

Detailed Project Report for School Education MMP – Draft Copy



Department of School Education & Literacy
Ministry of Human Resource Development, Government of India

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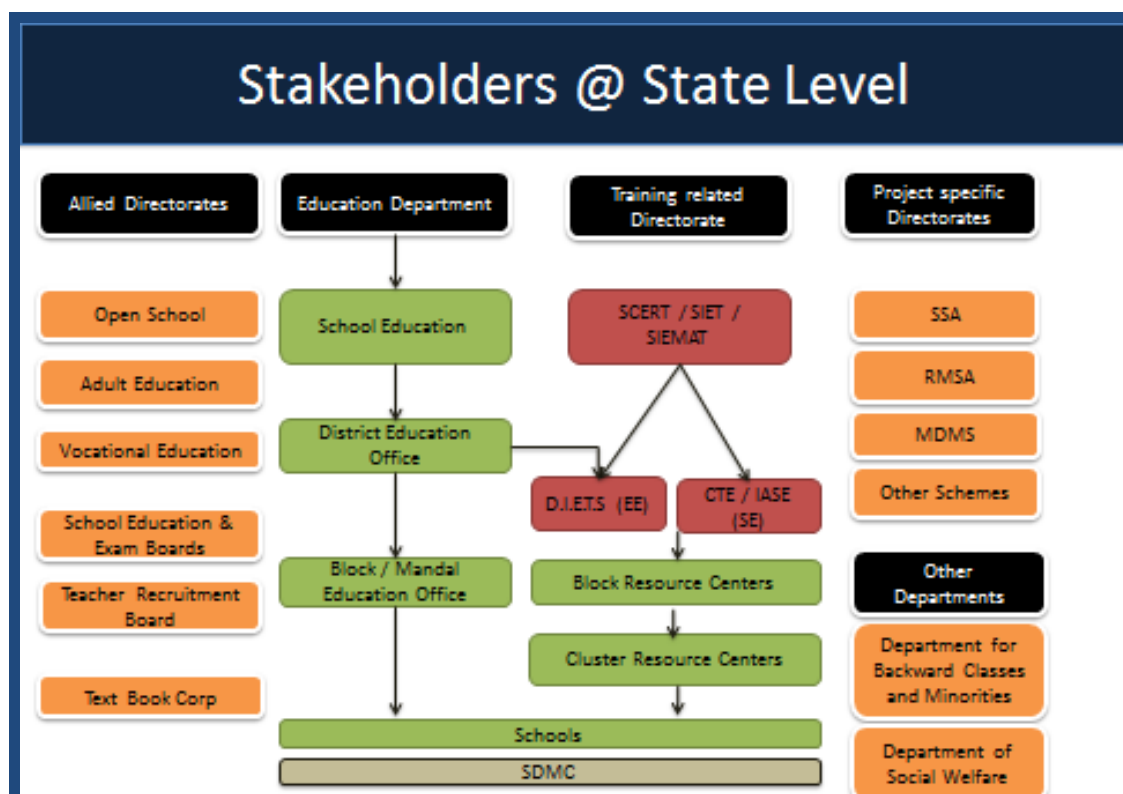
1. Project Background

Center-State Subject

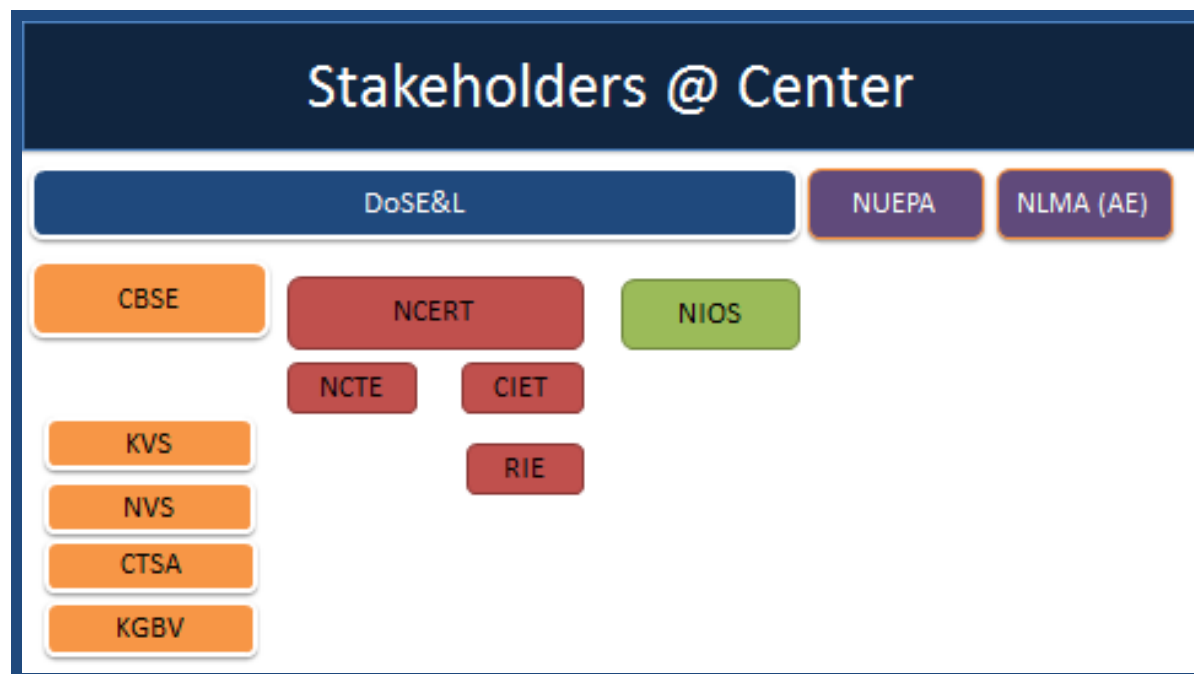
School Education is a Concurrent Subject under Constitution of India and falls within the domain of Center and States / UTs. At the Center, School Education is dealt by Department of School Education and Literacy of Ministry of Human Resource Development (MHRD). At the State Level, School Education is dealt by Education Department. In a few States, Department for Backward Classes and Minorities and Department of Social Welfare also play a significant role in administration of hostels, schools, and disbursement of scholarships to students.

