

Minutes of the Standing Committee of NMEICT, held on 6 December 2013

Participants:

Mission Director: Mr. Praveen Prakash

SC Members:

1. Prof. Kannan Moudgalya
2. Prof. Pradeep Varma
3. Prof. Y. N. Singh
4. Prof. Jayashree Shinde
5. Prof. C. G. Mahajan
6. Prof. Rajneesh Das
7. Shri. Pradeep Kaul
8. Prof. Uma Kanjilal

Others present:

1. Prof. Kamal Bijlani
2. Dr. C. S. Arora
3. PIs and the staff members of the projects presented.

1. Confirmation of Minutes of the SC held on 19 Sept. 2013.

The Meeting started with the confirmation of the Minutes of the meeting held on 19 Sept. 2013 and the actions taken. The Minutes were confirmed. The Mission Director gave a brief report on the current status of the Mission and the action taken.

From the first phase of the Mission, Rs. 4,700-1,600 cr. = Rs. 3,100 cr. is available, until 2017 March. Additional 1,000 cr. is available, if required. All the activities approved previously by the cabinet are acceptable for funding in this phase also. If there are important additional activities, we can go back to the cabinet for its approval.

Closure 10% money was not given earlier, as suggested by the Finance. In the recently held meeting, PAB has cleared the 10% money for all the projects that were presented. All of these projects are continuing in the second phase of the Mission.

Two of Phase II projects were presented in this PAB: Virtual labs and e-Yantra. For virtual labs, a detailed costing is sought for. A committee is looking into it. The PAB has approved the II phase of e-Yantra.

Prof. Kincha of IISc will be the Chairman of the Standing Committee. This position has been vacant since Prof. Prem Kalra left. The Mission Director summarised the role of a few of the Committees of the Mission.

Server Committee: the network put in place should be used extensively. It is now mainly used to access the existing content. Prof. Huzur Saran is the PI of this Committee.

Committee for monitoring and implementation of the network has to be reactivated. Seamless integration between NMEICT, NKN and the various clouds should be done. Most of the VPN (the networks) in India, e.g. defense labs, have two service providers - BSNL and Airtel, for example. A similar thing may be required for educational networks also.

DTH Committee: We tried to get 50 channels. For educational purposes, we should not have to get any license, just as the states, IGNOU and CEC. Entering into agreement with Prasar Bharati. There will be Prasar Bharati, MHRD and NMEICT logos. 150 teaching ends will be created and connected.

Aakash II project was presented in the PAB. The report has been accepted by MHRD and PAB. It has been announced by DGS&D. There is a tradeoff between administrative simplicity vs. increased cost, because of small quantum of purchases.

2. Novel educational and pedagogical applications on Aakash platform

PI: Prof. Ashok Jhunjhunwala

Institute: IIT Madras and four other IITs Kanpur, Kharagpur, Guwahati and Mandi

Control No: AAC18011212361

Prof. Arti Kashyap, who leads this activity at IIT Roorkee, presented the progress on this project.

Background:

Purpose

With the dream of affordability of a tablet PC for every student coming true by the World's first \$35 tablet, Aakash, there is a requirement for several applications that provide wide varieties of educational content to facilitate the student in his learning process using Aakash. Computer based lessons enable high-quality educational contents to reach rural students. Hence, it is essential to create an ecosystem which ports/develops applications focused on education / pedagogy to enrich the learning experience of rural students. The talent pool of IITs could be utilized to create the required ecosystem to ensure a rich set of application to be made available in Aakash platform to students from rural areas at free of cost.

Objectives

Nowadays, there is a host of high quality free open source educational software available in English on Linux environment. These software spans a spectrum from Basic Science lessons to animated advanced lessons, mathematics, space science, geography, Physics, Chemistry, Programming, Electronics, Languages, and Music etc. This software can be ported to other UNIX like Operating Systems with reasonable efforts. Apart from porting this software, the software needs to be localized to the native languages to reach the rural students. These requirements define a static content based education software.

Apart from these, there will be requirements for software tools to assist teachers to prepare new contents as per local syllabus and make them available to the students. Hence, there is a need to have software tools to create content and software tools to deliver these content such as on-line classes, on-line exercises and on-line exams. There are many free open source software tools, which would require customization for local requirements.

Students also require tools to help self-manage various study schedules. Once again there are free software tools, which would require localization for the benefit of local students.

Today's Linux world (Debian, Ubuntu, SUSE distributions) has wide varieties of software tools.

The major objectives of this project are:

1. Identify the required set of rich applications to be ported to Aakash
2. Port/Create the Educational Software for students from basic learning to advanced learning with animated video contents
3. Tools to assist Teachers
 - i. To create content for teachers
 - ii. To manage large set of on-line students learning progress
4. Educational Content delivery tools such as:
 - i. Large Scale Video Streaming software
 - ii. Teacher assisted on-line student exercise tools
 - iii. On-line exam tools
 - iv. Central Educational content repository
 - v. Cloud based Tools for Teachers and Students
5. Tools to assist Students
 - i. Organize educational content
 - ii. Organize learning schedule
 - iii. Monitor the learning progress
 - iv. Newer data interpretation tools
6. Pedagogical applications for
 - i) Interactive class room Response system application
 - ii) Participatory simulations between a group of students & teachers
 - iii) Collaborative data gathering applications

Approach

To create the educational ecosystem with high quality educational content and software tools to deliver the content and manage the learning process, we propose to create a team of skilled people. We propose to set up a team from 5 IITs, led by TCOE, IIT Madras. This team will study the available software tools and the required tools for Indian rural students and teachers. This study will provide the list of tools/contents to be ported / created. This study will provide detailed localization requirements.

TCOE IIT Madras is the lead member of this team. Other four IITs can plan their own share of contributions towards this ecosystem as per the identified tools and content required. TCOE IIT Madras will hire required education consultants and software developers to build the ecosystem. Likewise, each other IITs also may hire required people to contribute the educational ecosystem.

The created content and tools will be experimented with rural students to ascertain the applicability, usability and effectiveness. The findings of these experiments shall be incorporated.

Project Calendar and Cost

Duration of this project: 2 years

Participation: TCOE IIT Madras (lead member) and other four IITs

Each IIT may take up this project independently. In this case, TCOE IITM require Rs. 2 Crores (for the 2 years project duration)

Alternatively, if desired a coordinated project can be taken up by TCOE IITM on behalf of all member IITs. In this case, TCOE IITM requires Rs. 2.5 Crores per year including the one for TCOE IITM.

Cost for 2 years of project duration

	First Year	Second Year	Total
Human Resource	50 Lakhs	50 Lakhs	1 Cr.
Travel and Institute overheads	15 Lakhs	15 Lakhs	0.3 Cr
Hardware Platform /Software Tools	10 Lakhs	10 Lakhs	0.2 Cr
Content Creation	15 Lakhs	10 Lakhs	0.25 Cr
Test Tools	3 Lakhs	2 Lakhs	0.05 Cr.
Field Trials	0	20 Lakhs	0.2 Cr
Total			2 Cr.

If eco-system is created for at-least 5 IITs, and IITM takes on co-ordination on behalf of other IITs. The cost structure would be

	First Year	Second Year	Total
Human Resource	1.25 Cr.	1.25 Cr.	2,5Cr.
Travel and Institute overheads	35 Lakhs	40 Lakhs	0.75 Cr
Hardware Platform /Software Tools	13 Lakhs	12 Lakhs	0.25Cr
Content Creation	25 Lakhs	25 Lakhs	0.5 Cr
Test Tools	25 Lakhs	25 Lakhs	0.5 Cr.
Field Trials	10 Lakhs	40 Lakhs	0.5Cr
Total			5 Cr.

The SC's Observations:

Sanctioned amount: Rs. 5 crore. Amount already received: Rs. 1.5 crore. Funds sought for, in this presentation: Rs. 1.5 crore.

Objective: To identify set of rich applications to be ported on to Aakash, in addition to the ones already available. To port and create educational software for students and teachers. To create tools to assist students and teachers, for educational content delivery and pedagogical applications. They will also work with eContent creation companies. Each IIT will train 400 to 500 students. AADL website.

