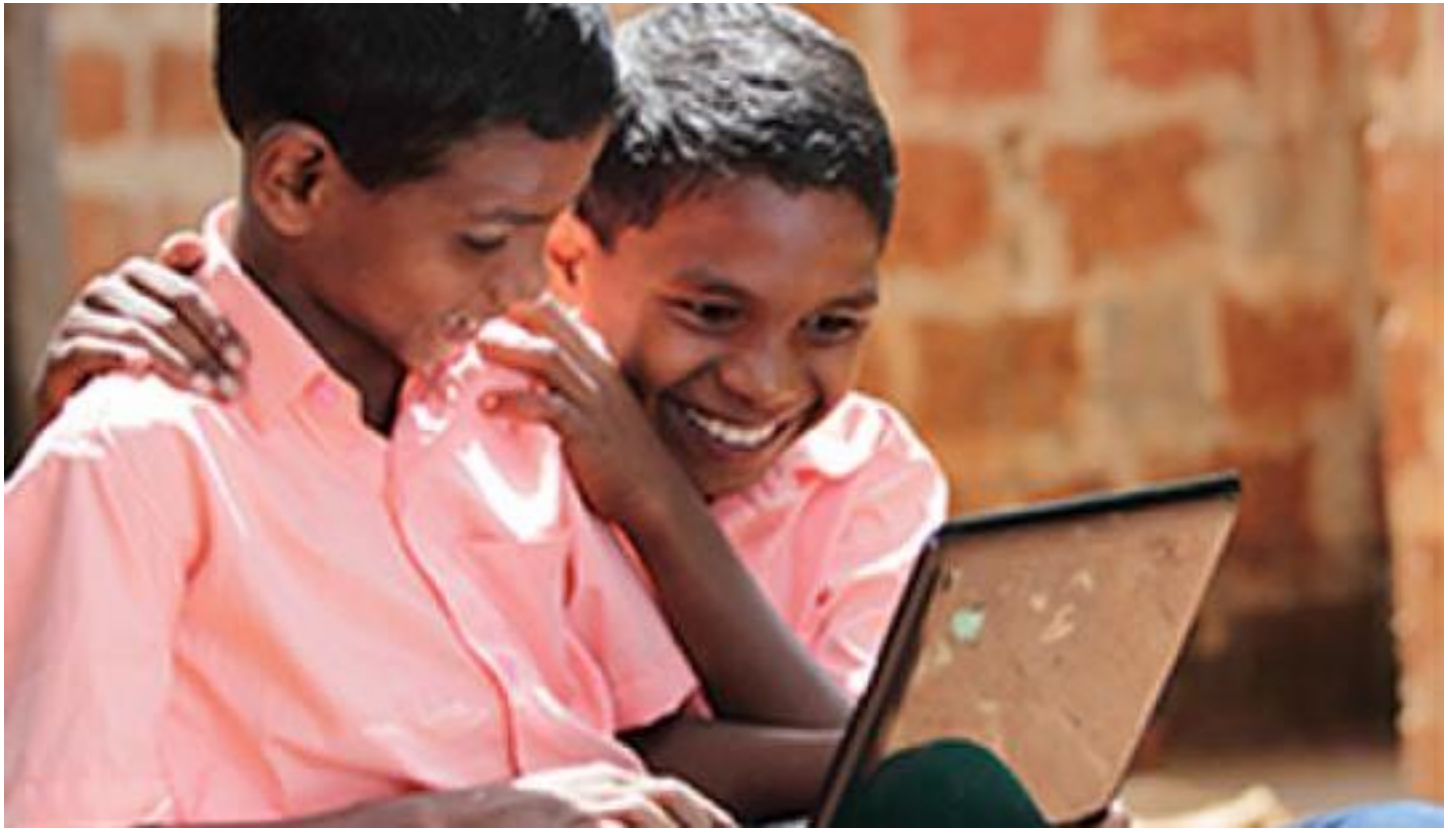
❖UNIVERSITIES-

Leverage and apply technological advances in order to find new ways to overcome economic and social marginalization of rural populations in developing nations.

Overview- Live-in-Labs Video

Live-in-Labs™
AN INITIATIVE BY AMRITA UNIVERSITY

Program-Phases



Live-in-Labs™

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Education

Education

Live-In-Labs
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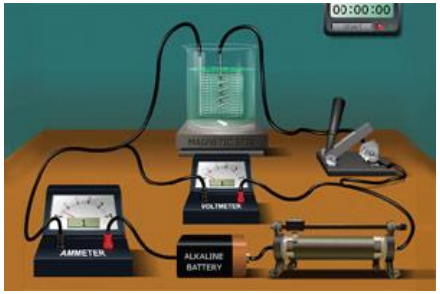
Amrita RITE (Adult Education)

OLabs (Science Simulations)



VALUE (Virtual Laboratories

Remote Triggered WSN Laboratory

Social Awareness (Gender, Substance Abuse)

Human Trafficking Awareness - Smart Decisions Software

Amrita RITE:
Tablet Based Education

Live-in-Labs™
AN INITIATIVE BY AMRITA UNIVERSITY

- Neo literates
- Tablet based education due to non availability of resources

- Tablet Based Software
- Multilingual
- Light weight software
- Android based

- Hand writing recognition – learning to write
- Speech recognition (work in progress), multiple indian languages, locally on Android – for learning to read

Amrita RITE Launch

The Amrita RITE project was launched by Chancellor of Amrita University, **Mata Amritanandamayi Devi** on 27th September 2013, by handing over a tablet to **Shashi Tharoor,** former Minister of State for Human R
C

eLiteracy & Health Awareness for Tribals

The objective of the Amrita eliteracy & Awareness is to spread computer literacy and health awareness among the ST people, who are generally unable to avail themselves of the benefits of eliteracy. The training is through tablet computers and includes Awareness in Computer Concepts (ACC) and Health Awareness.

- To empower tribal people, particularly youth, through computer education.
- To create awareness about IT, Social and health awareness education.
- To provide quality computer education free of cost.
- Game oriented computer basic training and modular courses.
- Interactive education through software, games and e-books.
- Government certified basic computer course.

1000
Scheduled Tribes
to be trained

OLabs: Online Laboratories

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AN INITIATIVE BY AMRITA UNIVERSITY

- Shortage of Laboratory Equipment's in High Schools
- Shortage of Trained Teachers

- Online Software with complete pedagogy: theory, procedure, animation, simulation, video, assessment's, references
- Multilingual Course material development by remote expert teachers using collaborative platform
- Tablet based education due to non availability of computer labs

- Under Digital India Program developed 130 science labs
- Trained 8000 teachers
- Implemented in 15000 schools

- Funded by Ministry of IT
- Evaluated, Endorsed, and Implemented by Ministry of Education
- Scalability and Sustainability achieved through collaboration between Academia, Ministry and NGO

OLabs: Online Laboratories

Live-in-Labs™
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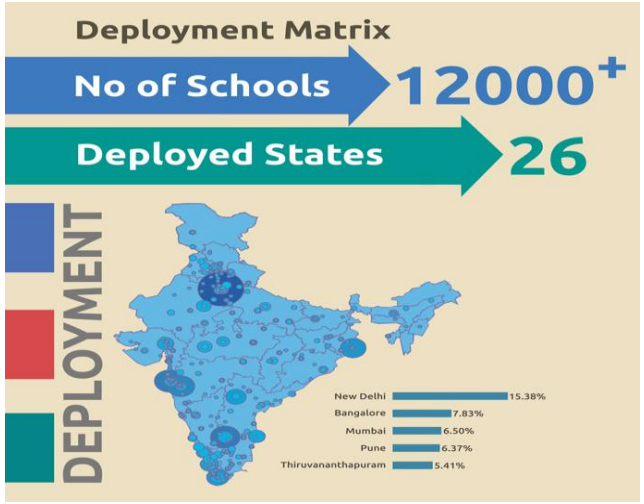
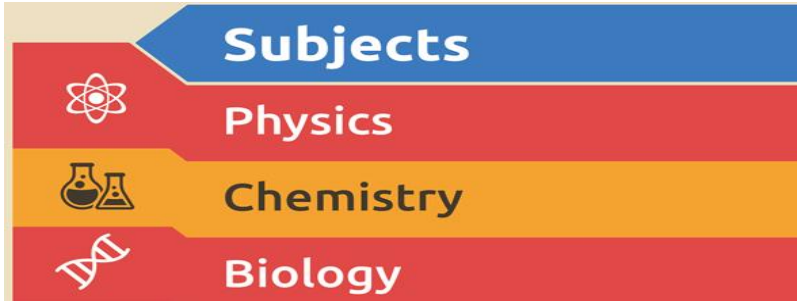
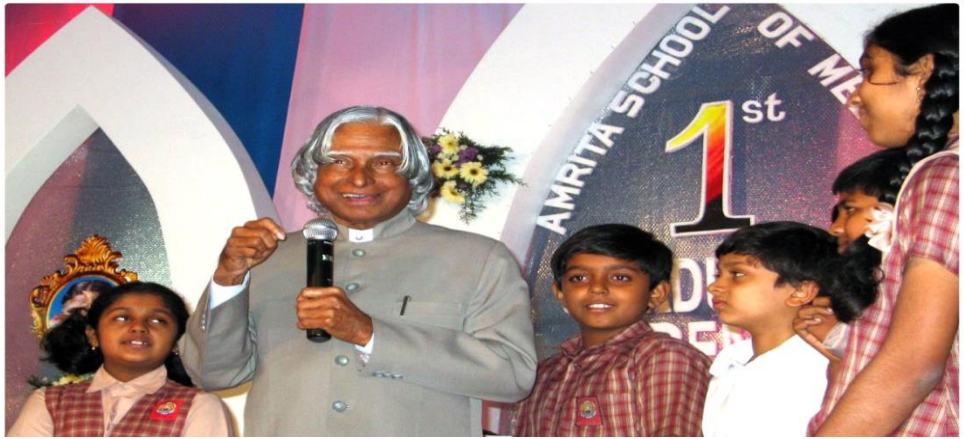