Vast Landscape and Multitude of Stakeholders

School Education is a vast domain with 1,24,500 secondary schools and over 11 Lakh elementary schools spread across the country and employing more than 55 Lakh teachers. The schools and teachers are supported by NIE, RIEs (5), IASEs (31), CTEs (104), DIETs (571), BITES (196), BRCs (~7100) and CRCs (~75000).



In addition, there are several national (NUEPA, NCERT, NCTE, CIET, NIOS, CBSE, KVS, NVS) and state level agencies (SCERT, SIET, SIEMAT, State Boards, Directorates (examination, textbooks..), District Educational Officers (DEO), Block Education Officers (BEO) within the education ecosystem that deal with School Education.



Several Flagship Schemes under Implementation

Several Schemes (Sarva Shiksha Abhiyan, Mid-Day Meal, Rashtriya Madhayamik Shiksha Abhiyan,...) are funded, either partially (with provision of appropriate matching grants depending on the guidelines of respective schemes) or fully by the Center and implemented by the State Governments / UTs. Schemes such as free text books for students, scholarships to socially and economically backward groups, Residential schools for such disadvantageous groups are also funded and implemented by State Governments / UTs on their own.

ICT Initiatives – Center, States and Non-Governmental

There are also several ICT initiatives in School Education that have been implemented both at the Center as well as States. NUEPA has implemented DISE and SEMIS to collect various statistical information from the schools. ICT @ Schools Scheme of MHRD is designed to provide opportunities to secondary stage students to develop ICT skills and also for ICT aided learning process. National Academic Depository (NAD) is an initiative of MHRD to maintain a national-level database of all academic qualifications from secondary school certificate to university and professional certificates. Several States including Kerala, Madhya Pradesh, Andhra

Pradesh, Karnataka, and Gujarat have taken initiatives to implement ICT in the field of School Education. A National Policy on ICT in School Education has been recently finalized by the MHRD to provide broad framework to guide and assist the States in optimizing the use of ICT holistically in school education.

There are also several NGOs / Private Sector initiatives (ex, Azim Premji Foundation, ASER, Educational Initiatives) that are active in the Education Sector. A Survey on ICT for Education in India and South Asia was commissioned by infoDev to create a consolidated source of information on the experiences of using ICTs for Education in the South Asian region. A study of learning and teaching in rural India by ASER through funding by UNICEF and UNESCO provides a comprehensive report on the learning and teaching levels in rural schools.

School Education included as a MMP

While there are several existing schemes and state level initiatives, most of the schemes are focused on providing ICT infrastructure at the schools and only a few states have taken the lead to realize the full benefits of IT as a key teaching support and service delivery tool. A focused approach from the Center in consultation with the States / UTs can give the right impetus to all the States in deploying IT to provide teaching support services such as a digital learning resources and streamline the data collection to provide quality data amenable for decision support and improve the quality of learning for the teachers and students.

School Education has been included as a Mission Mode Project (MMP) under the National e-Governance Plan (NeGP) by the Apex Committee for the NeGP. The MMP is focused on Primary, Secondary, and Higher Secondary education. A MMP by design has to cover a multitude of stakeholders in the ecosystem and arrive at a set of stakeholder centric services that have a measurable outcome/ impact over an agreed project timeframe.

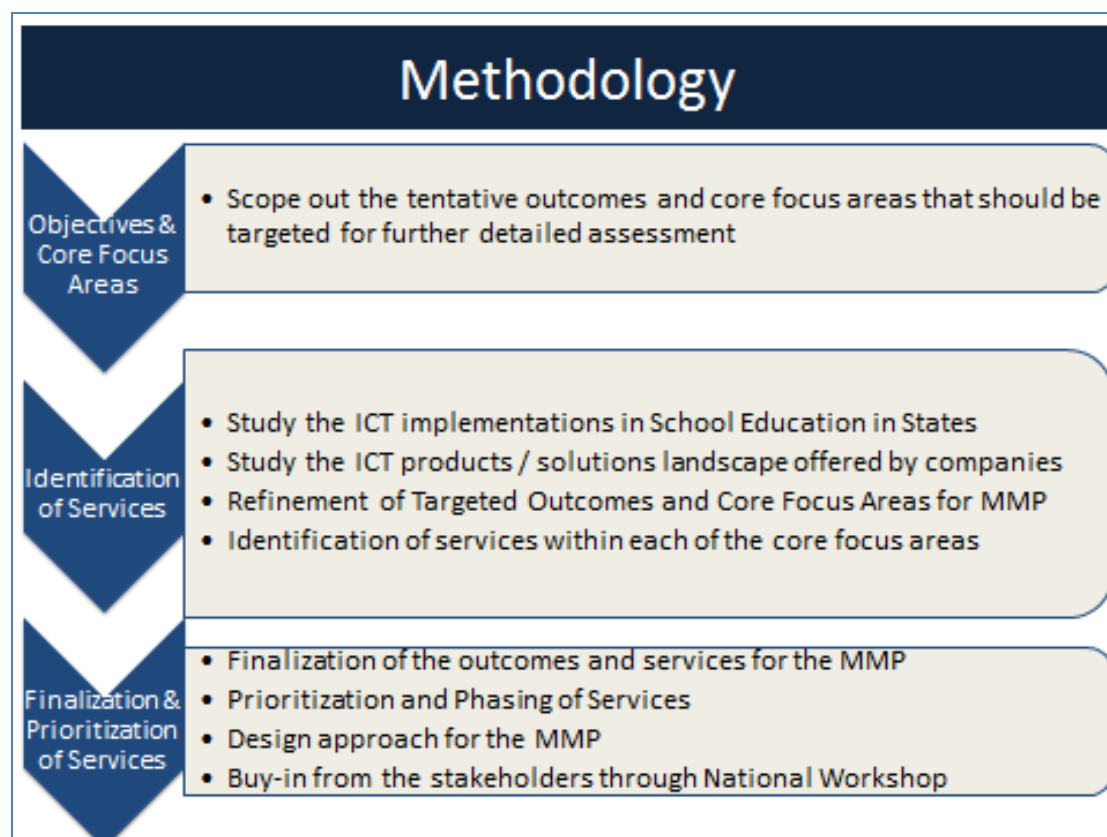
In the context of School Education MMP, with its vast landscape, multitude of stakeholders, several flagship schemes and ICT initiatives under implementation, as a first step, a Core Scope Document outlining the objectives, desired outcomes, and the target set of services for the School Education MMP was prepared to lay the foundation for the design and implementation of the MMP. The Core Scope Document for the MMP was prepared through a consultative exercise with the State/UTs, Central Agencies and other stakeholders. The Core Scope Document along with the prioritization framework has been finalized and approved by MHRD in October 2012.

