Higher education creates professionals, thinkers, future teachers, researchers, economists and knowledge workers, who, besides inhabiting knowledge societies, can be instrumental in creating them. Higher education also has a direct correlation with GDP, health indicators, and development (World Bank, 2002). The current scenario of higher education is marked by various problems of access, equity, and quality. The ills that afflict higher education in the country relate to outdated and rigid curricula, large number of vacant faculty positions, poor faculty quality in terms of both commitment and competence, poor systemic enablers for student mobility, absence of research, minimal and poor extension work, low levels of skill development, low employability, flawed and rigid system of examination, poor methods of teaching and learning, presence of strong vested interests, poor management and educational services, and problems of governance in the ecosystem of higher education. As we grapple with all these problems, Information and Communications Technology (ICT) comes through as a possible silver bullet offering a lot of promise and prospects. With the possibilities of ICT-driven access to quality education, 24X7 availability of educational resources, penetration of Internet, and the now available mobile access to these resources, a fresh perspective on the approach to solving the problems afflicting higher education becomes possible.

Simultaneously, in the global scenario, there are countries like the US, Japan, South Korea, and the UK with much better governance, access, and quality of higher education. However, these systems are also fraught with certain basic problems and a mere imitation or replication of these systems in our country may not be the real solution for our problems. The remedy for various ills in the education system may lie in an integral education which would simultaneously nourish the body, mind and intellect, and the spiritual dimension of an individual. Agencies like the UNESCO and the Government of UK have accepted ‘learning to know, learning to do, learning to live together and learning to be’ as the four pillars of education and Spirituality as one of its important components. This would facilitate students by preparing them to receive that knowledge through which all other kinds of knowledge can be known, as postulated in the Chandogya Upanishad. This is particularly of relevance in today’s world of internet and globalization, marked by continuous, exponential explosion of knowledge.
The world over, experiments on open education resources (OER) have demonstrated the dramatic effect of technology-enhanced education (Iiyoshi and Kumar, 2008). These include the Open Course Ware (OCW) initiative of Massachusetts Institute of Technology (MIT) and the Open Learning Initiative (OLI) of Carnegie Mellon University (CMU). Now, a ‘service oriented architecture’, is, perhaps, needed, which would enable such ‘loosely coupled’ services and open education resources built across various platforms to be found, bound, and invoked by different users across various locations and time zones. The ‘Multiversity’ as developed in this paper is a conceptual model that leverages ICT to address the human resources development problems that plague the country.

There has been a variety of Open Education Resources and Services (OERS) efforts across the world to introduce the paradigm of ‘boundarylessness’. Appreciating this fact, this paper has examined the need to tie all these efforts together in a structured format with tight scaffolding to make them sustainable and viable, and open the benefits of all these transformational efforts for easy use by students. The scaffolding will have to neatly and systematically bind the efforts in individual colleges, universities, and institutions that currently function as ‘silos’. These offerings that are so diverse in terms of space, disciplines, methodologies, and contexts can be systematically organized into a comprehensive system to cover all the phases from enrolment to certification. These ideas described in this paper have been presented to stakeholders like students and university teachers as part of a larger research project, and the Multiversity Model presented here draws on the feedback from these stakeholders. The paper is addressed to policy makers and managers in higher education. Our hope is that it will trigger some reflection on the need for fresh perspectives on human capital formation and management of higher education in India.

THE MULTIVERSITY MODEL

The vision underpinning the Multiversity Model is transformed access, quality, and equity, ushering in a new system of higher education based on both conventional and open education resources and services (OERS), which would strive to cultivate professional and human excellence. The mission is to build a new educational architecture of a multiversity; to facilitate the sustainable sharing and extensive usage of diverse OERS through the multiversity; and create and nurture an appropriate ambiance conducive to the creation of a huge pool of high quality, humane professionals at the ground level.

The model has five main components: e-Gyan portal, National Knowledge Network (NKN), National Programmes (NP), Member Higher Education Institutions (MHEI), and Halls of Culture and Training (HCT).