Following actions are planned: Forum for discussion between IIT students, Localisation support, virtual labs and e-books. It was suggested that they work with the Virtual Labs project as opposed to be developing from scratch.

Examination Management System. Mainly in security, encryption, etc. Student support tiered system is developed by IIT Mandi.

Interactive digital book platform by IIT Madras. SASTRA University has already ported most of the NCERT books to epub format to run on Aakash. It will be good if these two projects are harmonised.

Port Magic work is done at IIT Kanpur for DAC, embedded systems and arduino. IIT Bombay has developed a miniature version of Arduino, about a tenth of the size, called Anuduino, for use with embedded systems. The two groups should work together.

IIT Kharagpur has also done many projects. Aakash Bani, talking keyboards, etc. IIT Mandi: educational gaming, memorizer, MIPs simulator, hangman, etc., Social applications, IMGNREGA survey form, etc.

IIT Guwahati: speak2learn, formula app, library book reminder. 1,000 students have been trained from all disciplines, all 5 IITs.

The applications should work cross platform. The projects created by different IITs should work together. Applications developed by all IITs should be made to work together. There should be standardisation.

PRSG met on 24 Aug. 2013 and recommended the release of Rs. 1.5 crore.

The SC's Recommendations:

1. The SC recommends 30% of the sanctioned amount, namely Rs. 1.5 crore, to be released.
2. The PIs should come up with details of deliverables in focus areas, based on the work done until now. Shri Pradeep Kaul, Senior Consultant of the Mission and the facilitator of the IIT Madras projects should be consulted while arriving at this list.
3. The PIs should harmonise their projects with similar projects happening through other funded projects of the Mission.
4. The PI should make a presentation to the SC at the earliest, but not later than three months after the current release of funds. During this presentation, they should address points 2 and 3 above.

3. Enhancement and roadmap to Aakash platform.

PI: Prof. Ashok Jhunjhunwala
Institute: IIT Madras
Control No.: AAC18011212361

Background:

Purpose of the Project

With the announcement of Aakash, world's first 35\$ tablet by MHRD, the affordability of a tablet PC is increased to the rural community especially students in schools and colleges. In the near future, in the next 5 years, when the user base of Aakash is going to increase exponentially, the enhancement path for the tablet with respect to performance, usability, user-friendliness, serviceability, upgradability aspects needs to be focused at in parallel to maximize the potential of the tablet.

The purpose of this project is to study the architecture of Aakash tablet from different aspects and conduct experiments with and without modifications to the platform and do measurement of various parameters and submit a technical test reports with conclusions and recommendations.

Current Features of Aakash platform

Features supported by the low cost Aakash platform as of today are listed in the table below.

Hardware Features		Software Features	
Processor	ARM11 processor @ 366 MHz with graphic accelerator for HD video	Operating System	Android 2.2 – Froyo version
RAM	256 MB	Editor	Text editor
Internal Flash memory	2 GB	Application download option	Get Jar model
Memory extension slot	Micro SR card slot to increase Flash upto 32 GB	Document Format supported	DOC, DOCX, PPT, PPTX, XLS, XLSX, ODT, ODP,PDF
Network Interface port	Wi-Fi IEEE 802.11 1/b/g	Image file format supported	PNG, JPG, BMP and GIF
Interface ports	USB port with 3G Dongle	Audio file format supported	MP3, AAC, AC3, WAV, WMA
	3.5 mm audio port in-out	Video file format supported	MPEG2, MPEG4, AVI, FLV
Visual Display Unit	Resistive Touch Screen , 7", 800 x 480 pixel resolution	Browser capability	Ubisurfer browser with IE 8 rendering that streams online videos.
Battery capacity	2100 mAhours	Other Application Support	Youtube video streaming
Battery backup time	3 hours	Content Development tool Support	From Sakshat portal http://www.sakshat.ac.in/

Objectives

To improve the Aakash tablet with respect to higher usability, power consumption, cost and ruggedness, a study of the design and conduction experiments are required. As part of the study, the complete design and component usage will be reviewed to improve performance and cost effectiveness. Several experiments will be conducted to improve the usability for many types of people behavior and to improve power consumption efficiency and ruggedness. A study will be conducted to find out OS aspects including porting of a higher OS. A report will be generated with the recommendations for enhancements.

A few aspects that would be fitting in as part of this exercise are listed below. A detailed list on each and every aspect will be taken up once the project is approved.

Power Section Enhancements

- Improving current Battery backup time
- Power consumption optimization
- Heat dissipation when the Hardware runs at maximum capacity

Interface Ports

- Bluetooth or another NFC port interface addition
- GPS interface addition
- Touch screen sensitivity enhancement

Engineering aspects

- Enhancing the engineering to improve usability
- Casing, PCB, wiring inside the box to improve ruggedness

Software Aspects

- Porting of OS versions higher than Android 2.2 Froyo to the Hardware platform of Aakash
- Support for direct downloading of Android applications from the Android App store

Cost Aspects

- Optimization on Components / PCB / Power to reduce the cost further.

Approach

This project is proposed by IITM's Telecom Center of Excellence, an independent R&D lab setup in 2009 by Department of Telecom and IITs. IITM's TCoE has a team of engineers with expertise in embedded product development. This project is proposed to be run as a technical research project with a 2-3 member team that will constitute TCoE engineers / student of IITM, with the guidance of faculty support from IITM.

Project Calendar & Cost

The time estimate for the current phase of the project proposed is 1 year. The project cost estimated to execute the project is roughly Rs.25 lakhs.

	Duration 1 year
Human Resources	12 lakhs
Travel, meetings and Institute Overheads	8 lakhs
Hardware Platform/Software tools/Test equipment / Components	5 lakhs
Total	25 lakhs

The SC's Observations:

Improving Aakash IIT tablet in terms of processing power, video output, user input, audio input/output, database operation, battery, software support, network, etc. About ten different types of tablets, apart from Aakash, were tested for various qualities mentioned above. Many small test benches were created. Benchmarking also was done on CPU, memory, database with SQL, video and web browsing. Aakash IV specs have been published. In the 24 Aug. 2013 PRSG, a recommendation has been made to release Rs. 17.5 lakh.

The SC's Recommendations:

The SC recommends the release of Rs. 17.5 lakh.

4. Village communication network leveraging on fibre to the village.

Pls: Prof. Ashok Jhunjhunwala and Prof. Abhay Karandikar
Inst.: IIT Madras and IIT Bombay
Control No.: ACO18011212362

The Purpose

In rural India the penetration of Internet and Broadband is low in spite of Fiber reaching at most of the villages and now an Aakash tablet PC is available to overcome PC penetration problem. There is an urgent need for a nation-wide broadband network to provide education, healthcare, banking and other services across the country.

Broadband Access provided through various technologies such as DSL, Cable modem, WiMax, LTE etc. is not viable solution for low density, low average revenue per unit (ARPU) rural subscriber.

The challenge is in providing suitable cost effective solution for providing broadband access at the last mile in rural areas.

The Objective

To provide broadband connection to a rural area from the Fiber point is typically upto 2 Km radius area. In rural area this central node needs to run on low power to make it economical. Effective outdoor WiFi solution using license exempt bands 2.4 GHz & 5 GHz can be the most cost effective solution. WiFi Radios are inexpensive and low power. This makes it viable to run on solar power.

The conventional indoor WiFi chipsets are not designed to handle multipath propagation, interference and suffer from limitations in range and capacity. These chipsets use CSMA/CA MAC protocol (DCF) which is inadequate for high speed, multi hop guaranteed data delivery. Many attempts have been made to make WiFi mesh as the last mile access option but it failed due to these reasons.

As part of this project, WiFi technology with beam forming and TDMA based MAC with existing 802.11n chipset can be developed and field tested to provide cost effective high-performance broadband last mile connectivity in rural area.

