Enhancing Technologies

Embracing Rural India

Empowering Life
Media Lab Asia is a not-for-profit R&D organization set up by Department of Electronics and Information Technology, Ministry of Communications and IT, Government of India.

**Mission:** To bring the benefits of Information and Communication Technologies (ICTs) and other advanced technologies to the common man.

**Profile:** Needs assessment and idea generation; ICT research for grass root applications; Development of technologies, products & solutions; Field testing / demonstration & enable deployment; Project consultancy.

1. **Applications areas**
   - **Empowerment of the Differently-Abled** (embedded systems, assistive devices, assessment tools, iconic interfaces combined with multimedia portals and contents)
   - **Healthcare** (ICT in healthcare promotion, Healthpedia, HMIS, HIS and linking healthcare hierarchy through telemedicine, electronic health records and affordable healthcare equipment & devices)
   - **Livelihood Enhancement**
     - Medium and small enterprises (CAD tools for artisans, ERP, skill development etc.)
     - Agriculture (extension, portals, embedded systems, sensor networks, animal welfare etc.)
   - **Education** (Pre-primary, Web & mobile based access, Intelligent tutoring)

2. **Some enabling ICT Technologies**
   - Mobile applications
   - Human computer interfaces including Iconic interfaces
   - Indian language technologies applications
   - Broadband wireless, adhoc networks
   - Embedded systems and emerging technologies
   - Biometrics

**Experience:** Since 2001, Media Lab Asia has worked on more than 75 projects / ideas and gained experience in understanding the needs & role of ICT for grass root applications with conceptualization, project preparation, development & field deployment in the focused areas and has touched lives of more than 1.5 million people.

**Collaborations:** Media Lab Asia collaborates with a number of organizations from Government, NGO sector, academia, industry and other experts in its mission.

**Others major activities:** Besides its core activity of developing ICT technologies and bringing them to daily lives of people, Media Lab Asia also has the following activities under its aegis:

- **IT Research Academy** (ITRA) for capacity building for R&D in academic, in ICTE in the country
- **National e-Governance Division** (NeGD) for the programme management of ‘National e-Governance Plan’ of Department of Electronics and Information Technology
Some Illustrative Projects

ICT for Empowerment of the Differently-Abled:

- Navshikhar, www.punarbhava.in - National network for education, training & empowerment of the differently-abled
- Sanyog™ - Iconic communication tool for speech impaired and neuro motor disorder
- Punarjani™ - Assessment tool for mentally retarded
- SAFA™ - Screen reader software in Indian languages (downloadable at www.punarbhava.in)
- Shruti- Text to speech and speech to text system
- Smart Cane - Waist above obstacle detection and bus identification system
- Shruti-Drishti - Web browser for visually impaired

ICT for Healthcare:

- Rural health management information system
- eDhanwanthari™, Sehat Saathi™ - Rural telemedicine systems
- mDhanwanthari™ - Rural mobile telemedicine system
- Uniterm™ - Low cost feature rich telemedicine terminal
- Adaptive automatic insulin pump

ICT for Livelihood Enhancement:

- CHIC™ - A CAD tool for embroidery artisans
- eSagu™ - Personalized agro advisory system
- aAqua™ - Web based discussion and advisory forum for farmers
- AgroSense™ - Wireless sensor networks for agriculture
- eGalla™ - Retail management system for small shops and enterprises
- Integrated agri services program - A business model
- Polysensor - Portable kit for water testing
- Grameen Gyan Kendra for rural agricultural services
- Chetana - Community TV for women empowerment and child development
- Ashwini - Rural connectivity for integrated services
- Multi port wireless access system

ICT for Education:

- Shikshan™ - Intelligent tutoring system
- Balshiksha™ - Pre-primary teachers resource kit
- Ganitmitra™ - Maths prep guide for class XI and XII
- eVigyanshala™ - Virtual labs for life sciences for class XI and XII
- MEEIT (Marshalling the environment to educate through IT)- Life skills training for nomadic tribes
- www.gyanpedia.in - Content sharing portal for school children
- ICT for schools through multimedia content