The detailed project report (DPR) is prepared to provide the solution overview, implementation approach and the required financial outlay for the services targeted under the MMP.

2. Detailed Assessment

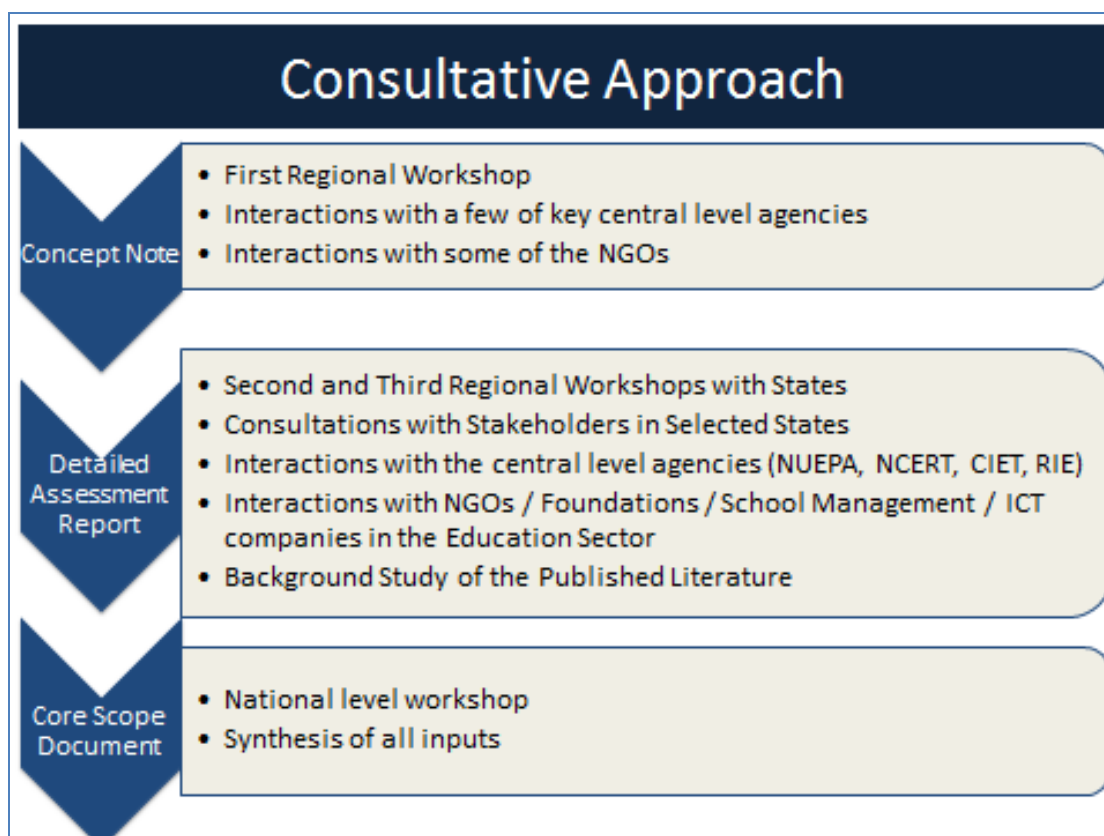
School Education MMP is classified as a State MMP, given the constitutional division of responsibilities between Centre and States. In order to design and implement the MMP, it is important to identify the core services that will be delivered as part of the MMP in consultation with all the States / UTs.

A detailed assessment has been carried out as part of the formulation of the Core Scope for School Education MMP. The Core Scope Document outlining the objectives, desired outcomes, and the target set of services for the School Education MMP was prepared as a first step to lay the foundation for the design and implementation of the MMP. The States / UTs take up the implementation of the MMP within the broad framework as envisaged in the core scope but as per the readiness and requirements at the State level.



2.1. Consultative Exercise with States / UTs and Central Agencies

School Education MMP has to be designed keeping in view the fact that Education is in the concurrent list in the Constitution, where States / UTs will take the responsibility for implementation. The design principle of centralized planning and decentralized implementation was adopted where conceptualization and design of the Core Scope was carried out by MHRD in consultation with all the States / UTs and other Stakeholders.



As part of the exercise to prepare the core scope document, three regional workshops were conducted with participation from all of the States / UTs and a few of the central agencies. The first workshop was conducted in Hyderabad, second in Kolkata and the third in Chandigarh. The workshops with participation from all levels of School Education department including Secretaries, Directors, SPDs, DEOs, Headmasters, and Teachers provided an opportunity to obtain raw thoughts and perceptions of administrators & educators on successes and challenges in School Education. The workshops aided in identifying the core focus areas and potential services to be targeted under the MMP. Summary of the proceedings and discussions in each of the workshops are captured as individual workshop reports.

Regional workshops – Participation from all levels

- Objective:
 - Obtain raw thoughts and perceptions of administrators & educators on successes and challenges in School Education
 - Identification and refinement of 'Focus areas' and potential services for the MMP

Participation from all levels of School Education department: Secretaries, Directors, SPDs, DEOs, Headmasters, Teachers, Central agencies, NGOs etc.

First Workshop Hyderabad 19th April 2012

- Andhra Pradesh
- Puducherry
- Goa
- Tamil Nadu
- Karnataka
- Lakshadweep (UT)
- Chhattisgarh
- Madhya Pradesh
- Akshara foundation

Second Workshop Kolkata 24th May 2012

- West Bengal
- Odisha
- Jharkhand
- Sikkim
- Assam
- Nagaland
- Mizoram
- Manipur
- Tripura
- Meghalaya
- Andaman & Nicobar Islands

Third Workshop Chandigarh 11th June 2012

- Punjab
- Haryana
- Delhi
- Himachal Pradesh
- Rajasthan
- Chandigarh
- Uttar Pradesh
- Bihar
- Uttarakhand
- Daman & Diu
- Dadra & Nagar Haveli

In addition to the workshops, assessment was carried out in three selected states i.e. Kerala, Gujarat and Bihar with an objective to capture insights from the field in the form of challenges faced by stakeholders, experiences stemming from ICT implementations and potential for usage of ICT in education. Consultations were also carried out with a few of the key central level agencies such as NCERT, NUEPA, NIOS, and RIE. The summary of the workshop reports is attached under Annexure I.