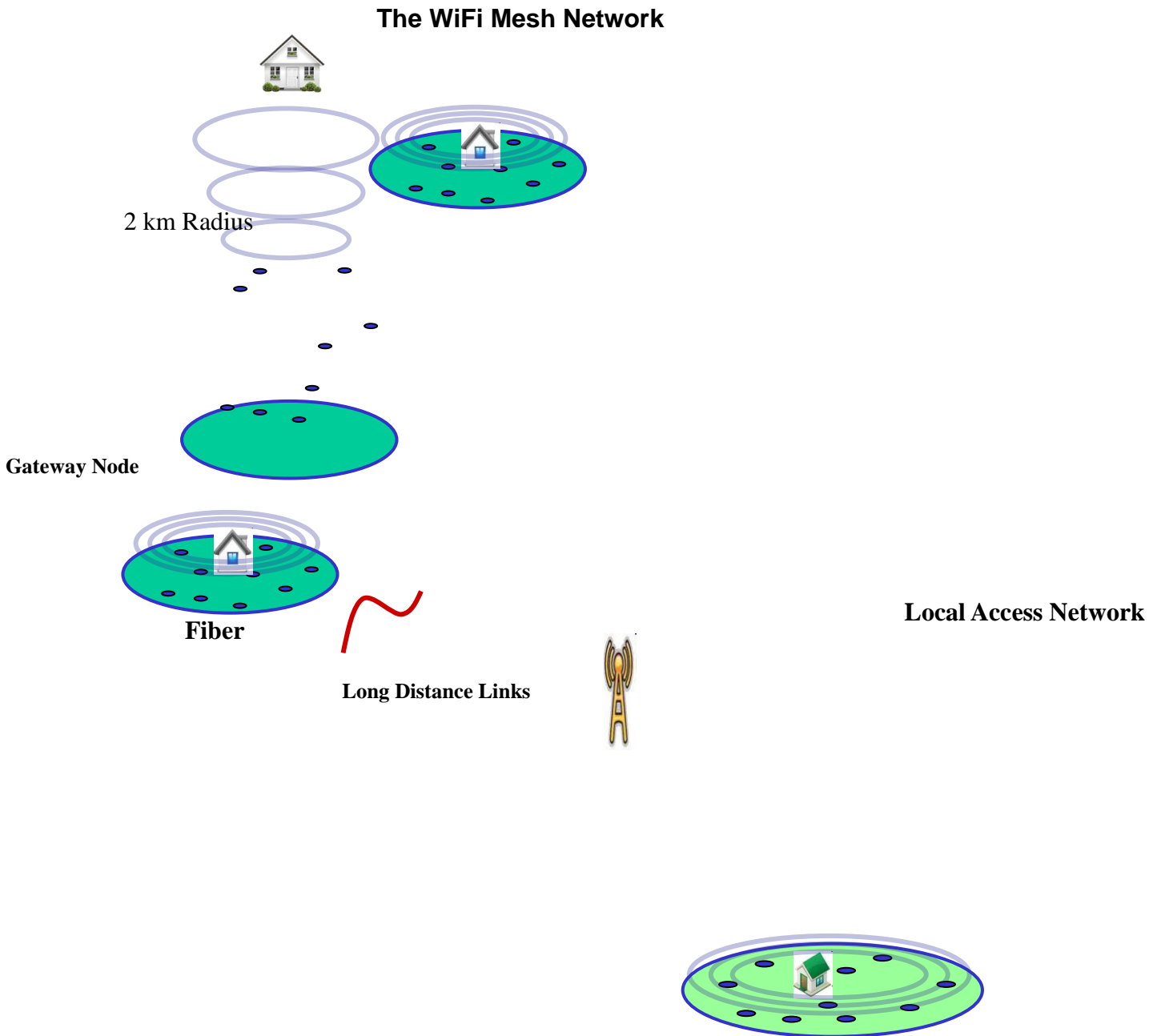
The Approach

IIT Madras Telecom Centre of Excellence (TCOE) and IIT Bombay TCOE has done preliminary work and found protocol portable on the low cost WiFi platform to make wireless mesh with TDMA protocol using existing WiFi integrated chips. The TDMA based approach is necessary to provide good performance on such networks. It optimizes Bandwidth usage and guarantees quality of service (QOS) to provide guaranteed high speed data delivery. It uses beam forming with 802.11n chipsets to cover 2 Km radius.

The Access point has following features which makes it a very attractive solution

- Self deployable on window or pillar due to compact form factor
- Solar Powered since the power consumption is very low.

The access point has two ports, one port can connect to the WiFi port of Aakash and the other port has modified TDMA MAC protocol to connect to the gateway node which uses Fiber as backbone for the traffic.



The Access network consists of wireless access points which are meshed to provide effective data transmission to the gateway node which has Fiber backbone.

Since this network requires minimal efforts for deployment and maintenance, a “sustainable franchise model” can be worked out by a village Franchise. The connectivity can be provided at a very nominal cost of Rs 10 per month for students.

Time & cost of the Project

Duration of this project: 2 years

Participation: TCOE IIT Madras and TCOE IIT Bombay

TCOE IITM and TCOE IIT Bombay require Rs. 2 Crores (for the 2 years project duration)

	First Year		Second Year		Total	
	IITM	IITB	IITM	IITB	IITM	IITB
Human Resources	25	25	30	25	55	50
Travel and Institute overhead	4	4	5	6	9	10
Hardware Platform and Test bed equipments	18		8		26	
Software and Test tools		15		15		30
Field Trials			10	10	10	10
Total					100	100

Note: All the Figures are in Lakhs

The SC's Observations:

The PAB in its 23rd meeting held on 28 Feb. 2012 approved this project with funding of Rs. 2crore, one crore each to TCOE, IIT Madras and TCOE, IIT Bombay. 30% of the sanctioned amount, namely Rs. 60 lakh, has been paid to the Pls. The current presentation is for the release of Rs. 50 lakh to IIT Bombay.

Objective of this project. Fibre reaches almost every village in India, there is an urgent need to provide cost effective solution for the last mile rural access to enhance rural education, healthcare and IT services. Effective outdoor wifi solution using license exempt bands. Mesh network is used for wifi, so tall towers are not required. It is also easy to install. Time slots and scheduling is done. IIT Madras is doing the hardware work. IIT Madras is developing MAC level software.

Implementation of TDMA based LiTMAC protocol for WiFi-PHY based mesh network: Modifications to open source ath9k driver. Testing and bug fixing. Stable running of code. Ported the software on the low cost Ubiquiti bullet M2HP platform. Testing the solution in lab setting and test deployment.

There was a discussion on this solution vs. C-DoT's technology: C-DoT's solution for point to point WiFi uses standard commercially available off-the-shelf hardware. Such solutions have been deployed by many operators also. However, all such solutions work only in point to point scenario and also incur expensive tower cost.

While solution developed in this project also currently uses commercially available hardware, instead of using standard WiFi protocol, it employs a novel Time Division Multiple Access (TDMA) based Media Access Control (MAC) protocol along with link scheduling algorithm. This MAC developed by this project team enables them to form mesh and multi-hop based links. Mesh and multi-hop mode of operations is also expected to reduce the cost of deployment.

The PRSG has recommended the release of Rs. 50 lakhs to IIT Bombay.

The SC's Recommendations:

1. The SC recommends the release of Rs. 50 lakh to IIT Bombay.
2. Field trials, which are one of the important deliverables of this project, have to be expedited.
3. The licensing method of this technology has to be discussed.

5. Creation of an Expert Database, VIDWAN.

PI: Mr. P. Kannan, Yatrik Patel, Abhishek Kumar, INFLIBNET

Institute: INFLIBNET

Control no.: KOT1411201313071

Background:

1. Objective

The basic objectives of the VIDWAN: An Expert Database and National Researchers Network are as follows:

- Create a database of Indian experts in all subjects' disciplines with detailed profile information
- Facilitate to enhance research momentum and research productivity in the country.
- Facilitate Govt. agency, policy makers, funding agency to identify expert available in all the discipline to evaluate the project proposal
- Establish communication directly with the experts who possess the expertise needed by users
- Identify peer reviewers for articles and research proposals
- To create information exchanges and networking opportunities among scientists

2. Methodology

Methodology proposed to be used for expert database would be as follows:

- Update existing database i.e. expert profiles with their updated information as well as additional relevant information
- Convert all data from relational database management system (RDMS) to XML format for semantic view
- Invite or add experts profile through following methods
 - a) **By Nomination:** written request to academic institution, R&D organisation, Global INK, Overseas Associations of Indian Origin, PanIIT and Alumni Association of Academic Institution to nominate experts from their organisation
 - b) **By Invitation:** invite national and international awardees, citation laureates, fellows of national level academies and societies to register in the VIDWAN database
 - c) **By Voluntary: registration of expert from academic institutions and R&D organisations.**

- Project team will authenticate and validate registered experts profile as per predefined eligibility criteria .
- Regular communication with experts to update their profile.