Awards & Recognitions

- IT Innovators award at ‘NASSCOM Summit’ in 2008
- Profiled in the listing of NASSCOM’s 100 IT Innovators
- Manthan Award for ‘eSagu’ in 2007
- eSagu recognized as one of the World-wide latest novel internet applications in the ‘Innovative Application Case Study 2006’ of ‘Institute for Information Industry, Ministry of Economic Affairs, Taiwan’
- CSI-NIHILENT e-Governance Award for ‘eSagu’ in 2005-06
- Manthan Award for best e-content for ‘aAQUA’ in 2005
- GOLDEN ICON Award by ‘Department of Administrative Reforms & Public Grievances, GoI’ for ‘Shruti-Drishti’ in 2005
- ‘Sanyog’ acclaimed by the ‘Engineering Society of Detroit, Michigan’ and ‘The National Multiple Sclerosis Society, Michigan Chapter, USA’ by Da Vinci Award in 2004
Impact– some projects:

Empowerment of the Differently-Abled

- www.punarbhava.in - National interactive portal for empowerment of differently-abled with information on Government policies, schemes, tools and devices to disabled: 300+ Hits per day; 473 RCI/MSJE recognized organizations connected to ‘Navshikhar’ channel benefitting large number of students undergoing special education
- Shruti-Drishti - A web page browser for visually impaired: Deployed in 40 schools in 18 states
- Computerized braille transcription system for visually impaired: Deployed in 40 schools in 14 states
- Puranjjan™ - Web enabled integrated assessment tool for mentally retarded children: Developed & pilot deployed in 8 schools of Kerala. Large scale deployment is under progress

Healthcare

- Health Asociado™ - Rural health information management system through handheld computers: Developed and deployed in mallapuram area of Kerala with 7.8 lakhs population
- mDhanwanthari™ - Mobile telemedicine system: Developed and deployed at 22 locations of Cherthala taluk in Kerala; Accessible to 4.4 lakhs people
- eDhanwanthari™ - Rural telemedicine facility: Developed & deployed at 8 PHC/CHCs & 4 specialty hospitals in Kerala; Accessible to 1.70 lakhs people
- ICT based malaria surveillance monitoring system: Deployed in Angul district, Orrisa; Accessible to 1.30 lakhs population

Livelihood Enhancement

- eSAGU™ - A personalized ICT based agro advisory system: 100,000+ expert advices on 32 different crops in 200+ villages in 7 districts of A.P.; Also deployed through 9 ‘Grameen Gyan Kendras’ in 66 villages in 3 districts of U.P.
- aAqua™ (almost all questions answered) - A portal for farmers: A startup company 'M/s Agrocom Limited' has been promoted; The company registered 21000+ members and received 38000+ posts on its website
- Ashwini - Last mile broadband connectivity for integrated services delivery – Deployed for quality services in e-Learning, e-health and e-education and e-agro advisory in 115 villages in A.P.; Accessible to more than 5 lakh people
- CAD for embroidery design: Deployed in 5 clusters of Lucknow & Kanpur, U.P for Chikankari; in Shahpur Jat village, New Delhi, Kampilya & Farrukhabad clusters, U.P. for Zardozi work; in Meerut MSME clusters & in Chanderi, Madhya Pradesh for Chanderi work
- Chetana - Community TV for women empowerment and child development: Deployed at 8 locations in Andhra Pradesh; Impact in 60 villages
- Community radio station: Deployed for livelihood generation in 5 agricultural universities (viz. SAU's at Ranchi, Faizabad, Coimbatore, Hissar & Raipur)

Education

- ICT in rural schools of North-East: Deployed ICT based content in 150 schools in Mizoram, benefitting more than 30,000 students and teachers
ICT for Empowerment of the Differently-Abled

Punarbhava – National Web Portal (www.punarbhava.in):

- National Interactive web portal for all stakeholders in disability field
- Information on legal instruments, assistive devices, accessible content, events, news, employment opportunities, training & courses, publications etc.
- 300+ Hits per day
- Accessible to the differently-abled (w3c compliant)

- Regular transmission of programs: 7 hours a day, benefiting large number of students undergoing special education RCI courses / programs and other stakeholders in the field
- Curriculum (Special B.Ed, M.Ed) based programs on different disabilities
- Special programs on Braille, sign language, computer learning etc.