2.2. Perspectives from Non-Governmental Initiatives and Education Solution Providers

Apart from the school education departments and related directorates and agencies, Non-Governmental organizations play a significant role in the school education sector. In addition to NGOs, there are a lot of Corporate Social Responsibility (CSR) initiatives carried out in school education by private organizations such as Intel, Microsoft, and Cisco. There are quite a few private players such as Educomp, Educational Initiatives that are providing classroom solutions with an objective to enhance the quality of learning.

Outside of visiting governmental institutions, visits have been carried out to non-governmental organizations (ASER foundation, Center for Civil Society, Askhara

Foundation), organizations with substantial presence in school education through their CSR initiatives (Intel, Micorsoft) and education solution providers (Educomp, EI) that have a substantial experience in School Education to obtain a more holistic view on the challenges present in the school education and the learning from their experiences in the implementation of their solutions. The summary of the NGO consultation report is attached under Annexure II.

2.3. Finalization of the Objectives and Core Scope Services

Broad objectives and core focus areas to be targeted under the MMP were identified in the first step based on preliminary interactions with the stakeholders that included the first regional workshop in Hyderabad. Concept Note was prepared as an outcome of these preliminary interactions.

The objectives and core focus areas were refined and the potential services for the MMP within the core focus areas were scoped out based on subsequent interactions with the stakeholders in the assessment phase. This phase included the assessment conducted in three selected states, second & third regional workshops in Kolkata & Chandigarh and interactions with a few of the central agencies, NGOs and ICT solution providers in the field of education. An assessment report was prepared based on the interactions in this phase.

The objectives, core focus areas, and potential services were presented at the National Workshop in Delhi for validation prior to finalization of the Core Scope Document. The Core Scope Document along with the prioritization framework has been finalized and approved by MHRD in October 2012. The Core Scope Document is attached as Annexure III.

3. Best Practices Study

3.1. Solutions Implemented in Government Schools (India)

Three regional workshops, with participation from all of the States / UTs and a few of the central agencies, and detailed assessment in Kerala, Gujarat, and Bihar was carried out to identify the successful implementations of ICT solutions in the government schools. The summary of the detailed assessment carried out in States is attached under Annexure IV.

3.2. Solutions Implemented in Private Schools (India)

A solution scan of the education solutions implemented in Private Schools in India was carried out to identify the available, relevant and proven products / solutions that are currently implemented in private schools in India that can be considered for use in Government and Government-Aided Schools in India. The solution scan was carried out in the areas of School Management Services, Decision Support Systems (student need assessment, teacher training need assessment, school performance assessment), ICT enabled teaching Services, Self-Learning Tools for teachers and students, Assessment Services, and Content Platform / Delivery Services. The solution scan was carried out to assess the implementation requirements and available business models for implementation. The summary of the solution scan in private schools is attached under Annexure V.

3.3. Solutions Implemented in Countries outside India

Solution scan of the education solutions implemented in China and Singapore was carried out to identify any additional relevant products / solutions and implementation models that can be considered for implementation in Government and Government-Aided Schools in India. The ecosystem covering the themes with respect to governance mechanisms and standards that has been setup for implementing ICT in School Education in the USA was also studied to identify any relevant educational data and content standards that may be applicable for Indian context. The summary of the solution scan in countries outside India is attached under Annexure V.

4. Stakeholders and Key Drivers

The key stakeholders of the MMP include:

- a. Teachers
- b. Students
- c. Parents
- d. Community
- e. School Managements – Government, Government Aided, and Private Schools
- f. Teacher Educators
- g. School Administrators – District, State, and Center
- h. Education Research and Training Agencies
- i. External Stakeholders (Health, Revenue, Social Welfare, Higher Education,..)

Some of the key drivers identified through the stakeholder consultations carried out during the design of core scope for the MMP are provided below:

- a) Improve the quality of education for elementary and secondary school students
- b) Monitoring the longitudinal performance (including assessment of learning levels at the beginning and during the academic year) of the students to assess the gaps in student learning and teacher training
- c) Monitoring the student enrollment and retention to proactively identify the students at risk of dropout.
- d) Deploying IT enabled teaching learning material including digital learning resources, model lesson plans and self-learning and assessment tools in the training centers and classrooms for better learning experience.
- e) Linking the student and teacher data in order to increase teacher accountability and identify teacher training needs
- f) Teacher Capacity Building (pre-service and in-service training) to provide a more customized and personalized training as opposed to the standard training received by the teachers currently. Teacher capacity should also be enhanced to address the gaps in ICT training.
- g) Monitoring teachers' attendance and deployment on non-teaching duties to increase the teacher availability in the school
- h) Ensure better service delivery to teachers through streamlining the recruitment, posting, transfer, and other service matters (payroll, leave,..) of teachers through ICT. A significant time of teachers is lost in following up with the DEO's office on their service matters. Similarly, time of the administrators is spent in addressing court cases filed by teachers / employees.
- i) Provide single portal to facilitate delivery of multiple services such as e-content, scholarship information, other scheme related information, school related certificates to students and teachers.

-
- j) Platform for disseminating success stories and best practices
 - k) Need for reliable and near real time availability of data of students, teachers, and schools in a format amenable for analysis to aid better decision support.
 - l) Rationalization of teachers to ensure availability of subject wise teachers in every school
 - m) Better regulation of private schools and provision of a single portal to facilitate delivery of multiple services including recognition, renewals, affiliation, accreditation to schools including private schools.
 - n) Monitoring the various aspects of the school education in government, aided, and unaided schools to ensure effective implementation of RTE.
 - o) Streamlining the board examination processes through use of ICT
 - p) Enable seamless communication across the department right to the School level
 - q) Monitoring of schemes including the physical and financial progress.
 - r) Direct delivery of benefits such as scholarships to Students
 - s) Monitoring & oversight mechanisms with respect to academic related school inspections
 - t) Creation of a single platform to address diverse needs of different stakeholders and implement schemes with large number of beneficiaries
 - u) Ensuring delivery of various incentives like free uniform, bicycles, textbooks etc.
 - v) Timely collection of data on various schemes from the field
 - w) Availability of information with the School Education Department to respond to RTI applications
 - x) Integration across multiple departments for streamlining of processes and effective implementation of schemes. Integrating with civil supplies department, as done in Chattisgarh, can aid in auto-generation of the supply order for supply of rations for mid-day meals to the schools based on the attendance of the previous month of the respective school.
 - y) Governance of teachers' training institutes (DIETs, RIEs,..) to enable tracking of trainees and training courses.
 - z) Increasing community participation and oversight in the school administration by providing visibility of the student, teacher, and school performance to the community and parents

5. Objectives

The mission of the School Education Department under MHRD as outlined in its Results Framework Document (RFD) include improving quality and standards of school education and literacy towards building a society committed to Constitutional values, providing free and compulsory quality education to all children at elementary level as envisaged under the RTE Act, 2009, and universalization of opportunities for quality secondary education. The stated objectives of the department include Access, Equity, Quality and Formulating policy and carrying out institutional and systemic reforms.