1. The e-Gyan Portal

The e-Gyan portal is the heart of the model. The gateway or portal would, in turn, collate and make available open education resources and services (OERS) from various ‘constituent’ MHEIs. The e-Gyan portal, a virtual entity, would have a full-fledged presence on the web with an effective back office to carry out all the work that is required to realize the OERS offerings. The possibility of including the set of courses that are offered by not just one university but a number of universities and institutions can really multiply the choices available to our population. To address the diversity among needs, a collaborative network of many traditional brick-and-mortar universities, which can collectively make all their offerings in the form of OER through e-Gyan, can be created.

Thus the different nuances and contexts of a course of Management, Psychology or Chemical Engineering, for example, as offered by Patna University or Pune University can now be available. This becomes the Multiversity, instead of a University as students can now choose courses from different universities. This becomes possible when the OER of different Universities and Colleges are all loosely coupled and made available through a common portal or e-Gyan for students from different geographical areas and backgrounds. They can appear for the examination and even get a degree or certificate based on the credits earned and sewn together as per the prescribed or allowed distribution requirement as given by the qualification framework to be set or prescribed by the NKN.

2. National Knowledge Network (NKN)

The National Knowledge Network (NKN) is proposed as a body constituted by the government and is responsible for the overall smooth running of the Multiversity. In turn, it constitutes the task forces and determines their
roles and responsibilities. To ensure that it does not suffer from the dysfunction that afflicts many such Government bodies, it comprises seven members drawn from diverse backgrounds – three from the top academics of the country, two industry leaders and a member each of the civil society and judiciary – selected by the Prime Minister, Leader of Opposition, Education Minister, and the Chief Justice of India.

The NKN would have a clear mandate and specified deliverables. The mechanism for Academic and Administrative Audit (AAA) – discussed later in the paper – will give it specific action points for course correction. It can leverage its strength to standardize, pool, and orchestrate all such offerings by various Universities in the country. The NKN will be able to draw on the authority it has to put in place sturdy mechanisms for standards, inter-operability, consistency, sustainability, regulation along various dimensions, grant of degrees, diplomas, and certificates, spawning or initiating an idea, and credibility.

**Roles, Powers and Functions of NKN**

NKN will be empowered and made responsible for the overall implementation and running of the projects. It would operate directly through task forces or organizations selected for Public-Private Participation (PPP), which would be suitably authorized and empowered. The Technology Task Force (TTF) constituted by NKN would in turn formulate, roll out, and maintain the basic service-oriented architecture (SOA) plan (Annexure 1) comprising OER standards, deliverables, performance norms, and processes for fulfilling the objectives of the Multiversity. NKN would ensure smooth co-ordination and conflict resolution across the different task forces. Broadly, NKN’s roles would include the following:

- Address all issues of technology choices, decisions, and standards by constituting a Technology Task Force
- Constitute task forces for the seven different national programmes (described later)
- Formulate and publish the Common Indian Qualification Framework of Reference (CIQFR)
- Put in place a Grievance Redressal and Monitoring Mechanism for the Multiversity
- Design and monitor the setting up of the Halls of Culture and Training (HCT)
- Oversee fund allocation and appropriation for the constituent components of the Multiversity, including the seven National Programmes, their co-ordination, monitoring, and institution of awards and rewards.
- Act as the final authority in case of any dispute or disagreement.

### 3. National Programmes

Seven National Programmes covering areas ranging from content provision, research, extension, examination, telecast of live lectures, teacher readiness, and educational governance, will be rolled out by the Multiversity (Table 1).²

<table>
<thead>
<tr>
<th>Table 1: National Programmes with Corresponding Areas</th>
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<tbody>
<tr>
<td>Content creation</td>
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<tr>
<td>Teacher empanelment, assessment and training</td>
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<tr>
<td>Research</td>
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<tr>
<td>Extension</td>
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<tr>
<td>Online on-demand examination</td>
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<tr>
<td>Streaming of live lectures</td>
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<tr>
<td>Governance and educational services</td>
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</table>

Each of the seven National Programmes will have to perform two generic kinds of roles:

1. Creation of content, norms, processes, and protocols, etc., for various programmes
2. Invoking this content and serving or deploying the content or resources.

These programmes are of a complementary and collaborative nature and are not meant to be conflictual; they are neatly held together in the Multiversity and accessed through the portal, e-Gyan.

