

E-Learning R&D projects initiated during XIIth Plan period

Project Title	Design and Development of Context Aware Mobile assisted Augmented Reality Framework for Learning Environment
Executive Agency:	C-DAC, Bangalore
Principal Investigator:	Dr. N. Sarat Chandra Babu Executive Director
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Project Objectives:	<ul style="list-style-type: none"> • To study various usage scenarios of cloud based Augmented Reality (AR) in eLearning ecosystem. • To design and develop a cloud based Context Aware Augmented Reality eLearning framework for mobile platforms. • Identify and develop pilot applications based on the framework developed. • Conduct knowledge dissemination program through trainings and workshops.
Achievements/ Outcome	<p><u>Expected outcome</u></p> <p>(i) An intuitively simple, user-friendly software framework to create augmented reality based e-learning applications for students.</p> <p>(ii) Documentation including user's manual, help and support for the framework via online forums and sample projects to kick start.</p> <p>(iii) To design and develop following 3 pilot applications based on the framework :-</p> <p style="margin-left: 40px;">a. Augmented Reality based Board. b. Augmented Reality based book. c. Augmented Reality based game.</p> <p>These are tentative subject to change during the study and identification phase.</p> <p>(iv) To conduct 1 workshop and 2 training programs.</p>
Start Date	20/09/2012
Duration (in months):	24 (extended by 8 months)
Status of Project:	Completed on 19 th May 2015

Project Title	Development of Personalised and Performance based E-Learning tool for existing E-resources
Executive Agency:	NIT Durgapur jointly with Bannari Amman Institute of Technology, Erode District, Tamil Nadu and IIT Kanpur
Principal Investigator:	Dr. Nirmal Kumar Roy
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Project Objectives:	<ul style="list-style-type: none"> To estimate the online learners' proficiency based on their navigation & search history To sort and prioritize search results in the learning contents To track the searching process in a content particular for learners To improve search engine performance To increase user (online learners) satisfaction
Achievements/ Outcome	<u>Expected outcome</u> <ol style="list-style-type: none"> The source code for the proposed module of the Brihaspati-3 shall be released in open source along with Brihaspati. For five courses, the content will be made available in new format, which can be used profile dependent learning experience through Brihaspati-3 LMS. The developers who will work will get trained for absorption by industry. Design document to be added to Working draft of ERP Mission project. User manual for using the system. Ten students will be trained from B. Tech, MCA, M. Tech and PhD
Start Date	19/02/2013
Duration (in months):	36 (extended by 18 months)
Status of Project:	Completed on 19 th August 2017

Project Title	MedSim – eLearning platform for Medical Simulation
Executive Agency:	C-DAC, Thiruvananthapuram jointly with Amrita Vishwa Vidyapeetham, Kollam, Kerala
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Project Objectives:	<ul style="list-style-type: none"> Build a eLearning platform that supports Computer based Medical Simulations Allow students pursuing medical sciences to visualize, learn, practice and experience interactive clinical cases using Virtual Patients that integrates 2D and 3D animations
Achievements/ Outcome	<u>Expected outcome</u> <ul style="list-style-type: none"> Medical elearning platform, portal with Administrative, Assessment and reporting tools (Medical Framework) Medical Simulations in two broad areas based on inputs from medical faculty (Pilot at 2 Hospitals) Virtual Patient Cases that are enriched with Interactive 2D, 3D Simulations, Animations With regard to documents for technology transfer includes Online manual, Step-by-step procedure, Self-evaluation through Quiz & experiments, Related resources and Online help One day training - Ability to use and teach using the medsim, guide the students to use them and conduction of Workshops
Start Date	07/03/2013
Duration (in months):	24 (extended by 6 months)
Status of Project:	Completed on 6 th Sep. 2015

Project Title	Online Assessment and Evaluation System (OAES) for National Level Certification Examinations
Executive Agency:	IIIT, Bangalore jointly with NIELIT, New Delhi
Principal Investigator:	Dr. Chandrashekar Ramanathan
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Project Objectives:	Creation of item banks, development of evaluation methods and online assessment and evaluation system (OAES). O-Level program of NIELIT has been proposed as the basis for creation of item banks along with a suitable software platform to conduct online examinations, which will help in online evaluation of students' performance
Achievements/ Outcome	<u>Expected outcome</u> (i) Item banks (1000 items per course) for the six O-Level courses. This results in a cumulative sum of 8000 items across all the courses. (ii) Online evaluation of students' performance against all the items in the item bank. (iii) A software platform that enables any agency to design and conduct online examination, and thereby evaluate the students' performance.
Start Date	11/03/2013
Duration (in months):	18 (extended by 36 months)
Status of Project:	Completed on 31 st August 2017