Amrita Learning – Adaptive Learning



64363
Students

46
Schools

*As of August 2014

A-VIEW

Live-in-Labs™
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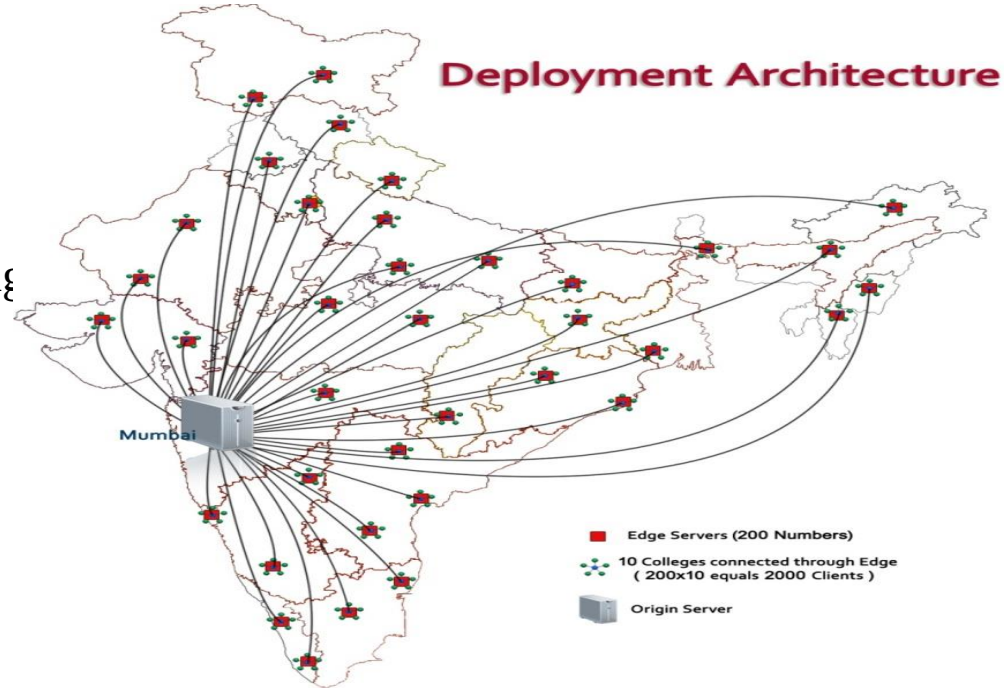
- A-VIEW: Amrita – Virtual Interactive E-learning World

- Designed for Education & Training
- Online & Offline Collaboration

- Funding by:
  - MHRD, DST, ISRO, TIFAC



A-VIEW: Functionalities & Unique Features

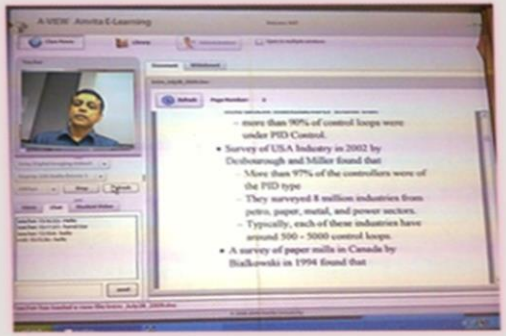
Live-in-Labs™
AN INITIATIVE BY AMRITA UNIVERSITY

- Audio Video
- Document Sharing
- Whiteboard
- Text Chat
- Shared Browser
- Desktop Sharing
- Live Interactive Feedback (LIF)
- Student Teacher Interaction
- Record and Playback of recorded classes
- Configurable Multiple Displays (1 to many)
- Adaptive Bandwidth Usage (56k to 2MB)
- No Proprietary Hardware (Use existing)
- Multimodal Student – Teacher Interaction
- Crystal Clear Live Document Sharing
- Multi Device Compatible White Board

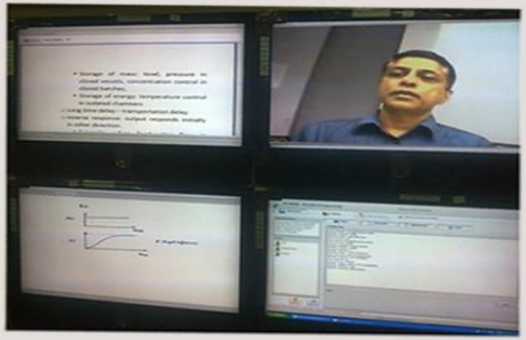
A-VIEW: IIT Bombay conducting e-classes to Pune and Nagpur

Live-in-Labs™
AN INITIATIVE BY AMRITA UNIVERSITY

Prof. P. S. V. Nataraj conducting class from IIT-B to VNIT, Nagpur and COE, Pune through A-VIEW



COE, Pune receiving class from IIT-B through A-VIEW with a single Projector system



VNIT, Nagpur receiving class by Prof. P.S.V. Nataraj, IIT-B through the multiple displays of A-VIEW

A-VIEW: Packages

Live-in-Labs™
AN INITIATIVE BY AMRITA UNIVERSITY

- **A-VIEW Classroom**
  - Used for Teaching / Training
  - One Teacher and Multiple Students
  - Hand Raise Option for Students
- **A-VIEW Meeting**
  - International Meetings
  - One Moderator
  - All participants see each other
- **A-VIEW Seminar**
  - Online Seminars and Conferences
  - Can hold seminar for a group of peers
  - Can pass control

A-VIEW: Advantage & Applications

Live-in-Labs™
AN INITIATIVE BY AMRITA UNIVERSITY

- **A-VIEW is FREE**
  Designed for Education in India
- **A-VIEW is Adaptable**
  Variable Number of Displays
  Low Bandwidth Usage (Rural Areas)
- **A-VIEW is Customizable**
  for India's Educational System
  for India's Multiple Languages
  for India's Existing Infrastructure

- **A-VIEW Classroom**:
  - Colleges
  - Schools
- **A-VIEW Meeting**:
  - e-Governance
  - Administration
  - Deployed at MHRD

VALUE: Virtual Laboratories

Live-in-Labs™
AN INITIATIVE BY AMRITA UNIVERSITY

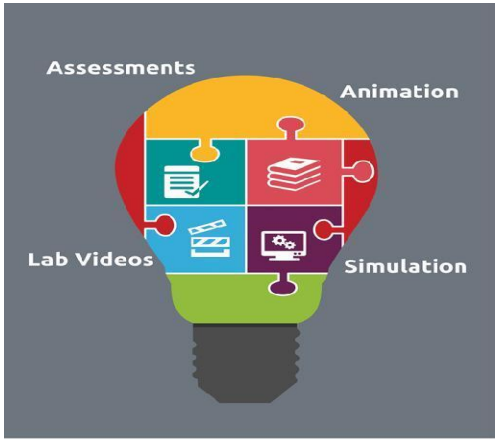
- Shortage of Laboratory Equipment's in Community Colleges

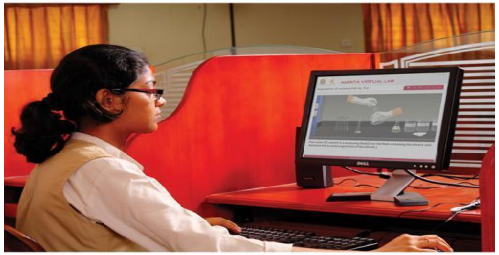
- Online Software with complete pedagogy: theory, procedure, animation, simulation, video, assessment's, references

- Course material development by remote expert teachers using collaborative platform

VALUE: Virtual Laboratories

Live-in-Labs™
AN INITIATIVE BY AMRITA UNIVERSITY





In Collaboration with

Amrita School of Arts and Science | Amrita School of Biotechnology

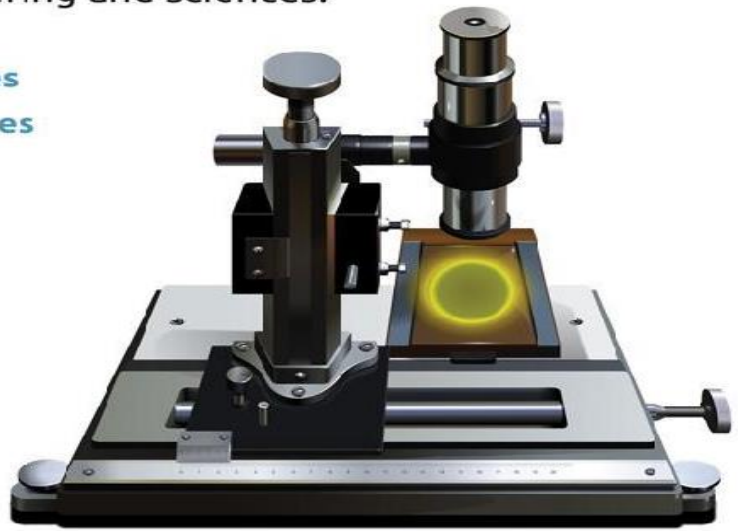
The virtual labs project has been funded by the National Mission on Education through ICT by the Ministry of Human Resource Development, Government of India and is being developed in partnership with IIT's and other prominent universities across India. Under the National Mission on Education, over 150 laboratories are being built in various disciplines of engineering and sciences.

- Physical Sciences
- Chemical Sciences
- Biotechnology

352 Experiments

42 Laboratories

3 Broad Areas



Remote Triggered Laboratories

Live-in-Labs™
AN INITIATIVE BY AMRITA UNIVERSITY

- Shortage of Laboratory Equipment's in Community Colleges

- Online Software with complete pedagogy: theory, procedure, animation, simulation, video, assessment's, references
- Course material development by remote expert teachers using collaborative platform

- Scheduling Equipment Usage
- Remotely operating, configuring, and triggering
- Secure Access – Since it provides opportunity to upload software codes into our University Network