¹ Of services and various features, including equivalence of degrees and certification, across various national and international bodies like equivalence with UNESCO, etc.

² The programmes are based on the needs of students identified in a study spanning several engineering colleges in the Indian state of Gujarat (Ravi, 2011; Ravi & Jani, 2011).
National Programme of Technology Enhanced Learning (NPTEL)

The current existing National Programme of Technology Enhanced Learning (NPTEL)\(^3\) can be extended to include courses of technical, science, and humanities disciplines. It encompasses content creation ranging from course objectives, learning outcomes, course outline, lesson plans to unit-wise lectures, class-wise, or week-wise lectures totalling to about forty hours of lectures, presentations, films, videos, text books, notes, projects, assignments, tests and practice questions, animations, films, simulated laboratory facilities, internet-based access of real laboratories, question banks, periodicity for syllabus updation, and provision of reference material in the form of a bibliography and ‘web’liography.

A task force for this work could be constituted with about five members representing academia related to technical and liberal subjects, industry, and the government to design and implement the entire programme. It would require an informed decision to select people with demonstrated leadership qualities, integrity, and academic excellence.

Given the linguistic diversity in our country, quality material in a number of languages would have to be gradually made available to the learners. The National Translation Mission \(^4\) could provide these translation services.

National Programme of Technology Enhanced Empanelment Assessment, and Training of Teachers (NPTEEATT)

The teaching training related programme, NPTEEATT, would address the capability building needs of teachers with their assessment and rating. This would also empanel teachers from the open market and facilitate the creation of a bank of teachers, both serving and non-serving, retired and fresh.

This programme would have a full-fledged faculty training calendar to roll out a series of training workshops which could have both online and face-to-face components followed by testing and assessment or rating of faculty, which should become an annual feature for all teachers in the country.

This programme would also empanel a pool of a thousand ‘Parivrajakas’ or visiting educational experts, designated as National Fellows of the National Knowledge Network. These could typically be people of great eminence and leadership from various fields ranging from Academics, Industry, Administration, Armed Forces and other sectors. Selected by a transparent, all-India process, they will be the ‘chief’ of each HCT for a minimum period of three years.

In addition, NPTEEATT would also select three thousand “Upa-Parivrajakas” or assistants to the Parivrajakas. These would be especially selected students from MHEIs, who choose to work at the HCTs for a period of one year, during which they can continue to study in the blended mode and also earn up to 25 per cent of the credits required for course completion by successfully performing the duties assigned to them. They would be designated as National Young Fellows of NKN.

Another three thousand young students of specified profile would be selected through a national level transparent, merit-based process for being online young tutors and mentors (e-upa-parivrajakas) for the students studying in the thousands of HCTs set up across the country to begin with. They could be compensated by waiving the credit equivalent to one course or given a special Certificate of Honour on successful completion of their assignment.

All the students opting for such online teaching and mentoring would be interviewed and empanelled online by a transparent process which would evaluate their subject competence as well as clarity in communication, and inter-personal skills for teaching. On selection and deployment, the work performed by them could be evaluated based on a set of objective criteria.

National Programme of Technology Enhanced Research (NPTER)

The research programme, NPTER, would work at two levels – through a specially created task force, which would be suitably empowered and enabled, and by contacting Universities and soliciting such experts with standard, authentic credentials – thus making a reposi-
tory of discipline-wise researchers. To begin with, about five hundred such researchers could be empanelled and designated as National Research Scholars. Based on the areas of research and their willingness to collaborate with students across the country, a shelf of research projects could be made available.

Students studying in conventional colleges, universities, and HCTs could opt for carrying out one research project as a part of their credit earning for course completion. All such students could be selected using an all India merit test followed by an e-interview with their respective National Research Scholars. This could be done with complete transparency and fairness.

On successful completion of their research, they could be awarded credits in lieu of the research work done or a Young Researcher Certificate of Honour. Such a movement with careful nurturing and mentoring could help transform the research scenario in the country.