Project Title	Online Labs (OLabs) for school experiments - Phase 2
Executive Agency:	CDAC, Mumbai jointly with Amrita Vishwa Vidyapeetham, Kollam, Kerala
Principal Investigator:	Dr. M. Sasikumar Associate Director (Research)
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Project Objectives:	<ul style="list-style-type: none"> • M-Learning enhancements to framework to support OLabs on Android tablets • Enhancing OLabs phase 1 experiments for deployment on Android • Enhance the framework for multi-lingual support • Translate content to Hindi, Malayalam, Marathi • Extend OLabs for Class 11 and Class 12 (Physics, Chemistry, Biology, Maths) • Extend OLabs for Class 9, 10 (Maths, Biology, English)
Achievements/ Outcome	<u>Expected outcome</u> 1. Softwares: Specifications and development 2. Enhance the OLabs framework to support accessibility features. 3. Add multi-lingual support to the OLabs framework 4. Translation and Audio Recording in Indian Languages 5. With regard to documents for technology transfer -Online manual, Step-by-step procedure, Quiz for Self-evaluation, Related resources and Additional help 6. Work with concerned end user organizations to roll out/utilize the technology and content developed under the project
Start Date	28/03/2013
Duration (in months):	24 (extended by 12 months)
Status of Project:	Completed on 27 th March 2016

Project Title	Setting up ICT E-Learning Centres in 204 schools in Srikakulam district of Andhra Pradesh
Executive Agency:	ERNET India
Principal Investigator:	Shri BB Tiwari Director
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Project Objectives:	To set up e-Learning ICT centres in 204 high schools in rural and tribal area of district Srikakulam to integrate ICT for learning and teaching to improve learning outcomes of rural and tribal children
Achievements/ Outcome	<u>Expected outcome</u> <ol style="list-style-type: none"> 1. Capacity building of E-learning ICT centre in 204 schools in rural and Tribal area of Srikakulam 2. Digital contents of Science, Math's and English in Telugu and English language mapped with Andhra Pradesh education curriculum will be developed and available to rural and Tribal students equitably and uniformly. 5000 students will be benefited by creation of e-learning facility 3. The integration of ICT in learning and teaching helps to create environments which enable all students to become confident and self-directed learners. When used well, ICT enriches learning and enhances teaching. It is a powerful motivational tool for students and it increases the scope and opportunities for learners with special educational needs. 4. Effective integration of ICT in schools will enable learners to develop these skill sets 5. It will help in developing ICT culture in society and in turn build knowledge society 6. It is expected that approx 50000 students would be benefited through the use of e-learning ICT deployment in the rural area of Srikakulam
Start Date Duration (in months):	26/06/2014 36
Status of Project:	Completed on 25 th June 2017

Project Title	Deployment and management of Brihaspati-3 services over NKN for Indian Academia
Executive Agency:	IIT, Kanpur
Principal Investigator:	Prof. YN Singh
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Project Objectives:	<ul style="list-style-type: none"> • To make installations on the servers deployed in NKN network and to maintain and upgrade them with every new patch and version being released. • The academic institutes who are subscribing to NKN connectivity will get the very good reliable access to the services of Brihaspati-3 and its upgraded versions. • All other services developed in open source which are being integrated with Brihaspati-3 will also be deployed and managed
Achievements/ Outcome	<u>Expected outcome</u> <ul style="list-style-type: none"> • Deployment of Brihaspati-3 services and allied services on NKN system will happen. The experience of the deployment and running Brihaspati-services shall be documented. The feedback from the services will be used in the development process to add more features and remove all kinds of bugs. • The working draft which is maintained during development, deployment and running of services shall be continuously maintained • About 10 manpower will be trained related to system admin, fault diagnosis in Brihaspati based on bugs report & fixing them and also management of services
Start Date Duration (in months):	12/05/2014 36 (extended by 7 months)
Status of Project:	Completed on 31 st December 2017