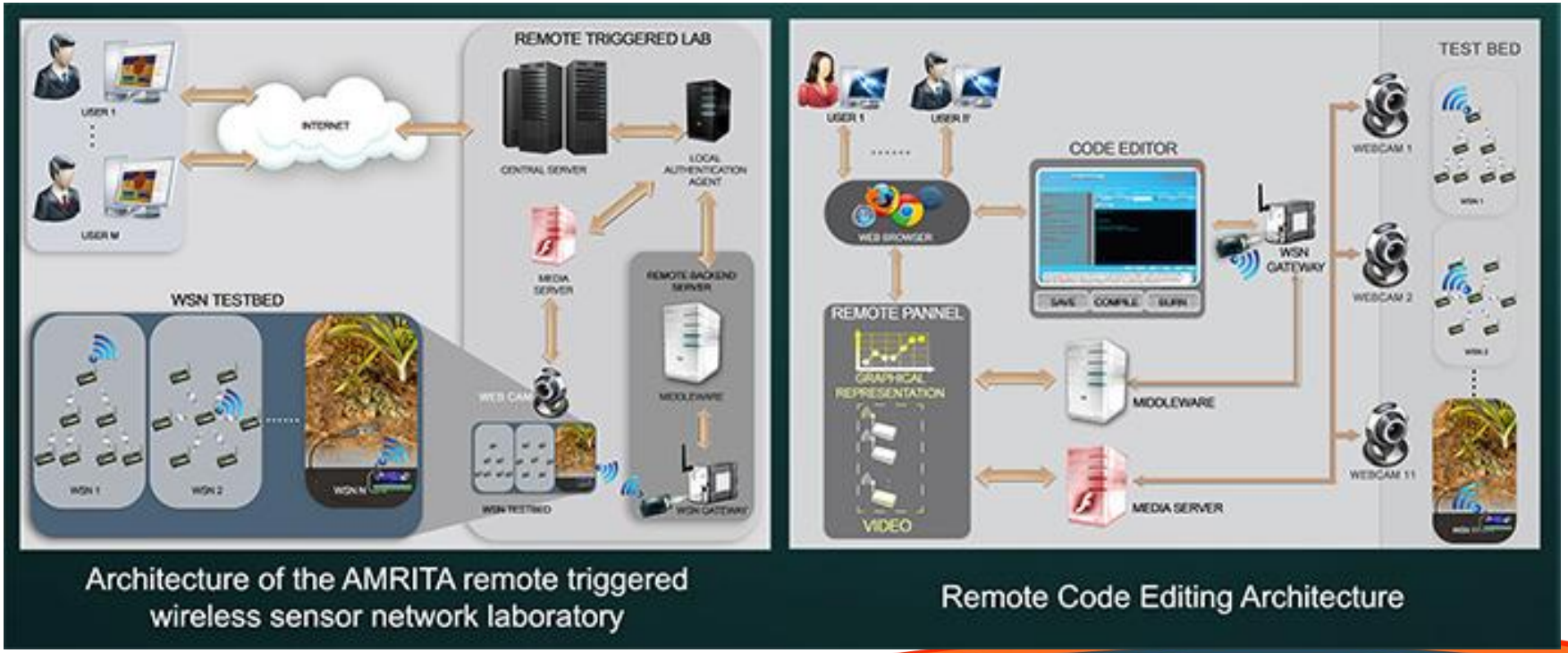
- Remote Triggering Protocol Development
- Energy Management in Wireless Sensor Network
- Time Synchronization

A Wireless Remote Sensing, Experimentation, Monitoring & Administration Lab

(India's first remote triggered lab in Computer Science)

A real time remote triggered laboratory with multi-set, multi-group wireless sensor network experimental setup

A Wireless Remote Sensing, Experimentation, Monitoring & Administration Lab

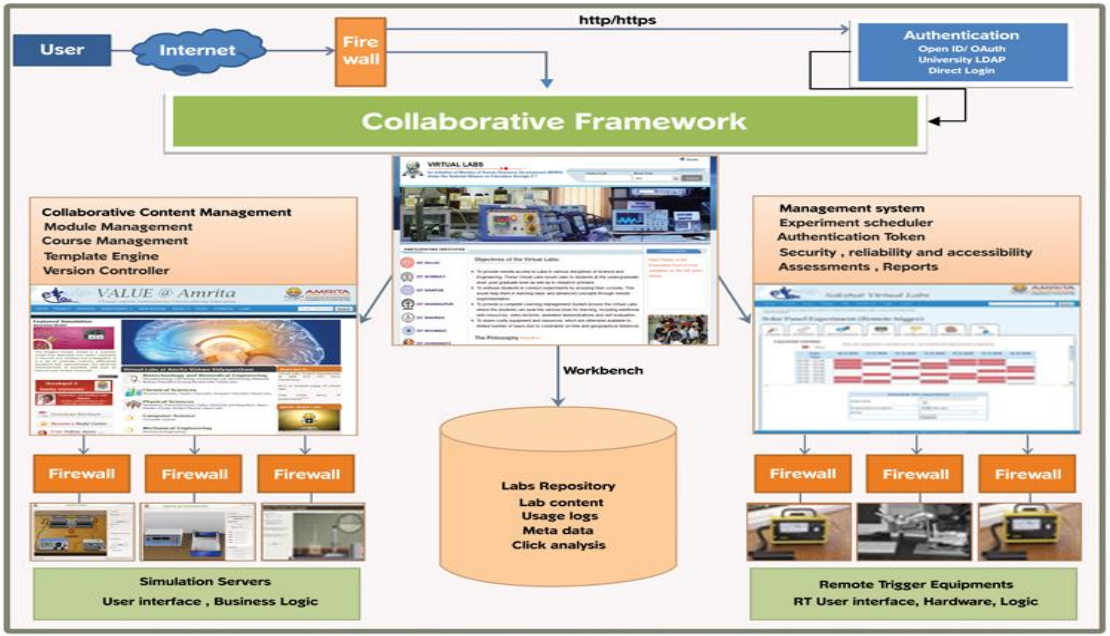


Architecture of the AMRITA remote triggered wireless sensor network laboratory

Remote Code Editing Architecture

Collaborative Platform Architecture

- Common set of **services** for distributed content
- Enables **rapid development & deployment** of Virtual content by remote & distributed faculty
- Consistent and rich **interactive experience** for learners

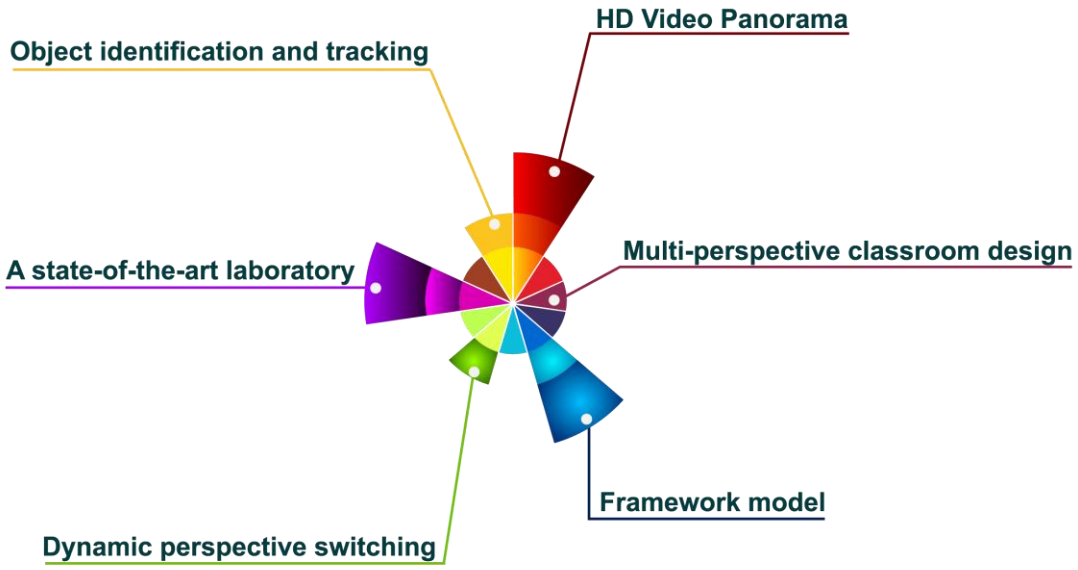


122360 Users

1235 Experiments

National Knowledge Network (NKN)

(A Gateway to a Global Classroom)

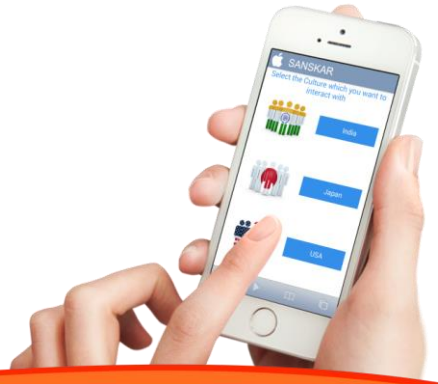


SanskAR

Understanding cultural compatibility and bridging cultures through participatory sensing based mobile applications

UNAOC
United Nations Alliance of Civilizations

- Obtained funding from United Nations Alliance of Civilization (UNAOC)
- SanskAR App collects the compatibility data between various cultures
- Developed an algorithm to analyze compatibility between cultures
- Designed and developed AR based android game to incentivize cultural interactions



Promote Gender Equality
Power of the Adolescent Girl

Power of the Adolescent Girl A programme by AmritaCREATE for adolescent girls to be Ambassadors with digital technology

- **Human Trafficking Awareness**
- **Adolescent Health Awareness**
- **Respect for women -** Introduce Non-intrusive customs
- **Prevent** Child Marriage, Child Labour,
- **Keep girls in schools**
- **Adult Literacy & Education for Women**

Some Success Stories in the field

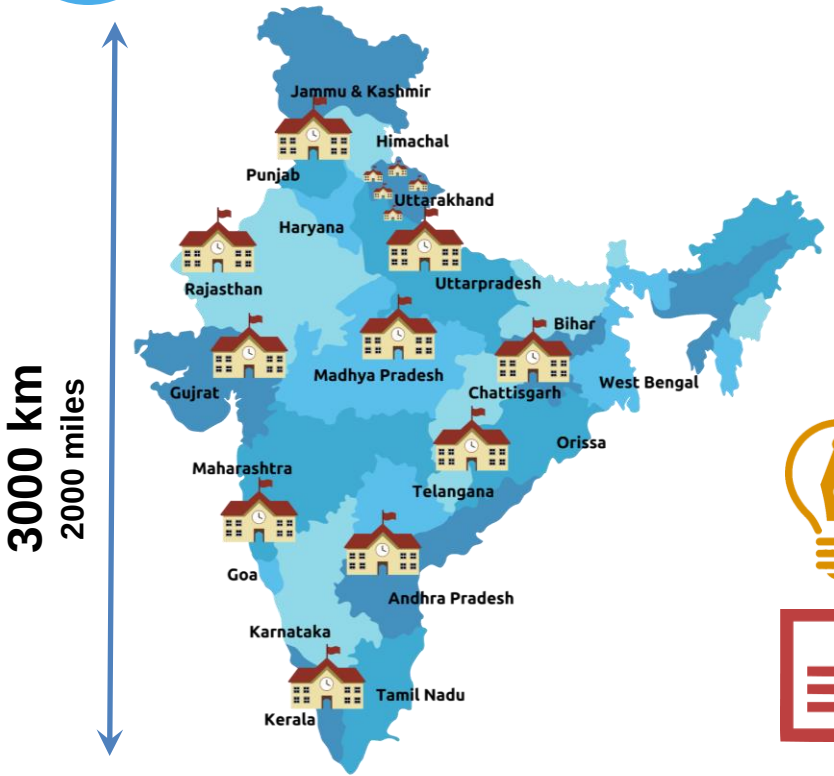
- **Reducing Dropouts** **Reduced dropouts from 16 to 1 i**n village in Ransai Maharashtra primarily through awareness sessions by Amrita University students.

- **Adult Education - Women** For the **first time** in Dagara Village, Gujarat, **women studied beyond grade 8** and graduated from grade 10.