There could, for example, be a situation where a student from an HCT in a tribal pocket of Chhattisgarh could be working in a frontier area with a leading Researcher in Physics of IIT, Kanpur along with students from Bombay and Kerala. Such interactions can hone their skills and transform them from an isolated existence into being connected and constructive. As these groups immerse themselves and learn and advance with each other, the processes and outcomes can both be very enriching and stimulating for all.

National Programme of Technology Enhanced Extension (NPTEE)

The extension aspect of the Multiversity is addressed by a programme called the National Programme of Technology Enhanced Extension (NPTEE). Extension here refers to two categories of engagement: One with the local community in the neighbourhood of HCTs and second, the prospective employers, including Industry, services, Governments, NGOs, and markets.

This programme will entail a survey of the local community and identify a set of projects or interventions that are needed. These could, for instance, range from a social audit of the MNREGA to a specific health intervention. The Parisvajakas at HCT will be available for consultation to guide the students and local community members for developing this programme. Students would again be selected on an all India merit-based sys-

National Programme of On-Demand On-line Examination (NPODOLE)

The National Programme of On-Demand On-line Examination (NPODOLE) would be another important programme. Students would be at liberty to appear for an examination when they are ready or even choose not to. A question bank for each of the courses would have to be readied which would be prepared and populated by the Principal Course Co-ordinator (PCC) of the system.

These questions covering the entire course could be of various types ranging from multiple choice questions to short answer questions to long answer questions as well as essays and project works. They would be suitably framed to test the knowledge, understanding, skills, application, and Higher Order Thinking Skills (HOTS) of students.

Another feature that the conventional system has been unable to offer can be attempted in this Multiversity Model. Every student can schedule a time slot for a live, online, video viva (LOVV). In addition to the on-demand, on-line examination, he/she can be tested through a live conversation, which can be recorded end to end, and grades awarded on the basis of this performance too. Such an effort will hone the communication skills, confidence, and conceptual clarity of the student. Those with good knowledge but endowed with poor writing skills can also get a fair assessment and thus benefit in the process.

HCTs could also double up as an assessment centre for a month in each semester and for three hours daily for one more month in each semester, say, from 6 am to 9 am, for those wanting to take the exam. A task force of about three competent persons with expertise in the conduct of examination with the required empowerment and enabling, can be constituted.

National Integrated Classroom Programme (NleCP)

Under this programme, talks of eminent speakers and personalities from various fields would be organized as
per a pre-scheduled calendar which would be streamed live to each of the HCTs from a centralized location. The design of the programme is based on a clear articulation of the need for inclusion in the curriculum the life stories of outstanding people and their struggles, accomplishments, beliefs, faith and achievements, and autobiographical sketches of scientists, sportspersons, technocrats and thinkers or philosophers.

**National Programme of Technology Enhanced Governance (NPTEG)**

This will automate various educational services related to students and faculty members. This could be made mandatory by organizations like the AICTE, UGC, NBA, and NAAC to ensure that all organizations update their information and use these applications. This can take care of various applications like admissions, enrolment, credit transfer, registration in the conventional and blended mode, scholarships, issuance of transcripts, fee payment, enrolment for examinations, college transfer, and a host of other applications. This will bring in a great deal of convenience, transparency, and accountability to the system.

### 4. Member Higher Education Institutions (MHEI)

We will touch on these institutions only in passing, since they would be familiar to most readers. The different central, state, private, and specialized universities, colleges, and institutions with their base of educational resources, services, and legacy are constituent members of the Multiversity. Each of the national programmes would solicit the participation and involvement of these Member Higher Education Institutions (MHEIs) in contributing to the OERS in standardized forms of the ‘credit framework’ that render them usable. The MHEIs and HCTs can be enrolled as points of dissemination of learning through online or a blended mode. There could be some basic eligibility for an MHEI such as a grade of not lower than B from the National Assessment and Accreditation Council.

### 5. Halls of Culture and Training

In India, where access is a major concern, the Model has made a provision for citizens to easily reach the Multiversity and enjoy an ambiance that is conducive to learning. Providing the Multiversity with the best of OERS alone is only strengthening the supply side. Unless the demand side is primed and access is made easier, the twain may not actually meet! This in turn would need new, innovative ways of addressing the demand side gaps, using the Halls of Culture and Training (HCT)\(^5\). Such Halls, as points of access, could be located at districts and metros across the country and would facilitate access to standardized OERS through e-Gyan.