3. Deliverables yearwise and its possible contribution to major objectives of mission

Creation of Research Network database with Analytical capabilities and spatial mapping
 Convert the existing profile data into RDF/XML format and integrate into semantic software
 Update publication data of 11,500 profiles from external databases to the VIDWAN database
 Promote the expert database system to reach out academic and R&D organisation
 Continue inputting expert profiles through invitation, nomination and voluntary registration.

One Years

Two months

Two months (on-going process)

Throughout the year

One year (on-going)

4. Time schedule

A detailed time schedule is given in the proposal.

5. Permanent Assets to be Procured from the Project with Estimated Cost

Total cost for a servers, workstation, pcs, printers and scanner: Rs. 12 lakh

6. Details of Financial Outlay in Year for Recurring and Non-recurring Funds 6.1. Recurring Expenses

6.1.1. Consumable, Travel, Miscellaneous

Items of Expenditure	Total Amount
Recurring	Rs in Lakhs
Consumables and Stationery + Miscellaneous	1.00
Travel	4.00
Promotional Activity	3.00
Printing of Brochures & Pamphlets	3.00
Hardware Maintenance Cost @10% of 12	1.20
Total	12.20

6.1.2. Manpower (Contract)

Designation	Numbers	Total Amount Rs in Lakhs Per Annum
Project Officer	1	3.00
Project Associate	3	5.50
Project Assistant	3	4.50
Total		13.00

7. Management of Deliverables & IPR etc.

The Database will be developed on the basis of open source semantic software and the data provided by the respective institution and the expert profile will be openly made available for the benefit of research community and the funding agency.

8. Justification of the Projection and its Contribution towards Mission Objectives

It is complicated as well as difficult task to find out experts for guiding, research, project proposals and review panels. Various national level academies developed database of their members/fellows in specific subject areas such as basic science, agricultural science, medical science, social science and engineering technology, etc. These databases provide information about the expert who are members of these societies / academies in the respective discipline. Major challenges for these databases are out-dated information about affiliation, project handled and peer-reviewed article information, etc.

The VIDWAN: An Expert Database and National Researchers Network will be developed based on authentic information from the authorised institutions / organisations / academic societies bibliographic information of scholarly publication from the unique researcher ID created by citation

indices like ORCID, Web of Science, and Scopus. Identifying correct expert for guidance, research proposal and review panel is extremely vital for the research community. There is a strong need to develop an expert database system which is based on authentic information and can be easily updated. The benefit of this database system are grouped as follows

Benefit to Experts / Scholars / Researchers community

- Find potential scholars with similar expertise
- Publicity of expertise to larger research community □ Linking to other databases and other resources

Benefit to the R&D Organisation and Academic Institution

- Find experts in a given research area / geographic area
- Improve faculty collaboration across organisations in India
- Identify institutional strength in a given subject area

Benefit to the Policy Makers and Funding Agency

- Identify experts for committees and expert panels
- Identify funding opportunities and associated experts
- Identify areas of intensive research activity
- Enhance the transparency of the process through which experts are invited to participate into its scientific activities

The SC's Observations:

There is no good database of experts. NIC has a database, but it has no interactive features, no facility to receive publications. UGC's database has personal details, but no publications. A few more databases, domain specific, are available.

The INFLIBNET Centre was asked to make a presentation on Expert database to Dr M Pallam Raju, Hon'ble Minister, HRD where-in the Centre was asked to propose development a full-fledged database incorporating features such as hyperlink to other databases (IndCat, Shodhganga) and integration with ORCID ID, Researcher ID, SCOPUS ID, Google Scholar ID, etc.

As per the suggestion of MHRD, INFLIBNET Centre, Gandhinagar has uploaded the project proposal for creation of "VIDWAN: Expert Database" on Sakshat Portal. The database would comprise information on experts available in India in different disciplines as well as experts and academicians of Indian origin working abroad. The country has more than 700 degree awarding institutions; 35,000 colleges and more than 4,000 research institutions. It does not have reliable source of information for experts available and country in various disciplines of teaching and researcher. The database proposes to be a comprehensive source of information for experts wherein the database would be populated by invitation, nomination as well as through voluntary submission of research profiles by experts. The database will store the data in RDF/XML, network of co-authors and networks of subject disciplines would be created automatically using semantic platforms like VIVO. The proposed project would be a trusted source of information for scientists and researchers to network with each other, for researcher and students to seek guidance in their research area for funding agencies and policy makers to find expert for evaluation and assessment.

Proposed approach: semantic, web based ontology driven database of profiles of scientists researchers and other faculty members working in academic inst., R&D inst. and abroad. Stakeholders: Research scholars at the individual level, institutions at their level and funding agencies. Large number of attributes of experts profiles are proposed to be collected at VIDWAN. Invitation to awardees, nomination by Presidents of educational academies, nomination by alumni associations, voluntary entry.

Open source software VIVO is proposed to be used. Advanced searches, browse, links with a lot of databases will be available. RDF XML database will be used. As it is a semantic database, some of the updating of records will be done automatically.

Subsequent to initial consultations with Mission Directorate, the PI has revised and reduced the budget projections considering the assumption that NMEICT would make NMEICT central server available for hosting the database. Revised budget for the project proposal, after reducing the cost for production server is Rs. 31.70 lakhs.

As the PI had given only the first year cost, the SC members asked for recurring cost, as this database has to be sustained at least during the life of NMEICT. Subsequently, the PI has given this information. The recurring costs for the second and third years will be Rs. 10 lakh and Rs. 11 lakh, respectively.

The SC's Recommendations:

The SC recommends this project, with a total cost of Rs. 31.70+10+11 = Rs. 52.70 lakh, for a period of three years.

6. Integrated e-Content Portal

PI: Dr. Jagdish Arora

Control No.: AEC141120131306

Inst: INFLIBNET Centre, Gandhinagar

The SC's Observations:

In the PAB meeting held on 21-11-2013, the members had observed that an integrated Portal for all NMEICT content may be created for students, as presently the Sakshat Portal contains a mix of administrative information as well as e-Content, and it's difficult to navigate the Sakshat Portal by students to access e-Content and Virtual Labs, etc. To address these issues, INFLIBNET was asked to write a project proposal.

Objectives of this project: Many of the projects funded by NMEICT do not have a web presence. The current proposal is to create a web portal to integrate all the content developed by the Mission and to make it a one stop portal. They had proposed Rs. 117 lakh as the budget for the first year.

Members pointed out that the repurposing of some websites may not be desirable. For example, the website of the Spoken Tutorial project has a lot of information, such as the sequence of learning, prerequisites, script, etc. NPTEL and Virtual Labs are other examples. Taking out the videos from these sites and hosting them in the proposed, common, website could reduce the effectiveness of learning, as all required information for learning cannot be recreated in the new, proposed, website. Duplicating an entire website is a wasteful exercise. The proposed website, however, can host the information of projects that do not have active websites of their own. It should give links to other active websites of the projects of NMEICT. They could also allow the users and the creators to add metadata.

The PI proposed budget only for the first year. They should maintain the webpage for at least during the duration of the Mission. The PI asked for Rs. 50 lakh for repurposing videos. The members felt that the PI should not take this task, but stay focused on making available what others have created. The members wanted as this website is meant for NMEICT projects, it should allow the Mission Officials to access information relating to the Mission funded projects.

The SC's Recommendations:

The SC recommends that the PI should incorporate the above suggestions and make a presentation to the SC again.