Project Title	Enhancing the outreach of Electronics System Design and training through e-Learning
Executive Agency:	C-DAC, Noida
Principal Investigator:	Smt. Arti noor
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Project Objectives:	<p>To educate and train in the areas of :</p> <ul style="list-style-type: none"> • Embedded System Design (ESD) • Designing using FPGA. • Digital Signal Processing. <p>Based on the above, the main objective of this project is to develop low cost educational kits and provide the training in these areas. Both hands-on and training through e-learning will be organized periodically throughout the project duration.</p>
Achievements/ Outcome	<p><u>Expected outcome</u></p> <ul style="list-style-type: none"> (i) Educational Kits for performing lab. (ii) User manuals to perform experiments. (iii) E-learning portal & LMS. (iv) E-Learning contents. (v) Documents on trainer Kits. (vi) Project will generate trained faculties, students, and other participants in different areas of Electronic Systems. Furthermore, the design & development of boards and training using different kits will enhance the knowledgebase for commercial production of electronic systems. About 200 participants are expected to be trained through the Training Programs conducted at CDAC, Noida. Additionally, based on an average registration of about 50 participants per Module, about 400 participants will be trained using the e-learning Mode. (vii) Likely saving in cost of product in terms of Rs./FE (viii) Availability of trained manpower in different areas of Electronic System Design can potentially have a large multiple effects. The financial benefits of such a programme to the society are immense and difficult to quantify.
Start Date	09/06/2014
Duration (in months):	24 (extended by 18 months)
Status of Project:	Completed on 8 th December 2017

Project Title	ICT based Framework to enhance the teaching and learning experience in large Classroom
Executive Agency:	IIT Guwahati
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Project Objectives:	<ul style="list-style-type: none"> • Development of framework and interface to deliver the lecture on the diverse portable computing devices carried by the students • Development of framework and interface for interaction between the teacher and the students both in the class and outside the class • Development of framework and interface for examination management (conduct and evaluate short exams/ quizzes/ home assignments)
Achievements/ Outcome	<p><u>Expected outcome</u></p> <ul style="list-style-type: none"> ▪ The overall framework for an ICT-based large classroom management system ▪ A system for automatic collection of attendance ▪ A scalable framework for real-time delivery of lecture content (slides and voice) to students and synchronization between mobile devices in the classroom (e.g. smartphones, tablets and laptop) ▪ A system to enable personalized interaction between the teacher and students ▪ A system to conduct and evaluate short exams ▪ Design documents for the system, source code of all the applications, results from performance evaluation, demonstration of the prototype and publication in journals and conferences (national and international) ▪ Manpower to be trained includes students doing final year project for B.Tech, M.Tech and 2 PhDs from department of computer science and engineering in research area relevant to their project
Start Date	06/08/2014
Duration (in months):	24 (extended by 18 months)
Status of Project:	Completed on 5 th February 2018

Project Title	Rollout of OLabs
Executive Agency:	CDAC, Mumbai jointly with Amrita Vishwa Vidyapeetham, Kollam, Kerala
Principal Investigator:	Dr. M. Sasikumar Associate Director (Research)
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Project Objectives:	<ul style="list-style-type: none"> To create the infrastructural and support framework for making OLabs (online labs for schools) accessible and usable by students and teachers across India. This includes level 1 and 2 support, toll free numbers, etc. To train approximately 30000 teachers across India in effective use of OLabs resources to enhance the teaching learning experience
Achievements/ Outcome	<p><u>Expected outcome</u></p> <ul style="list-style-type: none"> Olabs portal currently located at OLabs Website will be the resource point for access of OLabs online resources. This will cover all currently listed experiments as per CBSE curriculum for Physics, Chemistry, Biology, and also activities under Maths and English. This will be available through regional languages namely Hindi, Marathi, Malayalam, etc. This will help student and teacher to supplement the content & enhance their understanding. It will also result in capacity building of about 30,000 trained teachers across the country. Documents for technology transfer includes User manuals, online help, and research papers. 30,000 school teachers to be trained on OLabs.
Start Date	30/06/2015
Duration (in months):	36 (extended by 12 months)
Status of Project:	Ongoing