**Location and Spread of HCTs**

At the ground level, it is proposed to set up centres which are labelled as Halls of Culture and Training at district and ward locations.

The word *culture* in the context of the Hall of Culture and Training is used to connote the context of ‘immersion’ that is needed for sustainable and fruitful learning. This helps create a social and sustainable culture of learning as against fragile, dysfunctional processes of ‘learning’. Thus, an HCT would be the place ‘at the proverbial last mile’, where the model touches the ground and provides actual access to students and learners from across the country. It is proposed to start with about 1,000 HCTs initially, which may then be ramped up or otherwise, depending on their efficacy and performance. One HCT is proposed in each District and about four HCTs in each Municipal Corporation, to begin with, which could then be taken up to the taluka level and eventually the village and ward levels. The possibility of their collocation with an existing institution such as a college or a school with sufficient space is also to be explored.

**Design and Layout of HCT**

It is felt that for learning to happen, the features of the learning space will have to be thought through. To provide the right ambiance and educational ergonomics\(^6\), for assimilation, absorption and internalization of knowledge, the creation of especially designed learning spaces in the form of HCT, is proposed.

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\(^5\) The concept of Halls of Culture and Training has been articulated in great detail by Prof. Kireet Joshi in his book *Education for tomorrow*. Most of the concepts of HCT presented in this paper are based on his inputs and discussions with him.

\(^6\) This term has been coined as the right ambiance, features, facilities and spaces that are conducive to learning. ‘Ergonomics, also known as human factors, is the scientific discipline that seeks to understand and improve human interactions with products, equipment, environments and systems. Drawing upon human biology, psychology, engineering and design, ergonomics aims to develop and apply knowledge and techniques to optimize system performance, whilst protecting the health, safety and well-being of individuals involved. The attention of ergonomics extends across work, leisure and other aspects of our daily lives.’ From http://www.tandf.co.uk/journals/titles/00140139.asp viewed on 30th April, 2011.
The learning space is configured as the Hall of Culture and Training (HCT). A model design and layout of such a Hall is given in Exhibit 1.

Each Hall of Culture has a central quadrangle for formal assembly, informal learning, and group interactions in an open environment and a library of books, films, and e-material or resources to supplement the OER. This is flanked by two lecture rooms, one of which functions also as the Satcom reception room or Integrated e-Class room (IeCR). This room equipped with a dish antenna can receive live streaming of lectures that are telecast centrally by experts in various disciplines and other eminent personalities through the Integrated e-Classroom Programme (IeCP).

A laboratory facility (basic) would also be set up in some selected HCTs. Online simulated laboratories would also be available for conducting experiments related to various disciplines as a part of the OER.

The HCT includes another Lecture Room for seminars by visiting scholars and a Creativity Room for nurturing the various dimensions of one’s personality related to music, dance, fine arts, craft, poetry, dramatics, etc. A sound-proofed Silence Room is planned with a glass brick opening at the top to allow some sunlight to enter the room.

A separate room for the Parivrajaka\(^7\) in charge of the centre would be available, as shown. The HCT would be provided with the toilet block, drinking water fountain and cafeteria. The centre would have on the outside, a vocational skills cafeteria, which would house equip-

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\(^7\) The Parivrajaka would be the Person heading the HCT. This is detailed in the subsequent paragraphs.
ment, resources, and instruments needed for skills like carpentry, plumbing, electrical wiring, computer repairing, leather crafts, etc., based on the local context.

The hall of training will house 50 computers connected with a LAN, having internet connectivity. These will be connected to a common printer, copier, scanner and also have provision of headphones and microphones.

With a community room for extension work related to the local community and a running track with the provision of a basic gymnasium, the complex would have gardens with local varieties of plants to be tended by the students and local community.

Learning Processes in HCT

The learning in the HCTs would take place through several modes. Students would have the option of choosing from an online lecture mode, interaction with online mentors, discussions with other students, and mentors in HCTs such as the Parivrajaka and Upa-Parivrajakas.

Provision of Integral Education

Intrinsic values such as truth, hard work, sincerity, intelligence, and character can be developed through some of the methods outlined below.