7. Creation of courseware e-content development for 17 & 50 subjects

PI: Prof. Rajbir Singh

Control no.: DE19111011541

Inst.: CEC and EMMRCs

Background:

1. Objective

The objectives of the proposed programme are to:

- Promote generation of e-Content in all subjects;
- Develop teachers' and experts' resources in e-Content creation;
- Make available the e-Content to teachers and students through various delivery modes for formal and non-formal education, for supplementing and complementing the process of teaching and learning in higher education;
- Develop partnerships between educational institutions and the IT industry for the continuous development of new content and methodology taking into account contemporary technology.

2. Methodology

3. Deliverables year wise and its possible contribution to major objectives of Mission.

The following content shall be delivered in two phases. In Phase I, production of e-content courseware for 19 subjects shall be produced and under Phase II, production of e-content courseware for additional 68 subjects shall be undertaken.

- Production of e-Content Modules suitable for use in PC and internet.
- To hold Academic, Production, Technical and Research workshops for successful development, up-gradation and evaluation of the objectives of the project.

4. Time schedule (Year-wise)

Progress & Expected e-content Production (using Four Quadrant Approach) by CEC & its Media Centre under NME-ICT MHRD Project

4.1 Subjects under Phase-I

S. No.	e-content production for UG Subjects	Name of Media Centre	Tentative No. of Progs. to be prod.	Progs. Produced till 30/09/2013
1.	Mathematics	Calicut	530	382
2.	Physics	Pune	370	51
3.	Chemistry	Roorkee	500	91
4.	Botany	Srinagar	300	276
5.	Zoology	Ahmedabad	300	98
6.	Anthropology (G+H)	Manipur	450	194
7.	History	Kolkata	500	356
8.	Economics	Osmania	175	182
9.	Business Management	Osmania	225	08

S. No.	e-content production for UG Subjects	Name of Media Centre	Tentative No. of Progs. to be prod.	Progs. Produced till 30/09/2013
10.	Commerce	Jodhpur	300	635
11	English Language & Literature (H)	EFLU, Hyderabad	400	340
12	Geography	Mysore	650	196
13.	Geology	Sagar	400	58
14.	Computer Science	Chennai	300	188
15.	Communication & Journalism	Jamia	300	204
16	Environmental Science	Indore	150	75
17.	Hindi Lang.& Literature	Indore	200	317
18.	Sociology	Madurai	350	169
19.	Performing Arts	Patiala	350	219
	19 UG SUBJECTS		6750	4039

Subject completed under Phase – I

S.No.	Subject Name	No of Modules produced
1.	History	356
2.	Botany	276
3.	Anthropology	194
4.	English Language	131
5.	Hindi Language	124
6.	Environmental Science	75

4.2 Subjects under Phase – II

S.No.	SUBJECTS covered in 2 nd Phase	Tentative No. of Progs. to be prod.	Progs. Produced till 30/09/2013
1	B.A. (Hons) Urdu	355	08
2	B.Sc. (Hons) Food Technology	355	15
3	B.A. LLB	355	96
4	B. Pharmacy	355	--
5	B.A. (Hons) Music (Ravindra Sangeet)	355	--
6	B.A. (Hons) Political Science	355	--
7	B.Sc. (Hons) Microbiology	355	49
8	B. A. in Film Studies	355	--

S.No.	SUBJECTS covered in 2 nd Phase	Tentative No. of Progs. to be prod.	Progs. Produced till 30/09/2013
9	B. A. Vocational Studies (Book Publishing)	355	--
10	B. A. Vocational Studies (Mass Communication Video Production)	355	47
11	B.A. Psychology	355	141
12	B. A. (Foreign Language) French & Spanish	355	--
13	B.Ed. (English)	355	--
14	B.Sc. (Hons) Home Science	355	--
15	B.Sc. Analytical Methods in Chem & Bio-Chem	355	--
16	B.A. Management & Marketing of Insurance	355	101
17	B.A. Marketing Management & Retail Business	355	121
18	B.Sc. (Hons) Electronics	355	38
19	B.Sc. Agriculture	355	13
20	B.A. (Hons) Hindi Journalism	355	--
21	B.B.S.	355	17
22	Bachelor of Fine Arts	355	17
23	B.A. (Hons) Philosophy	355	66
24	B.Ed.	355	126
25	B.Lib.Sc.	355	10
26	BFA Painting Applied Art Sculpture /Epigraphy	355	28
27	BFA Painting Applied Multimedia	355	04
28	BTA (Bachelor for Theatre Arts)	355	38
29	B. Sc (Bio-Informatics)	355	02
30	B. A. Vocational Studies (Accounts)	355	02
31	B. A. Vocational Studies (Advertisement)	355	06
32	B. A. Vocational Studies (Computer)	355	16
33	B. A. Vocational Studies (Office Audit)	355	--
34	B. A. Vocational Studies (Photography)	355	28
35	B. Arch.	355	01
36	B.Sc. (Gen) Mathematical Science	355	24
37	B.Sc. (Hons) Polymer Science	355	16
38	B.Sc. Applied Physical Sciences (Electronics)	355	53
39	B.Sc. Applied Physical Sciences (Environmental Science)	355	37
40	B.Sc. Physics	355	32

S.No.	SUBJECTS covered in 2 nd Phase	Tentative No. of Progs. to be prod.	Progs. Produced till 30/09/2013
41	B.A. Human Rights	355	11
42	B.P.Ed.	355	--
43	B.Sc. Applied Physical Sciences (Computer Science)	355	136
44	B.A. Tourism	355	21
45	B.Sc. (Hons) Statistics	355	190
46	B.Sc. Agro-Chemical and Pest Control	355	--
47	B.Sc. Applied Life Science (Sericulture)	355	89
48	B. A. Vocational Studies in 22 Courses	355	--
49	B.A. (Hons) Music (Hindustani Classical)	355	30
50	B.A. Human Resource Management	355	53
51	B.A. Office Administration & Secretarial Practice	355	12
52	B.Sc. Applied Physical Sciences (Industrial Chemistry)	355	--
53	Bachelor of Applied Sciences (Hons) Instrumentation	355	--
54	B.A. (Hons) Social Work	355	11
55	B.Sc. (Hons) Bio-Chemistry	355	01
56	B.Sc. Physical Sciences	355	--
57	B. A. Public Administration	355	--
58	Criminology & Forensic Science	355	--
59	B.A. Yogic Science	355	--
60	B.A. (Hons) Music (Karnataki Sangeet)	355	--
61	B.Ed. (Special Education for Visually Impaired	355	06
62	B.El.Ed. (Elementary Education)	355	--
63	B.A. (Hons) Business Economics	355	05
64	B.A. (Hons) Sanskrit	355	--
65	B.Sc. Life Sciences	355	02
66	Text Editing & Manuscriptology	355	--
67	BA Social Welfare Administration	355	--
68	B.Sc Hons Bio-Medical Science (EFLU)	355	--
TOTAL No. Of SUBJECTS = 68		24140	1719

5. Details of permanent assets to be procured from the project with estimated cost.

6. Details of financial outlay in year wise for recurring and non-recurring funds.

S. No.	Item	Amount per year (Rs. in Lakhs)	Duration	Total Amount (Rs. in Lakhs)	Amount Per year (Rs. in Lakhs)	Duration (From date of Revision)	Total Amount (Rs. in Lakhs)
		Phase- I		Phase –II			
A. (i)	Development of Academic Content for e-learning	204.00	1Year	204.00	2534.7	2 Years	2546.70
A.(ii)	Contingency, travel Aprox. 5%	10.00	1 Year	10.00	422.45	2 Years	422.45
	Sub Total A	214.00		214.00	2957.15		2969.15
B. (i)	Recurring Expenses on account of engagement of Human Resource, material etc.	98.00	1 Year	98.00	844.9	2 Years	853.25
B. (ii)	Preview at Media Centre and CEC	42.00	1 Year	42.00	422.45	2 Years	422.45
	Sub Total B	140.00		140.00	1267.35		1275.70
C. (i)	ETV programme Production including pre-production, property, regarding, Music composition, post production,				2511.25	2 Years	2511.25
C (ii)	Honorarium to PI, CO-PI and staff				422.45	2 Years	422.45
C (iii)	Institutional overhead on Electricity, Water, Maintenance, consumable etc.				422.45	2 Years	422.45
	Sub Total C				3356.15		3356.15
	TOTAL A + B + C	354.00		354.00	7580.65		7601.00

The SC's Observations:

PAB approved a sanction of Rs. 18.5 crore to this project in its 18th meeting, held on 24 Jan. 2011. Rs. 12 crore has been released so far. The current presentation is for the release of 4.65 crore. The progress in the project is good. The PRSG has recommended the release of funds.