- **Equity in Education** Trained 422 (of planned 1000) **indigenous people in computer literacy with 84% pass rate** in government exam. **62% beneficiaries** were indigenous tribal **girls** including some saved from abuse.

- **Literacy** Mastering Malayalam Alphabet in **only 16 sessions with AmritaRITE technology v.s. 30 sessions with** conventional learning

Amrita CREATE Impact



3 PATENTS applied

54+ PUBLICATIONS

STATES	21
SCHOOLS	12000+
VILLAGE CENTERS	41
STUDENTS	270,000+
Teacher Trainin	30,000+

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Skill Development

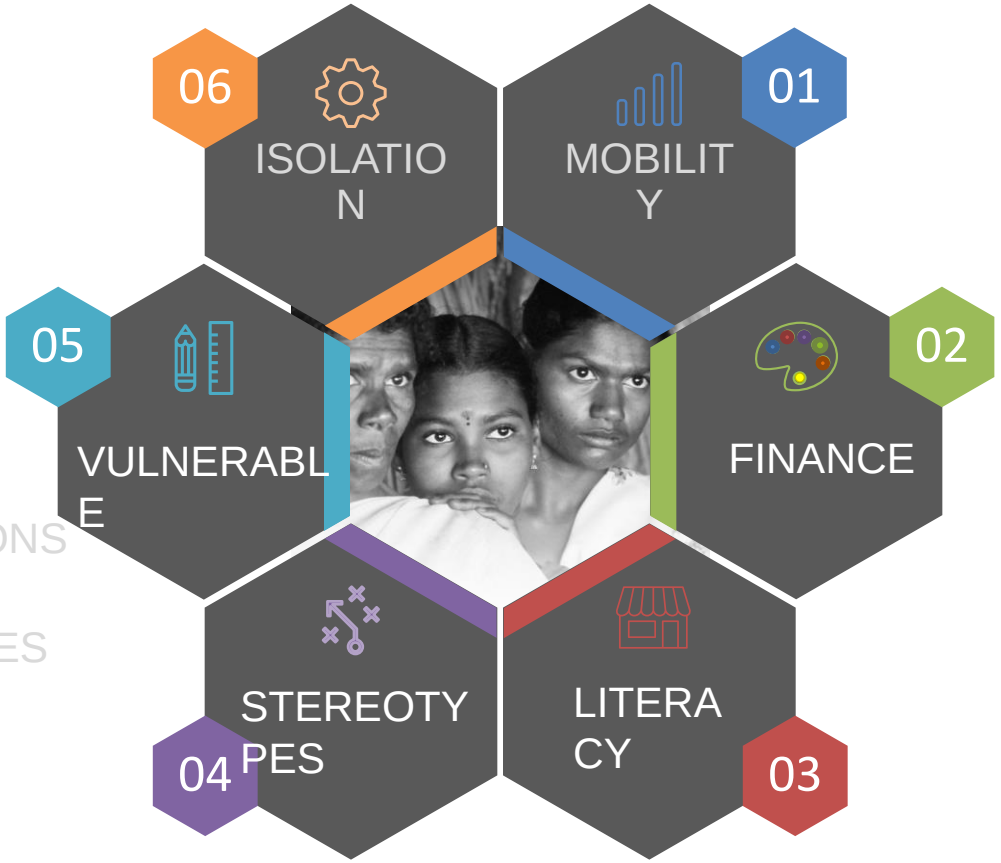
REDESIGNING LEARNING PATHWAYS USING TECHNOLOGY

ammachi labs

Amrita Multi Modal Applications Using Computer Human Interaction

WHO ARE OUR END USERS?

- SCALE
- DIVERSITY
- OUTDATED SKILLS
- MANAGING ASPIRATIONS
- INSUFFICIENT RESOURCES
- ACCESSIBILITY



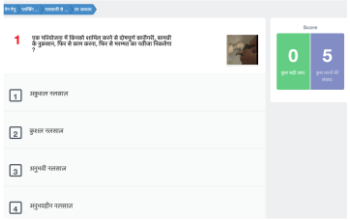
CREATING THE ATMOSPHERE

FACILITATOR

SUBJECT MATTER EXPERT (SME)

WHERE **ARE THE TEACHERS?**

VIDEO LECTURES



ASSESSMENTS

INTERACTIVE GAMES

3D GLOSSARY

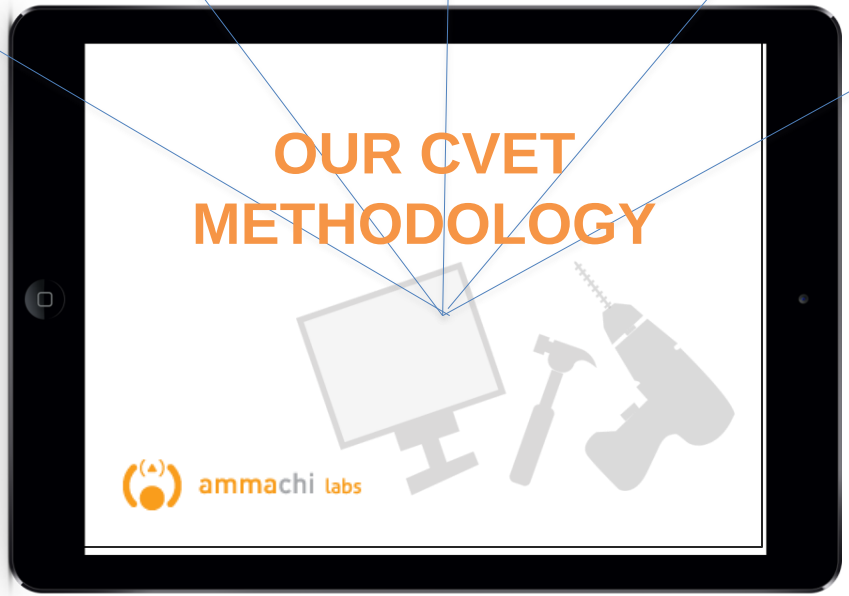
SIMULATORS

PROGRESSIVE DISCLOSURE

VOCATIONAL TRAINING

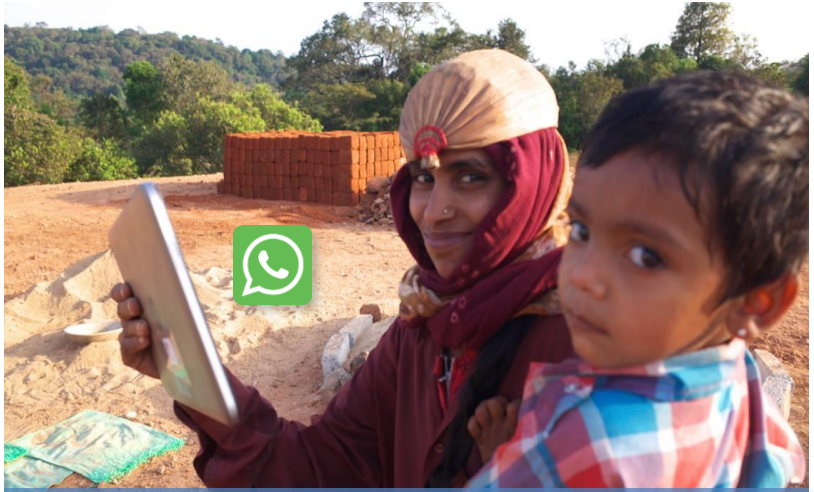
LIFE SKILLS TRAINING

MOTOR SKILLS TRAINING

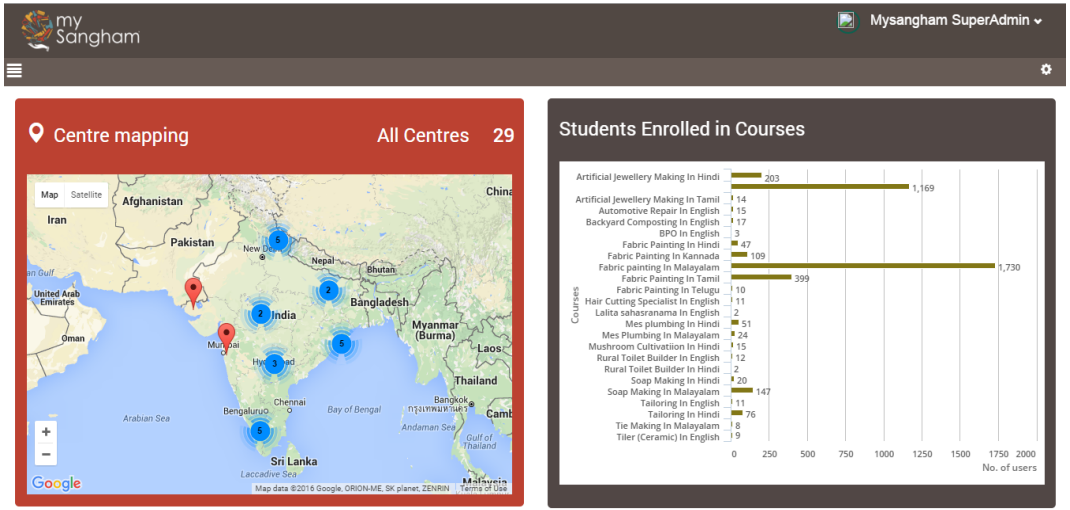


- Technical and non-technical courses
- Available in 8 languages
- Catered towards low-literacy audiences

TRANING CENTER MANAGEMENT VIA MYSANGHAM



ZONAL LEAD TO FACILITATOR COMMUNICATION VIA WHATSAPP



REMOTE MONITORING VIA AVIEW

COMMUNICATING ACHIEVEMENTS VIA FACEBOOK

MONITORING & EVALUATION

WHAT IS THE PERFECT BLEND?