• **Stories related to intrinsic values**

  One such action could relate to the narration or provision of stories of truth, beauty, and goodness. A repository of about a hundred stories from various cultures could be built and further expanded.

  Inspiring stories of the freedom struggle of India and the values that inspired the national leaders could be presented to the students. This could be using OERs through lectures, dramas, screening of films and conversations with eminent persons using the Multiversity portal.

• **Inspiring biographies and monographs**

  Monographs and books related to the values of illumination, heroism, and harmony could be presented to students through OER. There is a fairly high articulation of the need for inspiring life stories with details of the struggles, accomplishments, beliefs, faith, and achievements. These would have to be prepared as multimedia presentations.

• **Education related to the physical dimension**

  The jogging track and the basic gymnasium in HCT would facilitate physical education. In addition to actual physical exercise, sports and games, rich multimedia presentations on concepts related to the Beauty and Excellence of Human Body (Joshi, 2003) could be included.

• **Education related to the inner self**

  HCTs should also provide for a silent room for students to study, reflect or meditate in the course of their learning. The curricula proposed for the Multiversity should provide silent spaces for Buddha like qualities to be cultivated.

  A study and practice of the theme of consciousness through a variety of methods could be provided for students to choose from. This could range from provision of inspiring books to provision for quiet reflection and mentoring by online mentors and experts.

  Provision for meditation through guided multi-media OER could be an integral part of this effort. The provision of the silence room in the HCT could play a very important role in providing the space for such reflection and quiet contact with the inner self. The Parivrajakas and the Upa-Parivrajakas could be oriented for such training through example, instruction, and inspiration.

Parivrajakas

The HCT would have three key functionaries to initiate the work and start the open learning process – a Parivrajaka, heading the HCT and two assistants called Upa-Parivrajakas.

The overall maintenance, development of the HCT, and education of the learners that come to HCT would all be taken care of by the Parivrajakas. For a smooth running, some detailing of the daily functions, the financial budgets, and listing of tasks and roles would be made available by NKN for each HCT. The Upa-Parivrajakas would assist the Parivrajakas as interns and also take up specific responsibilities in the smooth running of the HCT and the process of integral learning.

The Parivrajaka would be expected to be a patient teacher with a new kind of understanding to guide and enable effective manifestation of the students’ abilities in an atmosphere of freedom, respect, and harmony. Discipline would be a core principle of this arrangement but
one that has the willing sanction of the students as partners in the process of discovery, learning, and scaling new heights, within and without.

**CONFIGURATION AT THE STATE LEVEL**

It is proposed that each State will have a node, which, in turn, would link all the HCTs and other institutions in the State. This node could be at the Knowledge Consortium of the State (KCS). The Knowledge Consortium of each State could be a society headed by the Minister of Education with all Vice-Chancellors and Heads of national, state, and private Universities and Institutions, as members. The Secretary in charge of higher education could be the ex-officio CEO of the KCS. Such an outfit could provide a platform for co-ordination, consultation, and collaboration with the various stakeholders of higher and technical education.

**Corresponding State Programmes**

As the model moves towards maturity, it may be a good idea to spawn a corresponding State Programme in respect of each of the areas to solicit more inputs and to slowly lead to a culture of decentralization and participation, particularly if the load on the NPs is very high and, more importantly, once the organization culture of the NPs is sufficiently developed. In any case, the States and UTs would be invited to form their respective Knowledge Consortia, which would be the corresponding nodal agencies of the States for consultation, environment building, and soliciting inputs.

These broad strokes depict the overall model with its components, processes, and methods. The seven national programmes at the national level will be rolling out the compiled and standardized OER. The NPs will also sustain them by funding and supporting on a transparent basis. They would directly interact with the Colleges and Universities for soliciting their OER. However, for dissemination and consultation at the State level, the NPs could engage with the Knowledge Consortia of different States (KCS) and Knowledge Consortia of homogeneous National Institutions like the IITs (KCIIT), IISc, and IISERs (KCIISc), IIMs (KCIIMs), Central Universities (KCCUs) and so on (Figure 1). After the model gains maturity, different KCs could also be involved for compilation of OERS to facilitate the compilation and vetting of OER.