School Education MMP will target to deliver the services that enable the stakeholders including students, teachers, and administrators both at the Center and States / UTs to achieve these objectives. The School Education MMP will also be a vehicle for implementation of National Policy on ICT in School Education.

Objectives of the MMP include:

- a) Enable improvement in quality of learning
- b) Improve efficiency of school administration and governance of schools
- c) Improve service delivery of school education department to the key stakeholders including students, parents, community, teachers, and schools
- d) Access to near real-time and better quality data for decision support

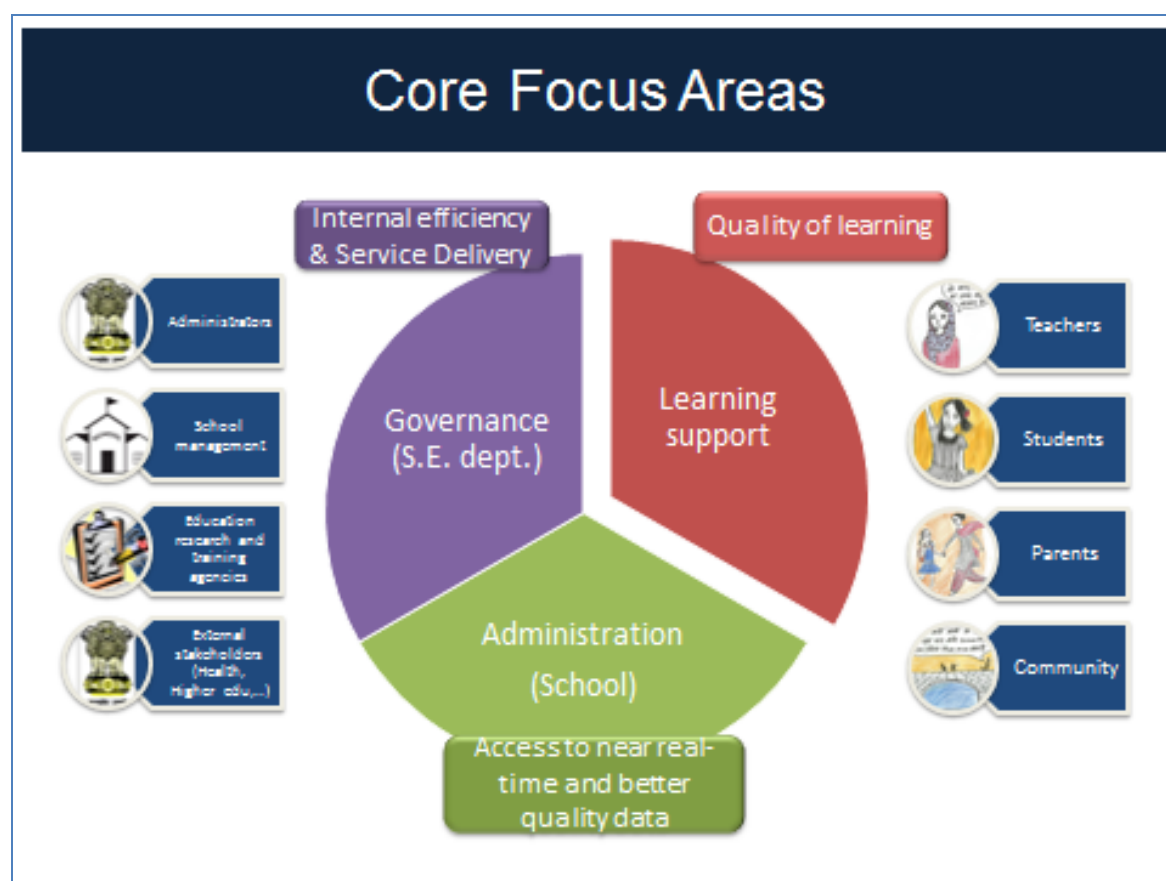
The MMP is designed with a mix of indirect and direct objectives. While the MMP will play an enabling role in achieving the indirect objectives as stated in the RFD primarily focused on services that enable improvement in quality of learning, the direct objectives include access to quality data for decision support, improved service delivery of the school education department, and improved school administration and governance.

6. Envisaged Services for the MMP

6.1. Core Focus Areas

Based on the objectives and interactions with the stakeholders, three core focus areas have emerged for the MMP:

- School Administration Services
- Learning Support Services
- Governance of School Education



a) School Administration Services

Improving access to near real-time and better quality data for decision support and efficiency of school administration are direct objectives of the MMP. In order to enhance the data quality and also collect data that is amenable for decision support, to the extent possible taking into consideration the underlying infrastructure constraints, school should become the basic unit for the implementation of e-

governance initiatives under the MMP. Enablement of school operations, both academic (progress of curriculum in the classroom, student performance) and administrative (attendance, scheme implementation details) will aid in near real-time data capture at the source, i.e., school. Collection of student health metrics may also lead to better delivery of inter-related services through other departments such as health.

Majority of the key learning support services such as identification of students in need of remedial education, focused and customized teacher training, faster feedback to teacher training institutes can be delivered only with a reliable and effective student to teacher data link. The student, teacher and school data including the underlying linkages form the basis for delivery of multitude of services to the administrators that include teacher rationalization, better monitoring of schools, effective scheme design and implementation.

b) Learning Support Services

Improving the quality of learning for the students through deployment of ICT in school education is a key objective of the MMP. Learning Support Services include the services that can play an enabling role in improvement of quality and standards of school education. ICT can provide additional teaching aids in terms of ICT enabled teaching learning material, model lesson plans (for explanation of concepts), self-learning tools, and standardized assessments that can be deployed in both schools and training institutes.