TABLET BASED LEARNING

HUMAN CONTACT

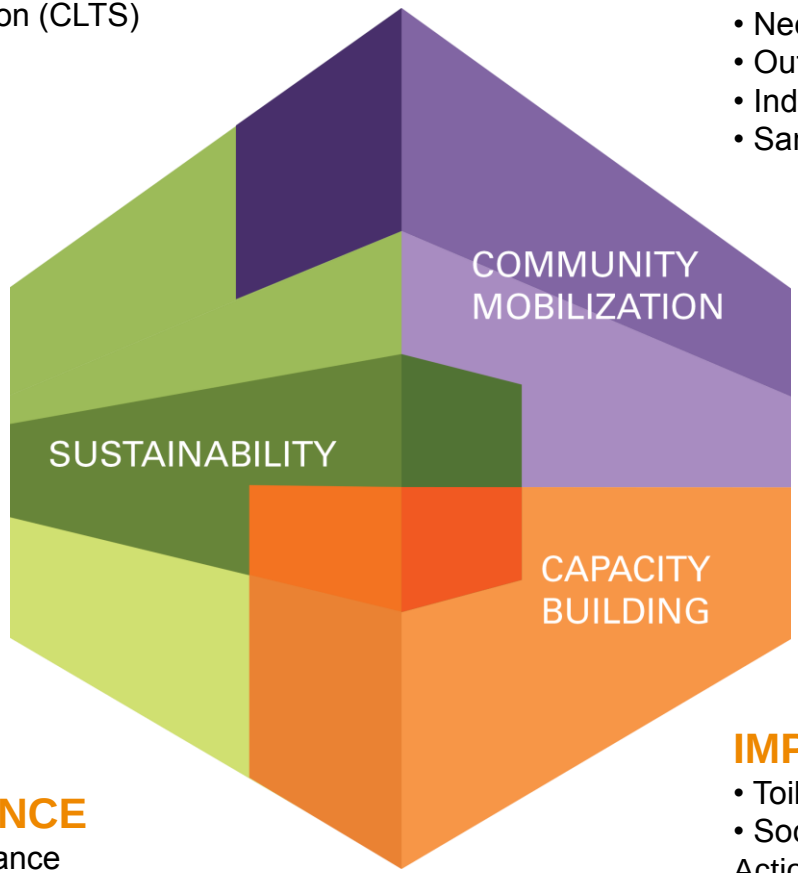
IMMERSIVE LEARNING

BEHAVIORAL CHANGE

- Community Led Total Sanitation (CLTS)
- ODF Family Pledge
- Live–In Labs Mentor Network
- Control and Monitoring of Water Systems
- Sharing Knowledge

AWARENESS

- Needs Assessment
- Outreach Programs
- Induction into Training Programs
- Sanitation and Hygiene



COMMUNITY DEVELOPMENT

- Improve Infrastructure
- Water Resource Management
- Entrepreneurship (Masonry, Soap and Block Making)
- Village Wiki: Online, Comprehensive Resource and Database

TRAINING

- Masonry, Plumbing and Plastering
- Soap Making
- Life Enrichment Education

MAINTENANCE

- Toilet Maintenance
- Inventory Management

IMPLEMENTATION

- Toilet Construction
- Social and Environmental Community Action
- Monitoring and Evaluation

COMMUNITIES OF LEARNING AND PRACTICE

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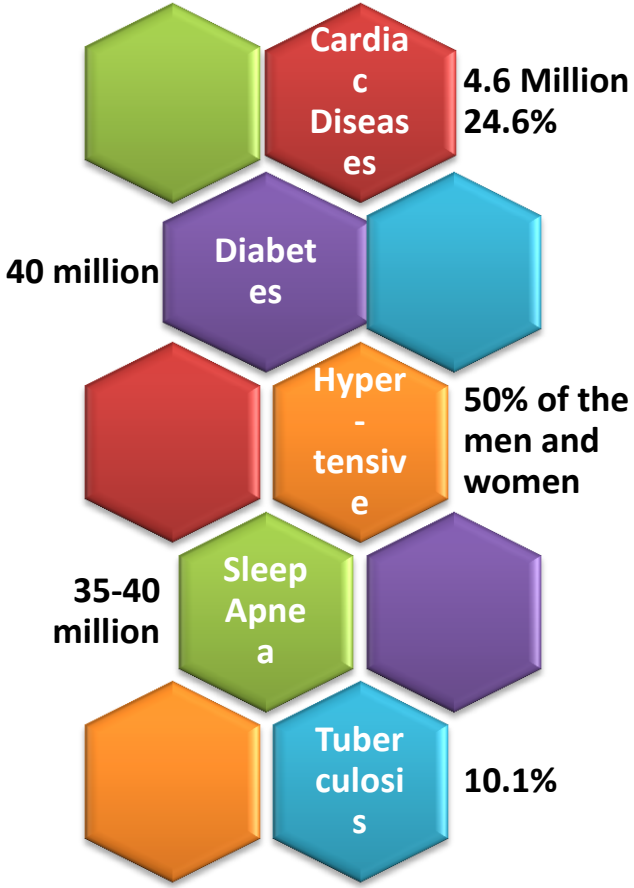
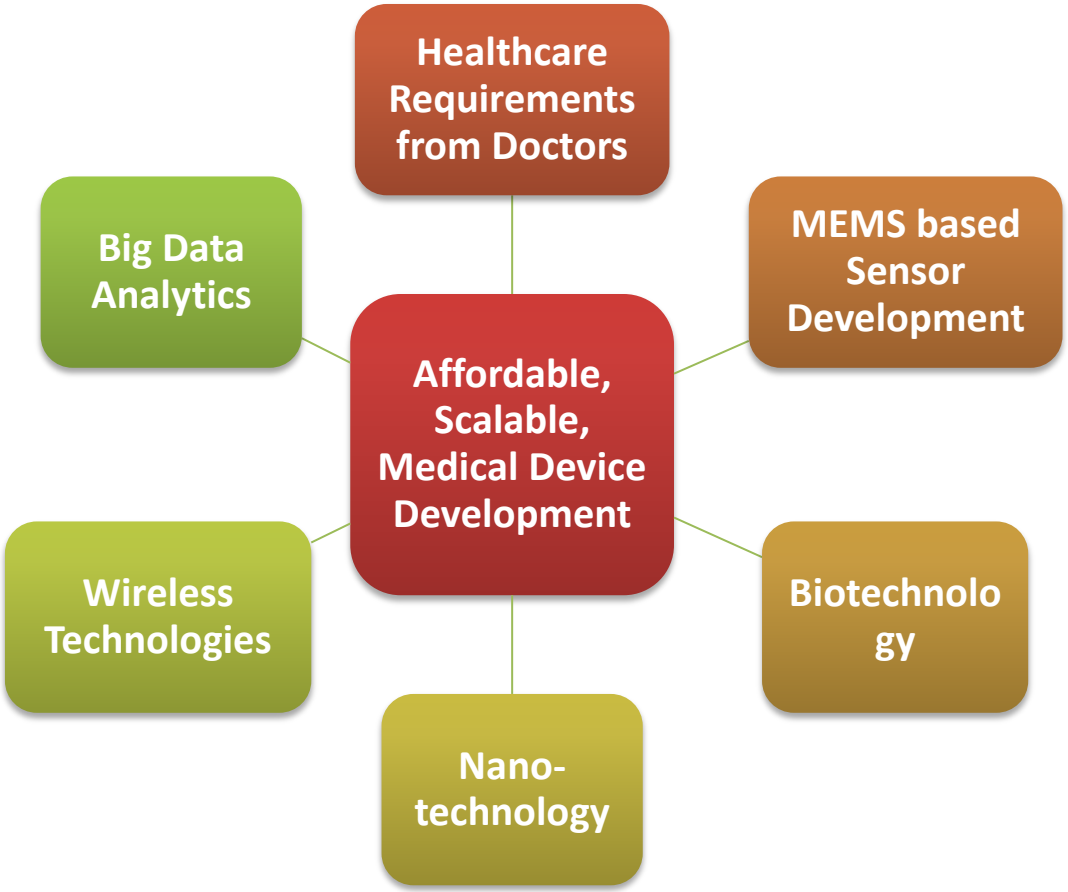
Healthcare

Healthcare


Cardiac Diseases
4.6 Million
24.6%
40 million
Diabetes
Hyper-tensive
50% of the men and women
35-40 million
Sleep Apnea
Tuberculosis
10.1%


Healthcare Requirements from Doctors
Big Data Analytics
MEMS based Sensor Development
Affordable, Scalable, Medical Device Development
Wireless Technologies
Biotechnology
Nano-technology

Healthcare:
Primary Health Centers

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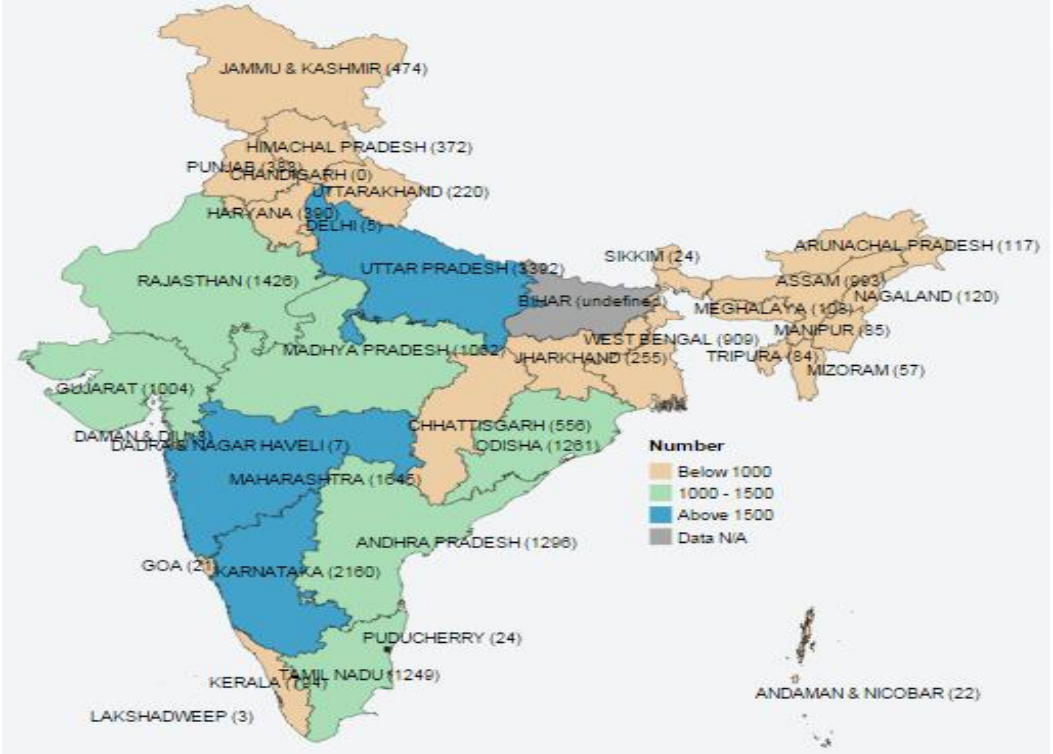
AN INITIATIVE BY AMRITA UNIVERSITY

Scalable & Affordable Healthcare Solutions



PHCs – cornerstone of rural healthcare

PHCs - 25020 Number

PHCs & Sub centers - Meet the health care needs of rural population

Healthcare - Architecture

PHC1

PHC2

PHC n

Local Hospital

Local Hospital

Tertiary Hospital 1

Tertiary Hospital 2

Our Experience in Healthcare Solutions- Continuous & Real-time Monitoring

Rural Healthcare Service

- Wearable Wireless ECG
- Cuffless Blood Pressure
- Non Invasive Blood Sugar
- Non Invasive SpO2
- Real-time EEG. EMG
- Real-time Temperature Monitoring
- Lab on a chip development
- Low cost drug delivery systems
- Mobile app for Rural Healthcare Services