The SC's Recommendations:

1. The SC recommends the release of Rs. 4.34 crore.
2. The balance money of 10% of the sanctioned amount can be released after the completion of the project, as per rules.

8. Creation of courseware e-content development for 17 & 50 subjects under Phase-I and Phase-II

PI: Prof. Rajbir Singh

Control No. DE-19111011541 Inst. CEC

Background:

The approach

The present project has been prepared by the C-DIT (Centre for Development of Imaging Technology) to develop a sequenced series of multimedia courses for the use of graduate students of Indian Universities, with the help of subjects experts whetted by educational - cum - media experts.

The fact that the material is developed in **six select subjects** by a group of top experts in the concerned subjects and educational experts specialising in media content development is bound to help the intending student community to enrich their learning in the basic conceptual- operational areas of the related discipline.

The learning units when put into the website will help the would-be learners to ensure their learning of the subject, irrespective of the particular curricula adopted by their universities. The lesson units will be developed by selecting what are defined as 'generalised learning areas' which will meet the needs of any university curricula, and help them to become better learners who can approach their select subjects with greater ease and confidence and enrich their conventional learning needs prescribed by their universities.

The multimedia approach to learning (especially when prepared by experts using the accepted principles of educational technology) is known to be several times more effective than the conventional lectures/chalk- and- talk presentations which are useful only for achieving a peripheral 'knowledge- recall' type of learning.

The material with will be accessible to a very large number of students in universities, the experts in this team will also be intervening with such students for giving further explanations whenever needed through this website/portal. The courses will be planned by connecting the curriculum with the top centres in higher education like the London School of Economics / Universities like Oxford, Cambridge, London, Harvard, Columbia, Stanford etc , depending upon the subject to be covered.

The content presented in the website will be revised and sophisticated from time to time and improved to introduce new content/ to revise the presentation format of the existing content.

Learners who register for this form of upgraded learning can use this course material free in the way they think fit. But for those who want to register for a full course in their subject formally, special arrangements will be made to evaluate them and give them the C-DIT certificate, free of cost.

Every completed course will be followed by appropriate tests (in the form of quizzes, seminar interactions, assignments, small projects etc) to further strengthen their levels of learning and develop additional competencies like problem solving, experimentation, contact with top world universities/ centres of research etc, through C-DIT intervention .

Course and Course Structure

The course and course structure for every subject will be put into the net in the form of lesson units. Instructional strategy used will help learners to become independent 'knowledge constructors rather than become 'knowledge consumers'.

Additional/supplementary services in the form of help for developing small- scale projects, publication of research in international journals, help in contacting international centres of research etc. will also be provided to the learners who require such additional help.

Subject/ Curriculum areas selected for the course.

The following six areas are proposed to be included in the project:

1. Physical Science
2. Life Science
3. Philosophy
4. Politics
5. Commerce
6. Malayalam

Units / topics

Under each of the above areas, **twenty five relevant topics** will be produced as e-content. A total of **150 topics** will be ready for learners on completion of the project i.e.: in two years time. All the e-content of the first five subjects thus produced will be converted to the regional language (Malayalam) and made available during this period. The total project outlay will be 13.625 crore.

How this will reach the learners

The e-content will be hosted in a web portal with link from the Sakshat portal. It will be provided with full time access with facility for feedback.

Special relevance of this course

The course will function as an enrichment curriculum, useful for all graduate students in the discipline in any of the recognized Indian Universities.

The course will certainly help the superior learners in our universities to have access to superior learning, comparable with what is given by the world-class top universities of the world. The learning experience will provide proper indications of how to make their learning world-class even when they are working in the conventional universities, adopting the relatively inferior curricula used by them.

The new approach will help even students in the conventional universities to catch up with world trends in learning their selected subject and using the advanced strategies which will ensure deep level educational outcomes of the kind expected by the advanced educational systems of the world.

The e-Content for graduate students

As envisioned in the mission document of National Mission on Education through Information and Communication Technology (NMETICT) there is an increasing need to create a good learning atmosphere to include larger population into the process of acquiring knowledge at all levels. The intention to disseminate knowledge through the now popular medium of web technologies is a welcome new development where the e- content which is primarily in the digital format can be made to create new learning experiences by making it interactive using multimedia in the form of texts, pictures, videos, animations and sound. There is also greater scope in presenting topics in the form of simulations or even interesting games where the learner can take part actively in the learning process.

The C-DIT (Centre for Development of Imaging Technology under the Govt. of Kerala) has been engaged in producing interactive learning resources for the last ten years and has been involved in science and development communication since 1989. The C-DIT was an authorised video production facility for the NCSTC. 'Sastrakauthukam' a science video magazine produced by C-DIT through the association with NCSTC, was telecast through Doordarsan Kendra, Thiruvananthapuram for more than the past ten years. In 2002 when IT was introduced as a subject in the 8th Standard State syllabus in Kerala, C-DIT produced an interactive multimedia CD for school children. The multimedia product was used in more than 3500 Govt. Schools. In the higher education arena, we had produced an interactive product named 'VEELS' (Virtual Electrical Engineering Laboratory Software), which contained ten multimedia experiments, very similar to some of the interactive experiments made for the Sakshat portal by other agencies.

The e-content has the innate ability to present itself before the learner at any time and also all the content presented under a subject is available for cross reference and study. Taking special care for formulating a pattern for communicating the content without loss of any of the essential links between the presented matter and the way in which it is presented. This aspect can be achieved only with the participation teachers who have excelled in each area under consideration. C-DIT has ensured the services of a number of experienced and well versed Professors who can help us in developing the material proposed to be created. The total project outlay will be 13.625 crore as given below.

S.No.	Subjects	Number of Topics	Cost of production per topic (in lakhs)	Amount (in lakhs)
1	Physical Science	25	7	175
2	Life Science	25	7	175
3	Philosophy	25	7	175
4	Politics	25	7	175
5	Malayalam	25	7	175
6	Commerce	25	7	175
		Total		1050
7	Conversion of 125 topics to Malayalam (all except Malayalam) @ Rs.2.5 lakhs per topic			312.5
Grand total				1362.5
Rupees Thirteen Crore Sixty Two Lakhs and Fifty Thousand only				

This is a first level project which will be developed into a more comprehensive project to cover a large number of teaching subjects in colleges. C-DIT can work through the project to produce excellent e-content which can be catered to the end user, the learner through a web portal. We hope that a fruitful outcome can be borne out of association with NMETICT.

The SC's Observations:

CEC has offered to produce 30,885 one hour modules in 87 subjects at a cost of Rs. 35,000 per one hour module or equivalently, Rs. 14 lakh for a 40 hour course. The budget for this proposal is Rs. 108 crore. CEC has further agreed to reduce the per hour cost to Rs. 34,000.

The Rs. 14 lakh per 40 hour course is twice of what was approved in the first phase of the Mission. The whole discussion was centred around the justification for the increase. The CEC maintained that they could not complete the previously allotted courses in Rs. 7 lakh and that the actual expenses were much higher. They also argued that the cost of making NPTEL courses was also higher than Rs. 7 lakh per year.

The SC's Recommendations:

1. The decision to increase the cost of producing one hour of video lecture has to be done carefully, as it will affect several other projects also.
2. Cost audit by competent authorities may also be useful.

9. Consulting services for the establishment of MOOCs

PI: Mr. Sanjiv Mital, CEO-NISG
Inst.: NISG

The SC's Observations:

This proposal has been submitted based on an invitation by MHRD. NISG will give consultancy to carry out the following tasks:

- 1) Creation of a MOOCs platform and putting it to use
- 2) Delivery of courses, at least one each, from 40 carefully selected colleges
- 3) Conduct of online examinations
- 4) Establishment of digital repository for online certification.