**Financial and Resource Implications**

The finer details of the costs and implications will have to be worked out. This would require detailed calculation but according to a rough estimate, each HCT could be built at a cost of about Rs. 3 crore. This includes the cost of building, computers, furniture and all associated infrastructure, assuming that government land is available on a cost-free basis or HCTs are collocated in the existing educational campuses which have some space/land that can be used.

The cost of engaging as many as 2,000 national level scholars would come to about Rs. 240 crore, if they are compensated at the rate of about Rs. 12 lakh per annum. Similarly, the cost of the National Youth Fellows at the rate of about Rs. 1 lakh per annum will come to about Rs. 60 crore. The cost of the task forces and their programmes will have to be calculated, which could be overall in the range of about Rs. 10 crore per National Programme task force to begin with. This would not include the cost of creation content which would have to be on the lines of Sakshat and the present form of NPTEL.

Given that the outlay for the National Mission of Education through ICT has been in the range of about Rs. 4,612 crore for the period 2008-2012, the rollout of the model after working out the details does seem a clear and ‘doable’ possibility.

**Academic and Administrative Audit**

Once the Multiversity is set up, the task forces created for the various National Programmes would ensure the smooth, sustainable running of these programmes as well as the HCTs through the multiversity. At the end of every three years, a complete re-look at the reports of the performance, the success, drawbacks could all be studied and changes incorporated. The reports of the Academic and Administrative Audit (AAA) as well as independent reviews and evaluations could be carried out.

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8 The Knowledge Consortium of a State is an organization with all the MHEIs of the State as its members. KCG is such a body for Gujarat. Details of its vision, mission, and objectives can be seen at http://kcg.gujarat.gov.in.

9 Sakshat is the official website of the National Mission on Education through ICT, or NMEICT a programme funded by MHRD; The web url is http://www.sakshat.ac.in/

10 http://www.sakshat.ac.in/PDF/Missiondocument.pdf
out to make corrections in the courses.

Academic and Administrative Audit is planned as an independent programme to be carried out by a specially constituted task force. This task force would comprise financial and academic experts who would put in place a complete protocol for the maintenance of quality by conducting periodic assessments of various component programmes, OERs, and HCTs. Teams of experts can be drawn from various organizations after being empanelled and trained. These need not be full-time team members although a core team of about five to seven people may be needed for the AAA core team, which can assist and work as per directions of the task force.

CONCLUSION

The various ills afflicting the current system of higher education can be addressed and mitigated by this model of ‘Multiversity,’ which proposes many new elements while building on a few components that are already in place. It can be adopted across various universities and institutions, on a national level, with a common educa-
tional framework of reference in place. In fact, this Multiversity Model could lead to linking up of various educational institutions and bringing them all together in a spirit of sharing and collaboration. Implementation of the Model at the national level will open up access, usher in quality and equity, and create competent and humane citizens, to realize the demographic and diversity dividend of this great nation, already bestowed with the democratic dividend.

Annexure I: SOA – Basis of Multiversity Model

Service Oriented Architecture (SOA) will enable the provision of search of various OERs and open education tools by the users. They can find, bind, and invoke the services that have well-defined standards, yet are in a loosely coupled mode. The providers of various services would be the constituent MHEIs.

SOA Components of the Model

The model would broadly consist of the Hall of Culture and Training, its Access Gateway or the Portal, e-Gyan, the Applications layer with business processes such as the NPTEL. The services layer has the description, quality of services, and service-level agreements. The enterprise component layer is responsible for the ultimate execution of the request from the Multiversity gateway. The operational resources represent the legacy enterprises with the systems and functions performed by the constituent universities and colleges.

Figure 2 details the components such as the Enterprise Service Bus (ESB), service repository and service con-

Figure 2: Generic Diagram of SOA
container, holding and orchestrating resources, sub-services, services and processes relating to Curriculum Providers, Teaching Resources, Research Providers, and the Learning cum Assessment Centres, tied together by business rules engine and policy server – HCT (point of presence).  

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11 Point of presence refers to a physical place of brick and mortar (HTC), where the OHE is accessible by local aspiring students.