Emergency Management

- Wearable Wireless ECG
- Cuffless Blood Pressure
- Non Invasive Blood Sugar
- Non Invasive SpO2
- Real-time EEG
- Real-time Temperature Monitoring

Geriatric Patients

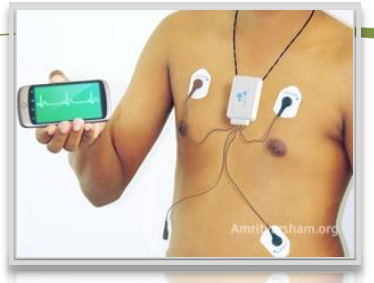
- Urinary Incontinence Device
- Wearable Wireless Tongue Controlled Assistive Device Using Optical Sensor
- Optical Sensor Based Tongue Controlled Assistive Device
- Wireless Interface System for Interpretation of Ocular symbols from People with Neuromuscular Diseases
- Vital Monitoring
- Sensors developed for Cholesterol, creatinine etc

Our Experience in Healthcare Solutions- Continuous & Real-time Monitoring

Cardiac Disease	Neurological Disease	Diabetics	Tuberculosis	Malaria
• Wearable ECG Device • Sensor for Cholesterol	• EEG System • EMG System	• Real-time Drug Delivery Device - Insulin Pump • Sensors for Blood Sugar, Cholesterol, Creatinine etc.	• Pre warning using Smart Stethoscope • Real-time Image Processing Techniques	• Real-time monitoring of patients • Sensors - temperature

AMRITA SPANDANAM

A device to continuously monitor patient's ECG in real time & sends data to the patients cardiologist/doctor



- Comfortable and inexpensive wearable device
- Real-time sensing and data collection
- Real-time data processing and analysis
- Monitoring possible even when both the patient and the doctor are mobile

Launch of “AmritaSpandanam”- **Wearable Wireless ECG Device**

India’s Prime Minister, Mr. Narendra Modi, launches the prototype of “AmritaSpandanam”, a wearable Heart Monitor, during Amma’s 60th birthday celebrations.

Healthcare - AmritaSpandana

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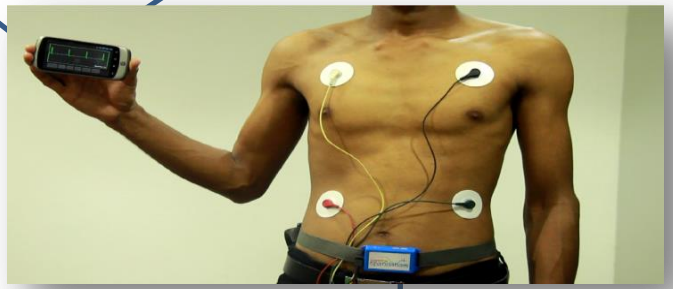
Smartphone Interfaced

Artifact Removal

Remote Monitoring



Disease Detection

Wearable Holter-like

Healthcare- Training the Villagers

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- Training at Amrita Institute of Medical Sciences to provide Preventive and Diagnostic Care
- Trained women from 9 states

- Volunteers from villages are trained as Health Workers
- The health workers serve under the Doctor during monthly visits to villages to conduct medical clinics

- The health workers provide first line of treatment
- Provide education about the basics of disease prevention
- Trained to conduct on-going sessions in Basic Hygiene, the care of safe drinking water and reeducating them in the use of their traditional home remedies

- Self care is also addressed
- Yoga and meditation
- Easy access to health and nutritious food
- Health workers guide and motivate villagers to grow their own kitchen gardens, simple composting, and waste management techniques

Mobile Education Supports Health and Well Being

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HEALTH CAMPS for Adolescent Girls & Children

2000+ HEALTH WORKERS TRAINED

Amrita Hospital using AmritaCREATE Digital Technology

MALNUTRITION

Health awareness material **Nutritional supplements** given in AmritaCREATE education center

SUBSTANCE ABUSE

School Student Ambassadors build awareness among peers and in community

AmritaJeevanam - Health Awareness for Tribals

- Android based health awareness app
- Maintains medical history – Cloud based
- Early warning system
- Single interface for multiple measurement devices.
- Blood pressure, Blood Glucose etc.

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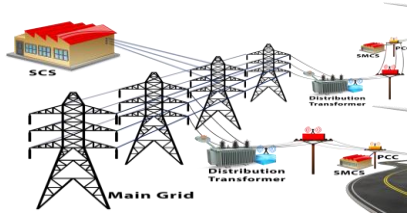
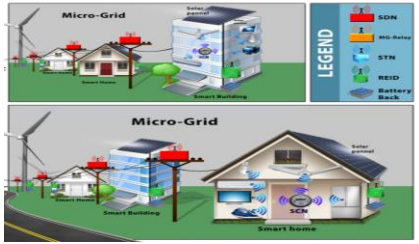
Energy

Energy

Nano Solar Panels & Storage



Smart Distribution



Energy management

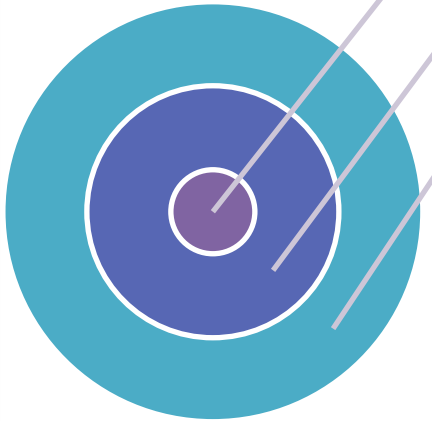
Renewable Energy Integration

Bio Fuel

Micro-Grid

(A Complete solution for rural area electrification)

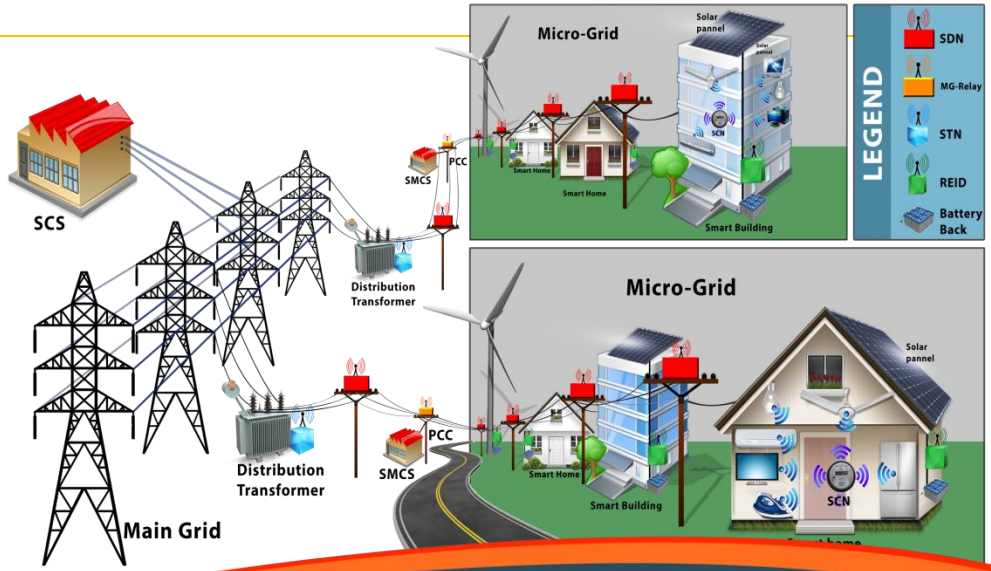
Micro-grid is a local energy system consisting of distributed energy sources, storage and loads capable of operating in parallel with or independently from the main electricity grid.



Higher security of supply

Clean & distributed energy supply system

Lower stress on transmission and distribution system



AmritaSphuranam – Rural Electrification

- No Electricity Access
- Leading to lack of education, healthcare services, economic development

- Micro Grid Solar System Implemented
- 6 clusters totaling 12 KW
- 300+beneficiaries

- IoT system for real-time monitoring solar panels, battery condition and the home utilization
- Energy Exchange between Clusters
- Data Analytics on energy consumption pattern, renewable energy generation, renewable energy usage, health monitoring of the systems

AmritaSphuranam – Rural Electrification Using Micro Hydro

www.amrita.edu/center/awna

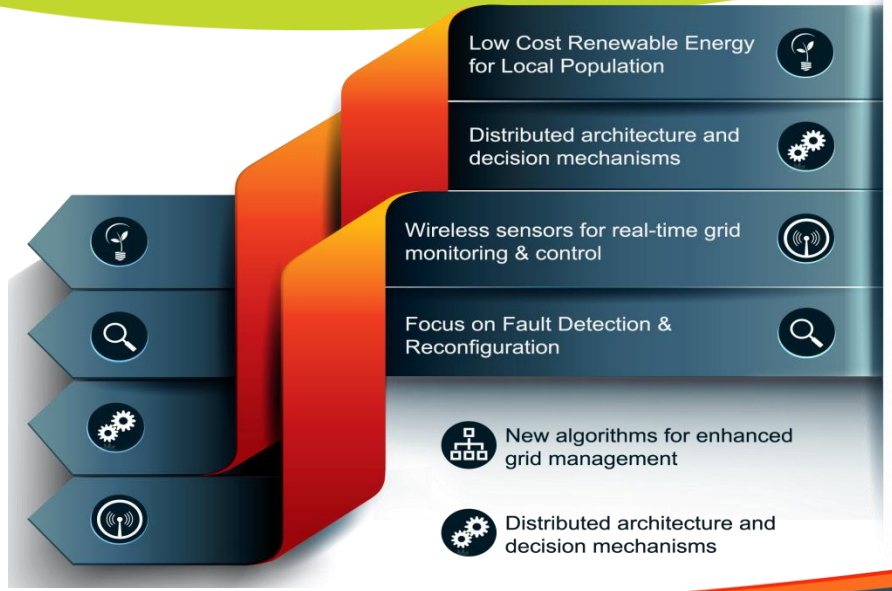
- No Electricity Access
- Leading to lack of education, healthcare services, economic development

- Micro Hydro System Implemented
- 5 kW System

- Energy to entire village
- Plan to implement remote monitoring systems for gathering real-time usage patterns, renewable energy generation, to improve the efficiency of the system etc.