NISG will identify agencies to implement the above said activities. The consultancy charges will be Rs. 65 lakh. In addition, there will be an implementation cost of Rs. 30 to 35 lakh per quarter. Suitable teams will be established/identified to carry out the implementation.

The SC's Recommendations:

The SC recommends that the deliverables have to be clearly identified and articulated in another meeting of the Standing Committee. The costing has to be worked out accordingly.

10. Methods and processes in the use of ICT in higher education

PI: Prof. Kannan Moudgalya
Inst.: IIT Bombay

Background:

1. Introduction

The objective of this proposal is to identify and understand successful methods and processes in the use of ICT in higher education, and to recommend methods of absorbing them. It is proposed to work with a few leaders in the use of ICT in education for this purpose.

It is proposed to collect the required information through published sources and also directly from the researchers/practitioners in the field in the identified universities. Surveys will also be undertaken, if required. It is proposed to complete this work in a period of 6-9 months.

2. Literature Review

In this section, we provide a brief literature review of the topic under discussion. Instead of waiting to produce greatest quality videos, one should go ahead and use instructional material even if they are only reasonably good [1]. The importance of Screencasts, the technology used to create Spoken Tutorials, for learning, is explained by Mosely [2]. Methods to use instructional material, such as Spoken Tutorial are well researched [3, 4, 5]. While Screencasts are useful to learn a new topic, Screenshots are more suitable to recall a topic [6]. Optimal length of videos for student engagement should be less than ten minutes [7]. Subtitles help students understand instructional material for our students, for whom English is a foreign language [8]. The need to reduce cognitive load and methods of creating multimedia instructional material to keep the cognitive load low are explained in these two classic papers [9, 10]. The role of social media in education has been well researched [11]. Large amounts of literature on all aspects of the use of ICT in higher education indeed exist and accessible through libraries, such as the one that exists at IIT Bombay.

3. Brief Description of the Project

One of the preliminary tasks of this project is to identify methods/activities that need to be considered in this study. A brief explanation of a few of the already identified topics is given below. These are not mutually exclusive and there can be substantial overlap between them.

Flip Classrooms: In this method, the role of classroom instruction and outside study get exchanged. The students study the required material in their in their personal space, such as their homes, hostel or office rooms, etc. They come to the classrooms for discussion and to get answers to their questions or to answer someone else's questions. Using this method, the PI has taught the postgraduate level course CL-692 Digital Control for four years at IIT Bombay.

Clicker Based Interactions: One of the validated methods of Education Technology is the use of Clickers to verify the understanding of students when a topic is taught in the class. Very often, there are gaps between what students understand and what the instructor thinks. If this mismatch is not corrected, there could be serious impediments in learning. The clicker based instant quizzing helps overcome this problem in a big way. The PI has successfully used this method in his undergraduate course CL-417 Process Control. This method has been used in many courses in IIT Bombay, including ongoing T10KT course on Engineering Mechanics.

Social Media: The social media, such as Facebook and Twitter have been used by many researchers around the world to improve the quality of learning. A large number of useful studies on these methods are available in the literature. These methods are especially useful for collaborative learning and content creation.

Simultaneous Education: This refers to the activity of several people from different geographical locations joining a lecture through videoconferencing and other such technologies. An example of this is IIT Bombay's T10KT (Train 10,000 Teachers) programme using A-VIEW. The QEEE of IIT Madras and the Ask a Question of IIT Bombay are other examples of this activity.

Asynchronous, Self, Workshops: This refers to creation of self learning material and using them in organised workshops for self study. The self learning nature will help conduct these workshops effectively also in places that do not have domain experts. The organisers of such work- shops can ensure that all required infrastructure is available. They can also enforce discipline and promote interaction amongst the participants.

Learning Management System, LMS: An LMS is an important component of any ICT based education. Using an LMS, an instructor can post the main and the associated instructional material for everyone to see and download. They can allow organised discussions on different topics of a course. Through an LMS, it is possible to offer group projects and to monitor the progress. One may even allow the students to create their web pages and to blog in them. Finally, one can use an LMS to administer exams. The official LMS of IIT Bombay has been the open source LMS for more than five years.

Instructional Material: This refers to the act of generating instructional material for ICT based learning. The instructional material may be in print form or in video form. It may be based on video recording in a classroom or on Screencast videos, such as Spoken Tutorials. This could also involve generation of electronic textbooks and their print form, either stand alone or to accompany classroom instructions.

Blended Learning: The use of any two or more educational methodologies gives rise to blended learning. One example combination is asynchronous education through Spoken Tutorials and the synchronous education through either in-class lectures or through a videoconferencing system. The phrase blended learning denotes all possible combinations.

Conduct of Exams: Using ICT to conduct exams is getting popular, because this is one way to test a large number of students. The popular exams conducted by AICTE, GATE and CEED are some examples of these. Although these exams mostly have multiple choice based question papers, other types of questioning, especially in the area of IT education is possible, as demonstrated by the Spoken Tutorials project. It is also possible to use LMS to randomise the questions that are administered from a database of questions.

The budget for this activity, expected to last for six months, is given below. All quantities are in Rs. lakh.

Three trips to Singapore (NUS) by four people each	12
Two trips to US universities by four people each	16
Ten trips between Indian institutions by four people each	12
Total	40

The staff salaries, in Rs. lakh, are given below:

Two managers, for six months	12
Two programmers, for six months	8
Two document writers, for six months	8
Secretarial support	2
Supplies, contingency	4
Total	34

The total budget is Rs. 74 lakh. The travel budget for the IIT Bombay's personnel alone is Rs. 10 lakh. The staff salary component for the staff members at IIT Bombay alone is Rs. 17 lakh. It is proposed to include a Central University and an Open University as partners for this project. It is also proposed to get in touch with two universities from the US.

4. Possible Outcomes

Identifying and understanding the best practices of each institution in using ICT for Higher Education will be one of the major outcomes of this project. There will be an attempt to also find out if there were any difficulties in implementing the successful methods. Methods to implement techniques suitable for Indian conditions will be suggested.

References

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The SC's Observations:

This proposal was submitted by the PI on the suggestion of members of Planning Commission and MHRD.

The objective of this proposal is to exchange best practices in the use of ICT in higher education between a few institutions/universities in India and a few overseas institutions. Final deliverables are what processes to implement, how to implement them, what to avoid and why.

It is proposed to identify an open university, a central university and possibly a state university in India. It is proposed to have National University of Singapore as one of the places to be visited. It is proposed to identify two US universities for this interaction.

The work involves travel between our institutions and visits to overseas partners. The material thus collected should be collated and converted into a report that has the information, as mentioned above.

The work is proposed to be completed in six months, at a total cost of Rs. 74 lakh. The travel cost is Rs. 40 lakh for the travels of the Indian delegates within India and to the Institutions abroad. The balance is for documentation.

The SC's Recommendations:

1. The SC pointed out that most of the information proposed to be collected through visits may be gathered without much travel.
2. The exact deliverables have to be quantified and presented to the SC again.

11. Proposal for consultancy for conversion of NPTEL video in Indian languages

PI: Dr. S. A. Shajahan, Registrar, CDIT

Inst.: Centre for development of imaging technology, Trivandrum

The SC's Observations:

This proposal has been made on the premise that if the NPTEL videos are made accessible to the students weak in English, the investments made in NPTEL will be better put to use. As the complete voice over may be expensive, it is proposed to stream the transcript of the speech in local languages, along with the English audio. They have proposed to do this for Malayalam. To carry out this activity for 6,000 hours of NPTEL videos, they estimate that it will cost Rs. 618.3 lakhs. They want a consultancy fee of 10% of this amount, namely Rs. 61.83 lakh.

The SC's Recommendations:

1. The efficacy of this method of using English audio with streaming Malayalam script should be established for NPTEL videos.
2. The estimated cost of this work should be compared with that of language conversion projects that are already funded by NMEICT.
3. The consultancy cost of 10% is too high and it may be reduced to 5%.