Punarbhava

Navshikhar Channel:

- Edusat based channel with studio and transmission centre at RCI connecting 473 RCI/MSJE recognized institutions

Project Partners: RCI, New Delhi; ISRO
ICT for Empowerment of the Differently-Abled

Punarjjani™ – Assessment Tool for Children with Mental Retardation (www.punarjjani.in):

Features
• Aids teachers for progress assessment and evaluation of the Children with Mental Retardation (MR)
• Integrates three standard tools widely used manually at present –
  ✐ FACP (Functional Assessment Checklist Programming)
  ✐ BASIC-MR (Behavioral Assessment Scale for Indian Children with Mental Retardation)
  ✐ MDPS (Madras Development Programming System)

• Capable of generating & aggregating graphs and charts on the progress of each child

USP
• This tool is first of its kind in India

Project Partners: IIT, Kharagpur

Sanyog™ – Iconic communication tool for persons with cerebral palsy & speech impairment:

• Facility to construct simple sentences by selection of icons
• Natural Language Processing techniques used to generate grammatically correct sentences and a Text-to-Speech engine to produce output.
• In English, Hindi & Bengali
• Deployed at IICP, Kolkata; AADI, New Delhi; NIMH, Hyderabad and Manovikas Kendra, Kolkata
• Available on desktop & handheld devices

Audio books for visually impaired students:

• In DAISY (Digital Accessible Information System) format
• For graduate/post graduate level on Hindi, English, law, management, political science, history, library science, social studies, journalism, mass communication, public administration, civil service & other competitive examinations for visually impaired students
• 80000+ CDs of audio books distributed and distribution continues

USP
• Qualitative and quantitative progress measurement
• Facilitates homogeneous grouping of Children
• Provides promotion objectively to the next level

Project Partners: C-DAC, Trivandrum

Project Partners: NAB, New Delhi
Health Asociado™ - Rural Health Management Information System (www.rhmis.kerala.gov.in):

Features
- Handheld based field data collection
- Handhelds for improved health care delivery and awareness
- Health database for information access at various levels for fast decision making and planning
- Analysis and report generation

Deployment
- In three blocks (20 PHCs/BPHCs/CHCs) of Mallapuram, Kerala covering 7.8 lakhs people
- Health database system deployed at Ballabhgarh with AIIMS

ICT based Malaria Surveillance Monitoring System:

- Uses mobile phones for sending the patients' information to central server through SMS and enables getting the result of diagnosis quickly & effectively so that the patients can get timely treatment
- Enables researchers, policy makers and Government to monitor the malaria surveillance, finding out the disease outbreak and plan accordingly on awareness/prevention & treatment
- Deployed in Pallahara block, Angul dist., Orissa and accessible to 1.3 lakhs population of the block

Project Partners: C-DAC, Trivandrum

Project Partners: Navayuga Infotech Pvt. Ltd.
ICT for Primary Healthcare

EDhanwanthari™ - Rural Telemedicine Facility (www.edhanwanthari.in):

- Connects rural / community hospitals with tertiary / speciality hospitals, along with video conferencing
- Interface of biomedical equipments with system
- Creation, storage, uploading of patient records
- Supports tele-pathology, tele-radiology, tele-cardiology, tele-ophthalmology and tele-education
- Deployed at 8 PHC/CHCs & 4 specialty hospitals in Kerala
- Accessible to 1.70 lakhs people in Tirur taluk of Kerala

mDhanwanthari™ - Mobile Telemedicine System:

- A unique system with its compact design that enables easy reach to rural location
- Van integrated with medical equipments i.e. X-Ray, Ultrasound, Haematology Analyzer, ECG with a suitable power back-up and communication setup
- Useful for early detection of diseases like TB, Diabetes, Hypertension
- Health awareness through video screening
- Deployed at 22 locations of Cherthala taluk of Kerala
- Accessible to 4.4 lakhs people of the taluk

Project Partners: C-DAC, Trivandrum

Project Partners: C-DAC, Trivandrum; KVM Hospital, Cherthala
ICT for Livelihood Enhancement

MSME Sector

Chic™ - CAD for Crafts:

Features
• Artisans can make embroidery designs using computers
• Designs can be stored, reused and combined in various ways to create new designs

USP
• Fast design turnaround time and thus enhanced productivity
• Anyone without computer knowledge can also quickly learn to use it
• Preview of the overall design
• Enables design innovation & modernization
• Preservation of traditional designs / knowledge
• Small footprint software

Deployment
• 5 clusters of Lucknow & Kanpur U.P. for Chikankari
• In Shahpur Jat village, New Delhi; Kampilya & Farrukhabad clusters, U.P. for Zardozi work; Meerut embroidery MSME cluster
• Training on tool to students of Fashion designing course at NIESBUD, Noida

Future Plans
• Deployment in other clusters (J&K, Ajmer etc.)
• Exploring application of the tool for other crafts such as block printing, wood carving, painting etc.
• Explore possibility of deployment in ITIs, vocational institutions, NIFT etc.