Stabiliz-E (Stabiliz-Energy)

Result of immense need to move from the traditional, centralized, static energy grid towards decentralized & dynamic grid



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Water & Sanitation

Water Conservation & Distribution Systems

www.amrita.edu/center/awna

- Scarcity of Water
- No Easy Access to Water Resources
- Open defecation is prevalent

- Bore wells were dug in our villages in Rajasthan, West Bengal, Maharashtra, Kerala, and Odisha to provide drinking water
- Water Distribution System – Implemented in Harirampur in Rajasthan, Guptapada in Odisha, and Komalikudy in Kerala
- Rainwater harvesting was initiated as a pilot project on one farm in our Tamil Nadu village.

- Water to the door step of every house.
- Bore wells were dug, pipelines were laid, overhead water tanks were built, and pump sets were installed
- Plan to make real-time water conservation system by real-time monitoring of different water resources and integrating it with our IoT system

Water Distribution Systems

Harirampur Village, Sawai Madhopur District, Rajasthan

Village Population	Total Homes	Number of Taps Installed	Number of Liters in Water Tanks (2) *max capacity 30,000 L / tank	Days Spent in Village	Number of Team Members	Total Number of Labor Hours
550 People	65	70	5,000 x 2 = 10,000	120	12	14,000+

Guptapada Village, Khurda District, Odisha

Village Population	Total Homes	Number of Taps Installed	Number of Liters in Water Tank (1) *max capacity 20,000 L / tank	Days Spent in Village	Number of Team Members	Total Number of Labor Hours
300 People	62	37	Now: 5,000 Future: + 5,000	120	13	16,000+

Komalikudi Village, Idukki District, Kerala

Village Population	Total Homes	Number of Taps Installed	Number of Liters in Water Tanks (2)	Days Spent in Village	Number of Team Members	Total Number of Labor Hours
350 People	90	12	3,000 + 5,000 = 8,000	210	37	80,000+

http://www.amrita.edu/center/awna

Sanitation & Health Awareness

- Drinking water from our villages was tested
- Three samples from the villages returned positive results for bacterial contamination

- Boiling of water is being emphasized in these places.
- Regular Amala Bharatam Cleanup drives are being organized to improve the awareness about cleanliness and waste management

- Building of toilets was commenced by AMMACHI LABS of Amrita University in all villages.
- Women were given the training and women groups are building toilets for their families

- More than 100 toilets were built
- More than 200 toilets are under construction by villagers who got training

- Training on sanitation and health awareness were given
- Train the trainers program were launched

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Infrastructure

Infrastructure

Live-In-Labs
AN INITIATIVE BY AMRITA UNIVERSITY

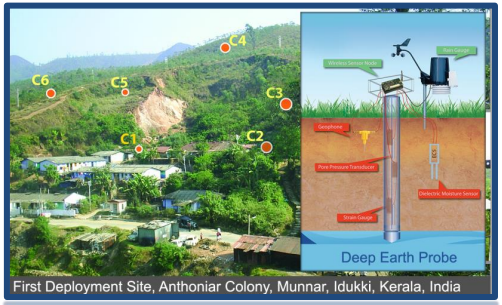
Agriculture

Water Distribution & Quality

Eco Friendly Buildings & Drainage Systems

Waste management

MICRO PROCSSING UNITS



Disaster management

Infrastructure

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- THREE FARMERS IN RAJASTHAN HAVE PLANTED WHEAT THIS SEASON WITHOUT THE USE OF ANY CHEMICALS.
- ONE FARMER IN OUR VILLAGE IN BIHAR HAS SWITCHED TO ORGANIC FARMING COMPLETELY. HE HAS REAPED GOOD HARVESTS OF RICE, CHANA AND POTATOES AND ENCOURAGED BY HIS EFFORTS, OTHER FARMERS ARE ALSO CONTEMPLATING ABOUT MAKING A CHANGE.

- THREE YOUTH FROM OUR VILLAGE IN GUJARAT WERE SENT FOR TRAINING TO BHUJ AND AFTER RETURNING, HAVE STARTED ORGANIC CULTIVATION ON A SMALL PATCH OF LAND. THIS IS ENCOURAGING, GIVEN THAT MOST YOUTH THESE DAYS DO NOT WANT TO ENGAGE IN AGRICULTURE AS A PROFESSION.

- KITCHEN GARDENS ARE BEING ENCOURAGED EVERYWHERE TO COMBAT MALNUTRITION, ESPECIALLY IN CHILDREN. IN OUR VILLAGE IN GUJARAT FOR INSTANCE, 80 FAMILIES OUT OF 127 HAVE PLANTED KITCHEN GARDENS. SIMILARLY, IN RAJASTHAN, 34 FAMILIES OUT OF 55 NOW HAVE KITCHEN GARDENS.

- IN KOMALIKUDY, KERALA, HYDROPOWER STATION IS INSTALLED TO GENERATE ELECTRICITY FOR PUMPING THE WATER AND LIGHT THE LAMPS IN THE HOUSES.
- A MINI-GRID WAS INSTALLED IN OUR SECOND VILLAGE CLUSTER IN KERALA IN WAYANAD TO PROVIDE LIGHT TO HOMES THROUGH SOLAR PANELS

- TREE PLANTING WAS INITIATED IN SEVERAL OF OUR VILLAGES. IN ANDHRA, A PROJECT WAS BEGUN TO PLANT THOUSANDS OF TREES OVER THE NEXT FEW YEARS.
- PROTOTYPE SMOKELESS CHULHAS ARE BEING DEVELOPED IN THE HQ SO THAT THEY MAY THEN BE DEPLOYED IN OUR VILLAGES.
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MICRONet

Secure Mobile Infrastructure for Indian Coastal Application

Provide solution to the connectivity-at-sea problem faced by the millions of India's Fishermen today

- Array of possibilities suitable for the off-shore communication
- Trigger and promote research on cutting edge wireless technology
- Cost-effective Mobile Infrastructure for Coastal Regions of India to enable offshore communications for the vessels at sea.

www.amrita.edu/center/awna

Wireless Sensor Networks for Real-Time Monitoring and Early Warning for Landslides

www.amrita.edu/center/awna

A fully operational landslide monitoring and detection system that has been operating 24/7 since 2009.

Two valid landslide warnings have been issued to the residents of Anthoniar Colony, Munnar, Idukki District, Kerala.

Received the Runners-Up **Award for Rural Innovations** from NABARD in 2012

World's first comprehensive Wireless Sensor Network System for Landslide Monitoring and Detection

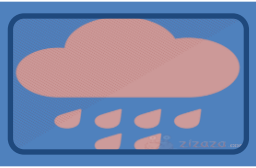
150 geophysical sensors integrated into deep earth probes have been installed, from which the data is transfered to our Data Analysis Center where complex analysis is conducted to determine the risk of landslide.

Patent: "Network-Based System for Predicting Landslides and Providing Early Warnings", Dr Maneesha V. Ramesh, No: US8692668

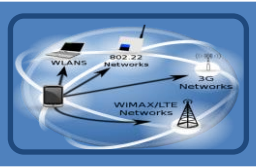
First Deployment Site, Anthoniar Colony, Munnar, Idukki, Kerala, India

FloodEVAC

Indo German Project for Flood Monitoring and Evacuation



Early warning of Floods



Wireless Heterogeneous Networks& Crowdsourcing Network Using Mobile Phones for Real-Time Data delivery

Predictability of the whole system enhanced by integrating it with the modified & improved flood simulation, real-time image and video processing

Crowd Sourcing System for Multi-Hazard Monitoring and Warning

Real-Time Data Retrieval	Wireless Heterogeneous Network	Warning of Disasters	Services
•Crowdsourcing using mobile phones •Wireless Sensor Networks •Maps •Historic Data •Facebook •Twitter	•Cellular Network •WiFi •Bluetooth •Wired Network	•Rainfall •Flood •Drought •Landslides •Avalanches •Earthquakes	•Distributed Data Collection •Real-time Data Visualization •Large Scale Warning •Localized Warnings •Participatory Sensing Opportunity •Multi Hazard Warning •Escape Routes •Awareness Materials Dissemination