12. Information to the Mission Secretariat

The Mission Secretariat should send give a link of the approved Minutes to all PIs whose projects were presented in the said Meeting.

13. Make a presentation based on the 10 point agenda

The Mission Director recommended that the presentation format be aligned with the ten point due diligence appraisal format required by the PAB. EdCIL/Mission Secretariat is therefore requested to circulate this format to all PIs and ask them to come prepared with a presentation in this format for consideration of the SC.

ATTENDANCE OF THE STANDING COMMITTEE UNDER NATIONAL MISSION ON EDUCATION THROUGH INFORMATION AND COMMUNICATION TECHNOLOGY.

Date/Time : 6th December, 2013 at 11.00 A.M.

Venue : Civil Services Officers' Institute, Vinay Marg, Chanakyapuri, New Delhi.

S. No.	Name, Designation & Address	Email/Phone/Mobile No.
1.	Sh. Praveen Prakash, JS (TEL) & Mission Director (NMEICT), MHRD, New Delhi	Email: praveen.prakash@sakshat.ac.in
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Attendance of Standing Committee Members from December, 2012 to November, 2013

S. No.	Name	Dec, 12	Jan, 13	Feb, 13	Mar, 13	April,13	May,13	June,13	July,13	Aug,13	Sept, 13	Oct,13	Nov,13	Total Mtgs
		No meeting was held	10	No meeting was held	16	No meeting was held	No meeting was held	No meeting was held	No meeting was held	No meeting was held	19	No meeting was held	No meeting was held	3
1	Mr. Pradeep Varma	-	Y	-	Y	-	-	-	-	-	Y	-	-	3
2	Mr. Pradeep Kaul	-	Y	-	-	-	-	-	-	-	Y	-	-	2
3	Prof. Uma Kanjilal	-	Y	-	-	-	-	-	-	-	Y	-	-	2
4	Dr. S.B. Deshpande	-	Y	-	Y	-	-	-	-	-	-	-	-	2
5	Prof. C.G. Mahajan	-	Y	-	Y	-	-	-	-	-	Y	-	-	3
6	Prof. Kannan Moudgalaya	-	-	-	Y	-	-	-	-	-	Y	-	-	2
7	Dr. Jayashree Shinde	-	-	-	Y	-	-	-	-	-	Y	-	-	2
8	Dr. C.P. Srivastava	-	Y	-	Y	-	-	-	-	-	-	-	-	2
9	Prof. S.K. Singh	-	Y	-	Y	-	-	-	-	-	-	-	-	2
10	Dr. Y. N. Singh	-	-	-	Y	-	-	-	-	-	Y	-	-	2
11	Prof. Kamal Bijlani (Rep. of Amrita Univ.)	-	-	-	-	-	-	-	-	-	Y	-	-	1
12	Dr. D.K. Singh	-	Y	-	-	-	-	-	-	-	-	-	-	1
13	Prof. K. Mangala Sunder	-	-	-	-	-	-	-	-	-	Y	-	-	1
14	Prof. H.C. Chaudhary	-	-	-	Y	-	-	-	-	-	-	-	-	1
15	Prof. Dipak Singh (DIT)	-	Y	-	Y	-	-	-	-	-	-	-	-	2
16	Prof. Karmeshu	-	-	-	Y	-	-	-	-	-	Y	-	-	2
17	Prof. A. K. Tripathi	-	-	-	-	-	-	-	-	-	-	-	-	0
18	Dr. B.P. Singh	-	-	-	-	-	-	-	-	-	-	-	-	0
19	Zahid H. Khan	-	-	-	-	-	-	-	-	-	Y	-	-	1
20	Prof. R.C. Panda	-	-	-	-	-	-	-	-	-	-	-	-	0
21	Sh. A.K. Arora	-	-	-	-	-	-	-	-	-	-	-	-	0
22	Shri D.K. Kalra (Rep of AK Arora)	-	-	-	-	-	-	-	-	-	-	-	-	0
23	Dr. P. Nandini	-	-	-	-	-	-	-	-	-	-	-	-	0
24	Dr. P. Ramanujan	-	-	-	-	-	-	-	-	-	-	-	-	0
25	Dr. Jagdish Arora	-	-	-	-	-	-	-	-	-	-	-	-	0
26	Prof.. Rajanish Dass	-	-	-	-	-	-	-	-	-	-	-	-	0
27	Dr. S. Kazim Naqvi	-	-	-	-	-	-	-	-	-	-	-	-	0
28	Dr. Rajeshwari R.M.	-	-	-	-	-	-	-	-	-	-	-	-	0
29	Dr. V.P. Srivastava	-	-	-	-	-	-	-	-	-	-	-	-	0
30	Dr. A.P. Tiwari	-	-	-	-	-	-	-	-	-	-	-	-	0
31	Shri Raghuraman	-	-	-	-	-	-	-	-	-	-	-	-	0

Attendance of Standing Committee Members from December, 2012 to November, 2013

S. No.	Name	Dec, 12	Jan, 13	Feb, 13	Mar, 13	April,13	May,13	June,13	July,13	Aug,13	Sept, 13	Oct,13	Nov,13	Total Mtgs
		No meeting was held	10	No meeting was held	16	No meeting was held	No meeting was held	No meeting was held	No meeting was held	No meeting was held	19	No meeting was held	No meeting was held	3
32	Dr. R.K. Singh	-	-	-	-	-	-	-	-	-	-	-	-	0
33	Ms. Geeta Varshneya	-	-	-	-	-	-	-	-	-	-	-	-	0
34	Ms. Jayashree Srivastava	-	-	-	-	-	-	-	-	-	-	-	-	0
35	Ms. Ambika Gulati	-	-	-	-	-	-	-	-	-	-	-	-	0
36	Ms. Meena Goel	-	-	-	-	-	-	-	-	-	-	-	-	0
37	Ms. Vasudha Kamat	-	-	-	-	-	-	-	-	-	-	-	-	0
38	Prof. N.K. Sehgal	-	-	-	-	-	-	-	-	-	-	-	-	0
39	Dr. K.P. Chinda	-	-	-	-	-	-	-	-	-	-	-	-	0
40	Prof. Govindan Rangarajan	-	-	-	-	-	-	-	-	-	-	-	-	0
41	Prof. A.K.Bakhshi	-	-	-	-	-	-	-	-	-	-	-	-	0
42	Nupur Prakash Rep of Prof. Dilip K Bandopadhyay	-	-	-	-	-	-	-	-	-	-	-	-	0
43	Prof. S.C.Saxena	-	-	-	-	-	-	-	-	-	-	-	-	0
44	Dr. G.P.Srivastava	-	-	-	-	-	-	-	-	-	-	-	-	0
45	Prof. N. BalaKrishanan	-	-	-	-	-	-	-	-	-	-	-	-	0
46	Prof. S. V. Raghvan	-	-	-	-	-	-	-	-	-	-	-	-	0
47	Prof. Pami Dua	-	-	-	-	-	-	-	-	-	-	-	-	0
48	Mr. Rajiv Sinha	-	-	-	-	-	-	-	-	-	-	-	-	0
49	Mr. R.S.Powar	-	-	-	-	-	-	-	-	-	-	-	-	0
50	Prof. Kushal Sen	-	-	-	-	-	-	-	-	-	-	-	-	0
51	Prof. Prasanna Venkatraman	-	-	-	-	-	-	-	-	-	-	-	-	0
52	Prof. Dhananjay Bhattacharya	-	-	-	-	-	-	-	-	-	-	-	-	0
53	Dr. Krishnashree Rep. of Dr. P. Venkat Rangan	-	-	-	-	-	-	-	-	-	-	-	-	0
54	Prof. Kalyan K. Dutta	-	-	-	-	-	-	-	-	-	-	-	-	0
55	Prof. Rajneesh Das	-	-	-	-	-	-	-	-	-	-	-	-	0
56	Shri Amol Newaskar	-	-	-	-	-	-	-	-	-	-	-	-	0
57	Shri K. C. Pandita	-	-	-	-	-	-	-	-	-	-	-	-	0
58	Dr. Sadanand More	-	-	-	-	-	-	-	-	-	-	-	-	0