However, even more significant benefits can be derived through use of IT to enable identification of students in need of remedial education, focused and customized teacher training, faster feedback to teacher training institutes, and better monitoring of the under-performing schools and training institutes, all of which can significantly impact the quality of learning. Decision support services built on student performance and attendance data capturing the underlying student-teacher linkages can provide continuous feedback on the student and teacher performance to schools, training institutes and administrators.

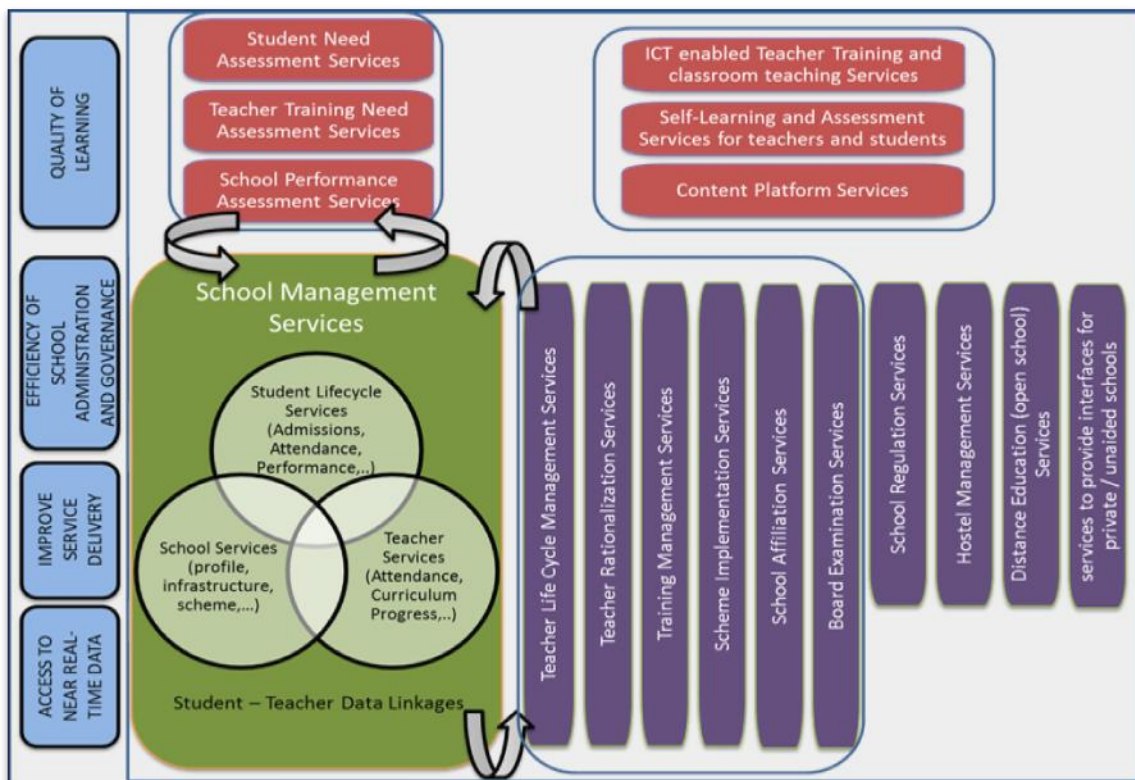
c) Governance of School Education

Effective implementation of ICT in various processes such as teacher recruitment, postings, transfers and administration of their service matters, regulation of schools and teacher training institutes, and scheme design and implementation can improve service delivery of school education department and efficiency of school administration and governance. In addition, IT can aid in efficient conduct of

examinations for students, recruitment of teachers and admissions into training institutes.

6.2. Services identified during the Core Scoping Exercise

The services as identified as the Core Scope for School Education MMP are presented in the following figure. The services are elaborated in the following sections.



6.2.1. School Management Services

School Management Services enable a platform for school operations, both academic and administrative to aid in near real-time data capture at the source. Once a platform for seamless collection and aggregation of the students, teachers, and school data including underlying linkages is put in place, numerous services can be developed and delivered on the platform to multiple stakeholders including students, parents, community, teachers, and administrators across the hierarchy.

Sub-services under School Management Services:

- i. Student lifecycle services with respect to enrollment, admission, attendance, CCE-based performance / assessment, and health metrics

- ii. Teacher services (regular as well as substitute or temporary) with respect to attendance, progress of the curriculum and lesson plans in the classroom, conduct of assessments
- iii. School services with respect to profile, underlying infrastructure, scheme implementation details
- iv. Services to establish the linkages between student and teacher performance
- v. Services to integrate with school boards, school regulation bodies, and other related agencies in the school education ecosystem
- vi. Services to provide visibility of student, teacher, school performance to parents, community, and administrators
- vii. Services (crowdsourcing) to enable parents and community to provide inputs on the student, teacher, and school particulars that enable validation of the data received from schools thereby enhancing the quality of data
- viii. Library Management Services
- ix. Laboratory Management Services
- x. Services for School Management Committees
- xi. Services for interfacing with hostels linked to the school
- xii. Event Management Services
- xiii. Accounts / Assets related Services
- xiv. Stores related Services

6.2.2. Learning Support Services

The Services identified under the core focus area of Learning Support Services are:

Decision Support Services

- i. Student Need Assessment Services
Student Need Assessment services derived from student attendance and performance provides visibility to administrators at school as well as school education officials to:
 - a. Identify students who are in need of remedial classes well before the end of the academic year
 - b. Identify students with increased risk of dropout based on their attendance and performance patterns
 - c. Trends in student enrollment
- ii. Teacher Training Need Assessment Services
Establishing the linkages between student and teacher performance (after taking into consideration parameters such as school working days, student attendance and earlier performance of student) enables identification of not

only teachers in need of training but also the training needs of the teachers. This can aid in delivery of more customized and personalized in-service teacher training. Such analysis also provides feedback on the pedagogy, courses and training material to the teacher training institutes.

iii. School Performance Assessment Services

School performance assessment services built on the student and teacher data captured at the school enables comparative analysis of schools with similar profiles on various parameters such as progress on the curriculum, school working days, attendance of students, attendance of teachers, performance of students and teachers. Such analysis may aid in:

