**Ministry of Human Resource Development**

**Department of Higher Education
National Mission on Education through Information and Communication Technology**

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**Addendum to the SWAYAM Report submitted by the Sub-Committee SWAYAM.**

The SWAYAM, Committee, Chaired by Shri SN Mohanty, Secretary (HE) on 5th May 2015 accepted the SWAYAM report, submitted by Prof. S.V. Raghavan, Chairman, Sub-Committee SWAYAM, in principle, subject to incorporation as addendum on major technical specifications, scope of development of SWAYAM, road map to set up the SWAYAM platform and options of the Data Centres etc.

Accordingly, a meeting of the Sub-committee was held at 11:00 a.m. on 22nd May 2015 at Conference Room, Shastri Bhavan, to elicit this important information from the presentations of the three ongoing efforts. Prof D B Phatak from IIT Bombay, Prof Mangal Sundar from IIT Madras and Prof T V Prabhakar from IIT Kanpur made the presentations on IIT BombayX, NPTEL MOOCs and Google Course Builder based MOOCs, and MOOKIT, respectively. The list of members who participated in the meeting is at Annexure-I.

During the meeting the members deliberated on issue concerning SWAYAM development and each of the presentation was focused on the following:

1. Features/specifications to be incorporated in SWAYAM based on the experiences of IIT Bombay, IIT Madras, and IIT Kanpur, leading to convergence of efforts.
2. Roadmap for SWAYAM Implementation with timeline.
3. Options for the Data Center

The presentations offered by the representatives of the three MOOCs platforms are attached at Annexure-II.

The members observed that MOOCs is the future and is likely to change the way education reaches “people of India” in years to come. While all of them welcomed the idea of National MOOCs being done by CDAC, they cautioned about timeline. However, they expressed solidarity about the professional capability of the organization chosen for this purpose. More so, they volunteered to steer the effort to success by serving in any “oversight committee” that MHRD may choose to form.

Chairman explained that CDAC is serving the purpose of “Translational Research” organization that absorbs the “research output” from elite institutions and converts them into “Technological Products and Services” through sustained development and delivery, a function which falls outside the charter of institutions such as IITs. Of course, the outcome of CDAC’s effort is a usable Platform – SWAYAM in this case – using which educational institutions all over the country can serve the “stakeholder community” at large.

The following additional information emerged during the discussions.

1. **Features/ specifications to be incorporated in SWAYAM**

*Input based on IIT Bombay EdX experience:* IIT Bombay effort with MOOCs started in 2013-2014 timeframe and is currently based on Open EdX Aspen version. They have added multi-lingual facility for English and Hindi; these are static pages for registration only but the course material production is manually converted to Hindi audio. Otherwise, courses are by and large in English. They use Postgress and CMS.

**a.** The following features/specifications are found to be essential from their experience:

* + 1. The lessons are to be configurable, parameterized, and with timeline.
		2. Multiple-choice quizzes are useful.
		3. Python script could be tried for automatic evaluation wherever feasible.
		4. Essay type answers should be supported by the platform for peer evaluation.
		5. Open Response Assessment feature is handy for programming assignments.
		6. Teaching Assistants should be available for providing 24 x 7 response.
		7. Discussion forums are a must.
		8. For analytics – Events must be captured; for example, time spent in pdf files, png files, and video as they reflect the ability (pace at which) of the student to learn.
		9. Face-to-Face lectures should be coupled with MOOCs delivery for Blended MOOCs.
		10. Facility for Relative performance of a “section of students” – such as the students belonging to a certain college – should be available.
		11. XBlock type of facility is handy and useful as a building block for Course Creation.
		12. The interaction events should also capture the visit to “library” of learning material.
		13. The event capture should cover visits to “related links”.
		14. Student cohort events should be captured and graphically presented as it reflects intensity of learner-to-learner interactions.

At this juncture, Dr. Paliwal, Director (TEL) made the following observations from the TEL Bureau point of view, before leaving for another meeting:

1. Convergence of efforts is a must for rapid growth in this area.
2. Creation and maintenance effort for such platforms is significant.
3. Technological sustainability and System administration should be factored in
4. Regular workshops for Awareness and Training.
5. All tiers of colleges, teachers, and students should be covered.
6. Teachers in other tiers should be able to compose lessons and conduct MOOCs with ease.
7. Periodic upgrade of the Platform should be part of the plan.

**b.** Input based on IIT Madras, Google Course Builder Experience the following features/specifications are found to be essential from their experience:

1. Course management is the key – Supporting the role of teachers, lesson creators, and students.
2. All actions / events should be recorded and purposed.
3. Subject-wise and discipline-wise management of courses is essential.
4. Courses may embed other platforms – copyrighted or otherwise – should be supported.
5. It should be possible to make course contents by the efforts of student groups also.
6. The view on the rendering device should be browser independent and device agnostic.
7. Social networking should be embedded in discussion forum.
8. GUI must be user friendly and intuitive. Engaging a Graphics designer is advised.
9. Language porting must be made easy.
10. Should have CC (Close Caption) compatibility for accommodating the physically challenged.

Input based on IIT Kanpur MOOKIT experience:

Prof TV Prabhakar opined that multiple platforms such as Open EdX, Course Builder, MOOKIT etc. should be supported. It was later explained to him the purpose of the meeting (which unfortunately was not conveyed to him directly and obviously he was not aware as he was not a member of the committee and did not have the benefit of earlier deliberations) and was requested to share the feature set required to be included.

**c.** The following features/specifications are found to be essential from the experience of Prof TV Prabhakar, on MOOKIT.

1. Need for Interactions – especially, learner-to-learner, content to learner, and learner to contents – enabling the same in the proposed platform.
2. To share an early version of his work with CDAC so that they can include all the features found there. He said that he feels that it is an honor if an elite organization such as CDAC is willing to adopt the features as part of the National Platform for SWAYAM.

It was unanimously decided that Features/specifications shared by three ongoing efforts as listed at **1 a, b, c** shall form major technical specifications of the platform, recommended by the Sub-committee, SWAYAM.

1. **Road map for SWAYAM**

|  |  |
| --- | --- |
| **Activity** | **Timeline (Cumulative)** |
| Scope, Features, and SRS | 2 Months |
| Architecture | 3 Months |
| Beta Release | 6 Months |
| First Production Version release | 8 Months |

1. **Options for Data Center:**
* Initially the IIT Delhi cloud in NIC/NKN center – up to Beta release
* CDAC and NKN Data Center – at the time of First Production Version Release
* Expansion in CFTIs as the Load increases through replication
* Overall design, management, and system administration by CDAC and NKN.

The features mentioned in the link, as under, may be progressively incorporated by C-DAC, as is observed by Prof. D.B. Pathak, IIT Bombay based on their usage experience.

[http://www.it.iitb.ac.in/frg/wiki/Building-and-Running-an-IITBombayX-Course.pdf](http://www.it.iitb.ac.in/frg/wiki/Building-and-Running-an-IITBombayX-Course.pdf%22%20%5Ct%20%22_blank)