Viability & Sustainability
• Low deployment costs
• Artisans and entrepreneurs are willing / eager to use

Project Partners: IIT, Kanpur; Sigma SciTech Ltd. Gurgaon; Draupadi Dream Trust, New Delhi

eGalla™ - Retail Management System for Small Shops and Enterprises:

Features

eGalla Stand-alone Application
• One point solution for managing inventories, vendors & customers
• Multi-lingual support (currently in Hindi, Marathi, Malayalam and English)

eGalla Portal
• Shopkeepers can open virtual shop
• Shopkeepers can display their prices, discounts and offers for each item
• Customers can view items, compare prices in different shops and place order through web and mobile

Deployment
• 15 retail shops in Mumbai & Delhi
• As ERP at 5 rice mills in Kurukshetra
• NIESBUD,MSME: Institutes at Meerut & Moradabad

Future Plans
• Discussions in progress with companies & Ministry of MSME for deployment
• Development and deployment as an affordable ERP package for small and medium enterprises

Project Partners: IIT, Bombay

Project Partners: IIT, Kanpur; Sigma SciTech Ltd. Gurgaon; Draupadi Dream Trust, New Delhi
ICT for Livelihood Enhancement

Agriculture Sector

eSagu™- Personalized ICT based Agro Advisory System:

Features
- Digital photos of crops sent to agricultural scientists & farm specific advice sent back to farmer (web & Mobile)
- Advice at farmers doors step

USP
- Farm specific advise and farm history
- Agricultural experts with diverse background at one place gives opportunity for inter expert discussion to problem solving

Deployment
- 100,000+ expert advices on 32 different crops in 200+ villages in 7 districts of A.P.; Also deployed through 9 ‘Grameen Gyan Kendras’ in 66 villages in 3 districts of U.P.

Impact
- Increased earning through enhanced productivity and reduced cost of cultivation

Recognitions/Awards
- Manthan Award – ‘India’s Best e-Content for Development’in 2007
- Recognized as one of 100 innovations by Taiwan Govt. in 2006
- Winner of ‘CSI - Nihilent e-Governance Awards’in 2005-06

Strategy
- Focus on integrated agri services program providing inputs, financial products, market and other services along with agro advisory on a single platform
- Upgradation of technology and porting to mobile platform

Project Partners: IIIT, Hyderabad

Need Assessment of ICT in Agriculture (www.ekrishinaip.in):

- A project awarded by ‘National Agricultural Innovation Project’ of ‘ICAR’ to study major ICT initiatives in India in agriculture vis-a-vis information need of farmers
- Studied 26 initiatives covering 1381 farmers in 57 villages across 12 states
- Findings are crucial for choosing and designing the future strategy and system to provide ‘Information to the farmers as and when they require’

Project Partners: NIRD, Hyderabad; ANGRAU, Hyderabad; MICA, Ahmedabad
Shikshan™ - Intelligent Tutoring System (www.eshikshan.in):

**Features**
- Provides customized instruction or feedback to students for step by step effective learning
- Adapts to different learning levels through tests
- Facilitates one-to-one relationship between tutor and student
- Facilitates course hierarchy creation
- Facilitates creation of repository of courseware

**USP**
- Most appropriate in distance education & contact class program
- Supplements regular classroom learning

Balshiksha™ - Multimedia based Pre-Primary Teacher's Resource Kit (www.balshiksha.in):

- 400+ modules for teachers and parents
- Stories, rhymes and songs with audio, video, animations, images and graphics
- Also available through GPRS & local app on mobile/handheld
- Deployment at 10 schools & 3 madarsas in Chanderi; 3 schools in NCR

Project Partners: IIT, Kharagpur

Project Partners: C-DAC, Pune
**ICT for Education**

**e-vigyanshala™ - Virtual labs for life sciences (www.e-vigyanshala.in):**

- 75+ life science experiments for Sr. Secondary (11th & 12th) in multimedia including teacher videos
- Also available on mobile through GPRS
- Deployment at schools in NCR & Pune

**Ganitmitra™ - Maths Prep Guide (www.ganitmitra.in):**

- Mathematics content for Sr. Secondary (11th & 12th) in multimedia
- Also available on mobile through GPRS & Local app on mobile/handheld
- Deployment at schools in NCR & Pune

Project Partners: C-DAC, Pune