- a. Visibility of the school performance relative to similar schools to the school teachers and administrators.
- b. Visibility of under-performing schools to the administrators that aids in scheduling the school inspections
- c. Identification of best practices (lesson plans, remedial classes, teacher training, school administration) in the high performance schools for dissemination to the other schools

ICT Enabled Training, Teaching, and Assessment Services

ICT enabled teacher learning (digital textbooks, short subject and language videos, videos of classroom teaching in best performing schools, structured lesson plans, self-learning tools, assessment tools..) deployed in schools as well as teacher training institutes can have an impact on the quality of learning. The solutions designed for delivery in the classroom in the school may be customized and deployed for teacher training.

i. ICT enabled Teacher Training and classroom teaching Services

IT can augment the teacher training, both pre-service and in-service training and classroom teaching through utilization of ICT enabled teacher learning material, model lesson plans (explanation of concepts), classroom videos, and best practices across the performing schools in the training centers.

ii. Self-Learning Tools for teachers and students

Providing access to self-learning tools to teachers and students can identify the weak areas and enhance the subject knowledge. A “talk-center” approach as adopted by one of NGOs that enables the teachers to have a conversation with the trainer in the talk-center may also be explored for self-learning tools.

iii. Assessment Services

Assessment services enable standardized assessment of teachers, and students' learning levels and provide quick feedback to the trainers or teachers. Deployment of standardized assessment tools will aid in comparison of teachers and students on uniform baseline but also aid trainers or teachers. Assessment services can also be deployed for in-service teachers to identify the gaps in teacher learning and provide the feedback to teacher training institutes.

iv. Content Platform Services

Content Platform Services provide a single platform for hosting the Digital Learning Resources for Students and Teachers. Such a platform should also provide services to users for providing feedback on the content that can facilitate segregation of high-utility content and easy access to the same.

6.2.3. Governance of School Education

The Services identified under the core focus area of Governance of School Education are:

i. Teacher Life Cycle Management Services

Services related to the service matters of a teacher in the government school system. It starts with teacher eligibility tests (TET), recruitment, payroll, administration of postings, transfers, records of deployment on non-academic duties, all types of leaves, seniority lists, promotions, retirement, pensions, awards, availability of all orders/ circulars issued by the administrative departments etc.

Services related to TET and recruitment includes receipt of applications, verification, assignment of examination centers, issue of hall tickets, and publishing of results.

ii. Teacher Rationalization Services

One of the key requirement, in addition to the deployment of teachers as per the RTE norms, is to ensure the availability of subject teachers in the schools. Teacher rationalization services can be derived from the student, teacher and school particulars available from the implementation of school management services.

iii. Training Management Services

Capturing the training details including the details of the trainees (teachers), training courses and teacher educators will enable establishing the linkages between the teacher performance and the training institutes. Such linkages will aid in providing feedback to the teacher educators and training institutes based on the teachers' performance in the school.

In addition, these will also include learning management services that enables the training institutes to create a central repository of the training content, design the online training curriculum and make the content available to the trainees in an online mode.

Since training institutes will be equipped with IT infrastructure for ICT enabled delivery of training, the same infrastructure may be leveraged for deployment of training management services.

iv. Services to provide interfaces for private / unaided schools for reporting school particulars

While the school management systems are targeted to be implemented in government and aided schools, these services would provide interfaces to the unaided schools for submitting the school particulars as mandated by the school education department.

v. Scheme Implementation Services – Student and School Centric

A lot of schemes implemented by States and Center are based on the student and school data available from the schools. MIS based on quality data can aid in better design of the schemes. Also such data can enable in minimizing the leakages and more effective implementation of the schemes that can ensure that the benefits or entitlements reach the targeted beneficiaries.

- a. MIS services to identify target beneficiaries
- b. Application, approval and disbursement services for schemes such as scholarships for students
- c. Auto Indent (for recurring) and distribution services for schemes such as free text books, bicycles,...
- d. Advance notification services to the targeted beneficiaries (students, parents, community, schools) of the schemes regarding approvals and disbursement
- e. Scheme lifecycle services for schemes such as SSA, RMSA, MDMS including receipt and approval of proposal, allocation of budgets, and

monitoring the physical and financial progress of the scheme implementation.

vi. School Board Examination and Certificate Services

Services related to entire conduct of examinations right from receiving the nominal rolls of the students from the schools, verification, assignment of examination centers, issue of hall tickets, assigning evaluation centers, roll of teachers for evaluation, tabulation of marks and publishing of results may be provided. Services with respect to creation of state level certificate repositories or integration with the national certificate repository will form scope of these services.

vii. School Regulation and Affiliation Services

These are services related to regulation and inspection of schools carried out from the DEO's office. School recognitions, renewals, inspections (academic and non-academic) related services will form part of these services. The suite of services will also include services related to affiliation of schools and renewal of the same with the state boards or other school boards.

viii. Admissions Management Services

Services to students related to application and enrollment to premier state schools and private schools under RTE.

ix. Hostel Management Services

These are services related to management of hostels through near-real time capture of particulars of the hostel inmates, available infrastructure, inventory and other hostel details. The services would aid in efficient management of hostels.

x. Open School Services

These are services related to receiving the applications, registration of student, assignment of study centers, delivery of courses through online platform, and management of the examination lifecycle processes.

7. Proposed Solution

The current detailed project report (DPR) is prepared to provide the implementation approach and the necessary financial outlay for implementing the services targeted under the MMP.

7.1. Services Targeted under the MMP








The below criteria are used to prioritize and identify the services for implementation under the MMP:

- i. Criticality to Objectives – The services should be critical to the identified objectives for the School Education MMP with respect to:
 - a. Ability to create the desired impact with respect to the identified objectives
 - b. Deliver value to the end stakeholders such as students, teachers, parents, teacher educators, and administrators
- ii. Ease of Implementation – The services should be amenable for rollout within a span of one to two years:
 - a. Faster time to implementation
 - b. Services can be built on existing data / applications
 - c. Products readily available in the market or applications already being successfully used in a few States
 - d. Dependency on least number of stakeholders for implementation
 - e. Low dependency on other or external initiatives