Live-in-Labs™

AN INITIATIVE BY AMRITA UNIVERSITY

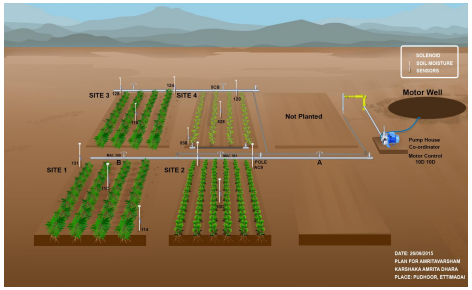
Income Generation & Empowerment

Agriculture

Live-In-Labs
AN INITIATIVE BY AMRITA UNIVERSITY

Organic Farming

Fertility monitoring



Smart irrigation

Environmental impact monitoring

ROI

IOT support

Agriculture-Amrita Karshaka

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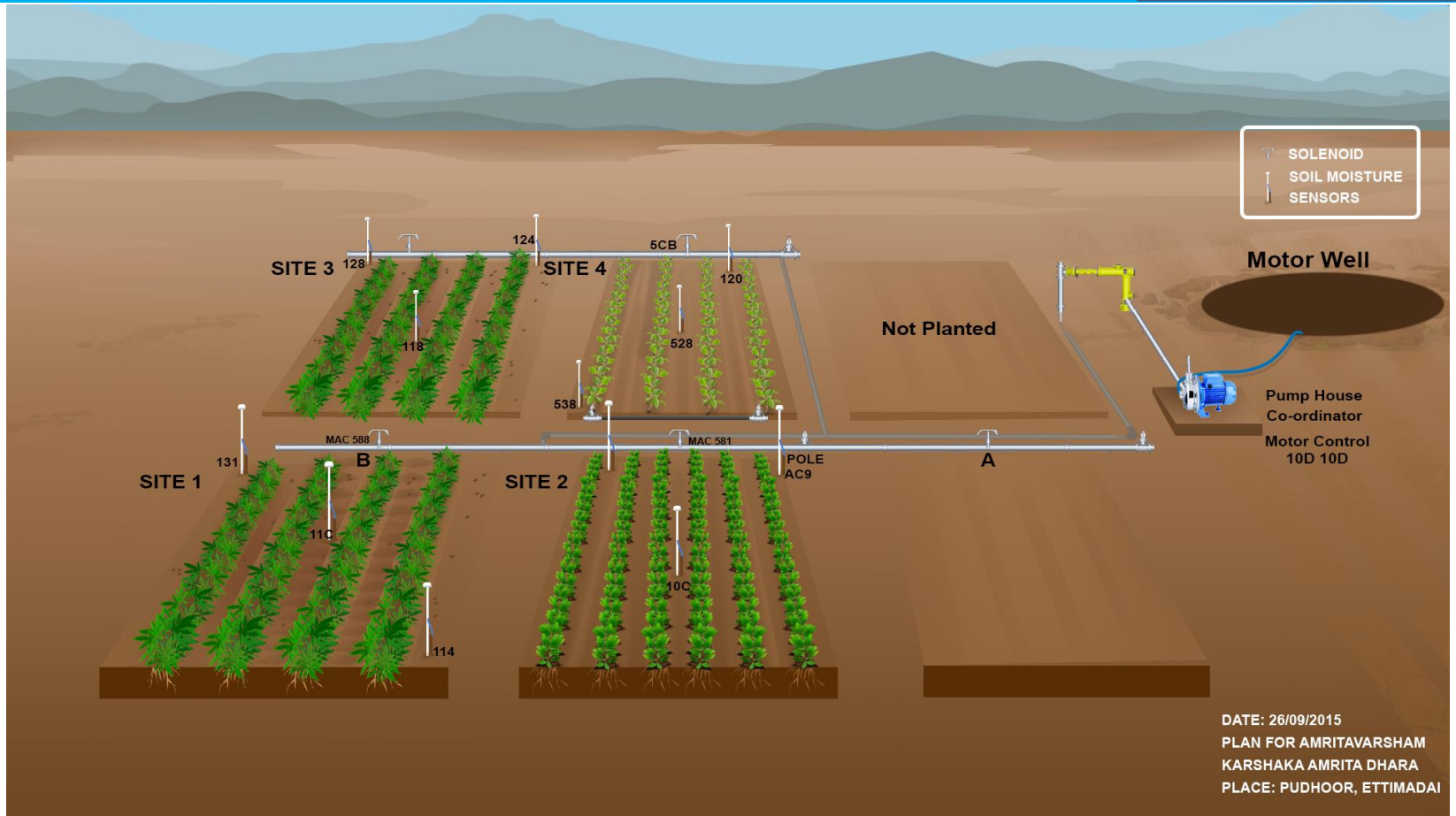
AN INITIATIVE BY AMRITA UNIVERSITY



Smart Sesame Farming & Context Aware Wireless Irrigation System

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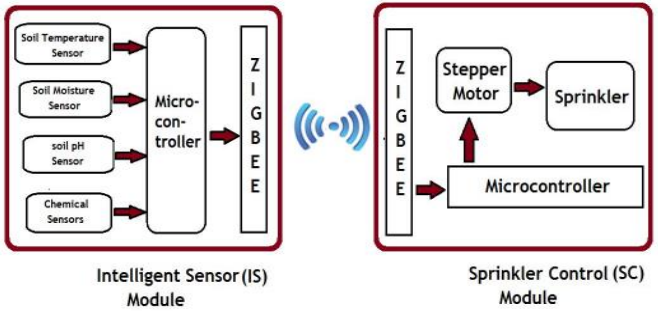
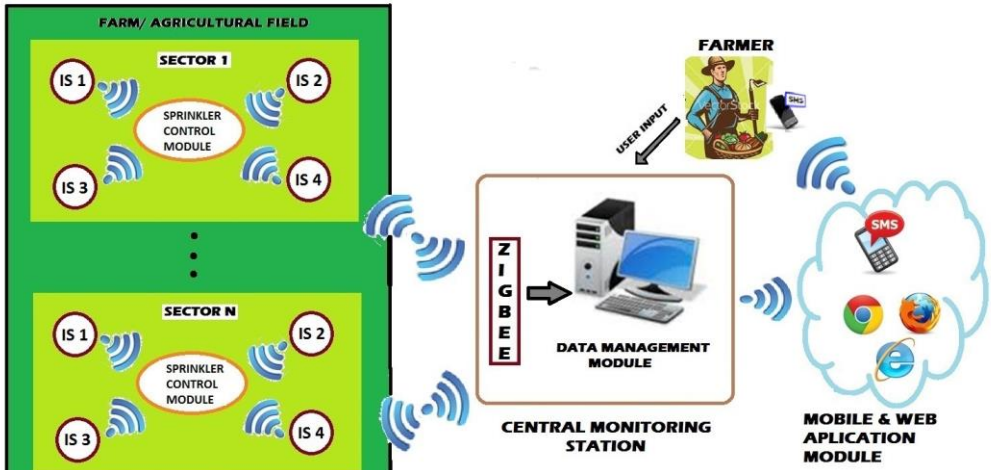


Intelligent Sensor (IS) Module

Sprinkler Control (SC) Module



Income Generation

LOCAL PRODUCTS

Value added

Self reliant groups

Income Management

Social Business

Income Generation

www.amrita.edu/center/awna

- Income generation using local resources

- Self Help group
- For savings
- For income generation

- Plumbers, Masons etc.
- Tailoring, Artists etc.
- Health Workers

- Training Life Skills
- Entrepreneurs – furniture, lemon grass distillation, cardamom processing

- Waste to Wealth

INCOME GENERATION

- THE FOCUS IS ON INCOME GENERATION USING LOCAL RESOURCES. FOR INSTANCE, TRAINING WAS PROVIDED TO OUR VILLAGE WOMEN IN KARNATAKA ON HOW TO USE JACKFRUIT THAT IS PLENTIFUL THERE TO MAKE DIFFERENT PRODUCTS.

- WE HAVE BEGUN ORGANIZING WOMEN IN OUR VILLAGES INTO SELF HELP GROUPS BOTH FOR SAVINGS AND FOR POSSIBLE INCOME GENERATION ACTIVITIES.

INCOME GENERATION

- RECENTLY, 9 WOMEN FROM JHARKHAND, UTTARAKHAND AND UTTAR PRADESH COMPLETED THE WASTE-TO-WEALTH WORKSHOP IN TAILORING AND ARTS / CRAFTS IN AMRITAPURI HQ WHEREIN THEY LEARNT TO MAKE USEFUL ITEMS FROM OLD FABRICS AND DISCARDED SOFT PLASTIC. THESE WOMEN HAVE RETURNED TO THEIR VILLAGES AND ARE PLANNING TO CONDUCT MORE SUCH WORKSHOPS THERE.

INCOME GENERATION

HINDUSTAN TIMES, PATNA
MONDAY, MARCH 07, 2016

Bhojpur Mahadalit women turn toilet construction trainer

Subhash Pathak
htpatna@hindustantimes.com

BHOJPUR: The nightmare of open defecation will no longer haunt the women of Ratanpur Mushahari, a nondescript village of about 30-35 families, situated in Garhani block of Bhojpur district.

They have constructed toilets equipped with basic amenities sans any help from the government agency. They also acquired the skills of constructing the cemented structure with plumbing and electrical fitting, which will help them to transform their lives.

On Saturday, Mata Amritanandmayi Mutt (MAM) organised a function to inaugurate different units of the community toilets built by the women villagers at Ratanpur. The bock education officer of Garhani had been present during the inaugural function as block development officer was conspicuous by his absence.

Ratanpur is one of the two villages, the MAM had adopted for women's empowerment belonging to deprived sections of the society.

Women constructing a toilet in Bhojpur district. HT PHOTO

Their motto was to develop a sense of sanitation and train them in skills to become bread winner.

North zone head of the organisation, Prema Pillai, who spent several days with women of the Mushahar community, said they had conducted an audio-visual demonstration through laptops to acquaint women of the basics of construction.

Apart from the sanitation outreach programme of the MAM, the villagers were provided construction material, tools as well as vocational training in masonry, plumbing and electrical works. It is also planning to conduct similar type of programme in many other villages in Bihar and Jharkhand in coming months.

ENTREPRENEURSHIP: BRICK MAKING

SELF EMPOWERMENT

- DURING LATE 2015, YOGA AND MEDITATION CLASSES WERE CONDUCTED IN OUR VILLAGES IN UTTARAKHAND, JAMMU AND KASHMIR, HARYANA AND HIMACHAL PRADESH.

- AWARENESS MATERIAL IS BEING DEVELOPED TO COMBAT THE PRACTICES OF CHEWING TOBACCO, GUTKA AND CONSUMING ALCOHOL IN THE VILLAGES.

Journey So Far

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ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Amritasphuranam-1

Solar Micro Grid

Amrita (EEE, WNA, Civil Engineering) & EPFL

DARTMOUTH
VOX CLAMANTIS IN DESERTO
1769

BioFilter

Amrita (Mech , Chemical, Biotech) & Dartmouth University

UMass Dartmouth

Empowering Artists

Ammachi Labs, MBA-Master Thesis, UMass Dartmouth

istom
Ecole supérieure d'agro-développement international

Organic Farming

Ammachi Labs, ISTOM France

Journey So Far (Con' t)

Live-In-Labs
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ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Amritasphuranam-2

(Micro Grid – Micro Hydro)

Amrita (WNA, Civil, Mech) & EPFL

Massachusetts Institute of Technology

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Rural Sanitation model

Amrita (MSW, Biotechnology, Ammachi Labs), EPFL, MIT

HARVARD SCHOOL OF PUBLIC HEALTH

Anti Alcohol Abuse Awareness Program

Amrita (CREATE Labs, MSW), Harvard School of Public Health

Solar Powered Lemon Grass Distillation Unit

Amrita (Chemical), TU

Journey So Far

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“ We got a chance to interact with those peoples and they share their problem with us and also it was really an inspiration for us to know that we are all provided with many facilities which they lack It made me realize that how blessed each one of us are, we have lived our lives in luxury without having to bother about anything but ourselves.”

Devika
S1 Mtech AmritaWNA, AMRITA

"Service trips and service learning is very important as opposed to just living in a culture. When you are working with the people, you really get to know where you are as opposed to being a foreigner who has been transplanted there. Thus, I found this to be one of the most valuable trips and I would definitely like to come back and continue the work I did."

- Meghan Gates, 2nd Yr. MFA
University of Massachusetts (Darthmouth), USA

AMRITA
CENTER
FOR
WIRELESS NETWORKS &
APPLICATIONS

Journey So Far (Con’ t)

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International Collaborations

Live-in-Labs™
AN INITIATIVE BY AMRITA UNIVERSITY

Dartmouth College

Ecole supérieure d'agro-développement international
istom

UNIVERSITÉ McGill

Ryerson University

TU Delft
Delft University of Technology

UNIVERSITY OF MASSACHUSETTS DARTMOUTH 1895

JOHNS HOPKINS UNIVERSITY

UNIVERSITY OF NORTH TEXAS 1890

HARVARD School of Public Health

PUC RIO

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE
EPFL

Massachusetts Institute of Technology

DEAKIN UNIVERSITY

university of groningen

श्रद्धावान् लभते ज्ञानम्
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Experiential Learning in Rural India