Based on the application of above prioritization criteria, the following services are recommended for implementation under the MMP among the services identified during the core scoping exercise:


a) School Management Services



S. No	Service	Implementation under the MMP

i.	Student lifecycle services with respect to enrollment, admission, attendance, CCE-based performance / assessment, and health metrics	
ii.	Teacher services (regular as well as substitute or temporary) with respect to attendance, progress of the curriculum and lesson plans in the classroom, conduct of assessments	
iii.	School services with respect to profile, underlying infrastructure, scheme implementation details, school management committee activities	
iv.	Services to establish the linkages between student and teacher performance	
v.	Services to integrate with school boards, school regulation bodies, and other related agencies in the school education ecosystem	
vi.	Services to provide visibility of student, teacher, school performance to parents, community, School Management Committees, and administrators	
vii.	Services to enable parents and community to provide inputs on the student, teacher, and school particulars that enable validation of the data received from schools thereby enhancing the quality of data	
viii.	Library Management Services	Additional Services that may be implemented by the States / UTs
ix.	Laboratory Management Services	Additional Services that may be implemented by the States / UTs





x.	Services for School Management Committees	Additional Services that may be implemented by the States / UTs
xi.	Services for interfacing with hostels linked to the school	Additional Services that may be implemented by the States / UTs
xii.	Event Management Services	Additional Services that may be implemented by the States / UTs
xiii.	Accounts / Assets related Services	Additional Services that may be implemented by the States / UTs
xiv.	Inventory / Stores related Services	Additional Services that may be implemented by the States / UTs

b) Learning Support Services: Decision Support Services built on data aggregated through implementation of School Management Services


S. No	Service	Implementation under the MMP
i.	Student Need Assessment Services	








ii.	Teacher Training Need Assessment Services	
iii.	School Performance Assessment Services	

c) Learning Support Services: ICT Enabled Training, Teaching, and Assessment Services

S. No	Service	Implementation under the MMP
i.	Content Platform Services to create the portal for hosting and accessing Student and Teacher Resources.	
ii.	e-Content and other instructional resources for ICT enabled Teacher Training and classroom teaching Services	
iii.	Standard Assessment Services for teachers and students (SSA & States initiatives)	
iv.	Self-Learning Tools for teachers and students	

d) School Education Governance Services:

S. No	Service	Implementation under the MMP
i.	Teacher Life Cycle Management Services	
ii.	Teacher Rationalization Services	

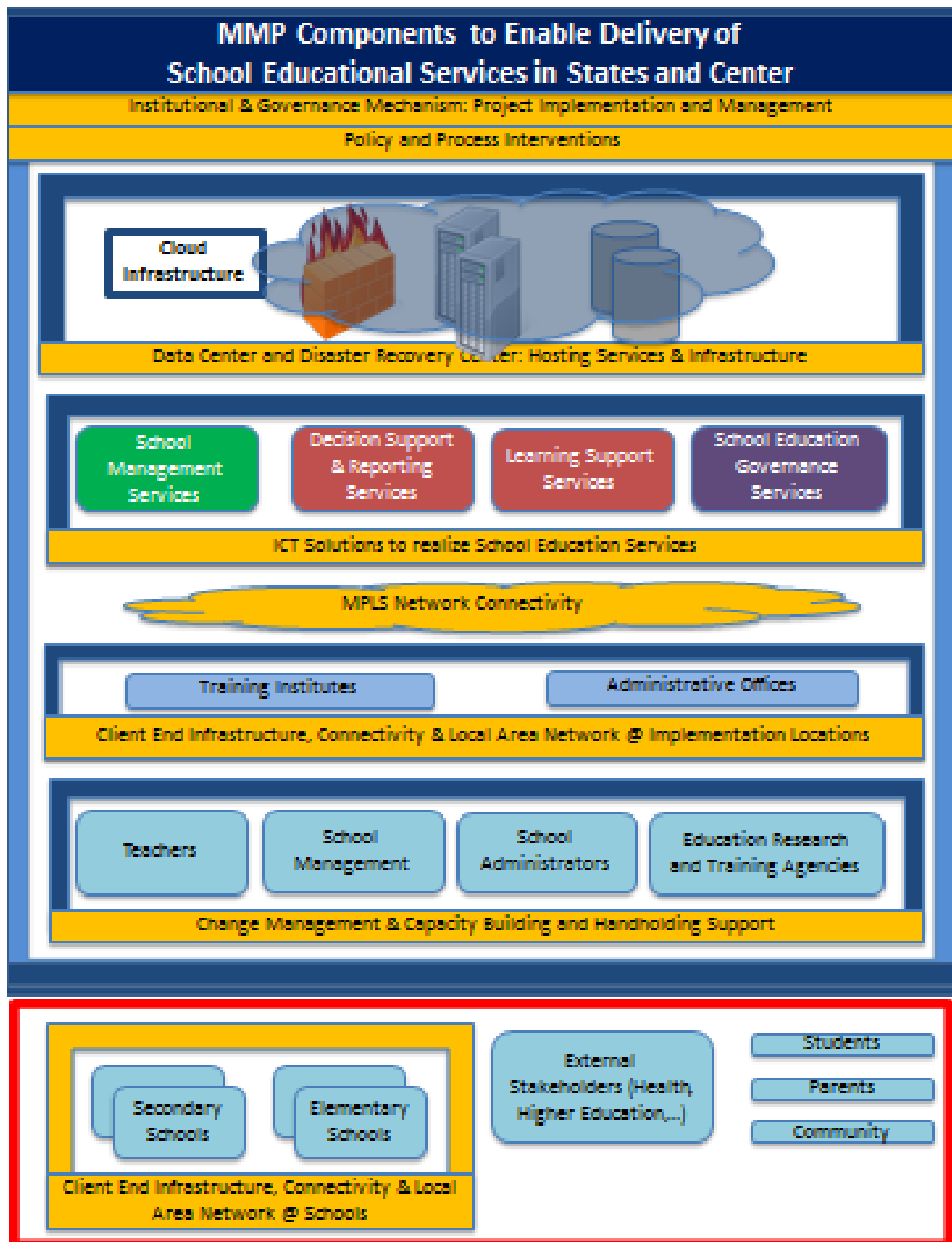
iii.	Training Management Services	
iv.	<p>Scheme Implementation Services –</p> <p>a. MIS services to identify the target beneficiaries</p> <p>b. Application, approval, and disbursement (where applicable) services for schemes such as scholarships for students and enrollment into premier schools</p> <p>c. Auto Indent (for recurring) and distribution services for schemes such as free text books, bicycles,...</p> <p>d. Advance notification services to the targeted beneficiaries (students, parents, community, schools) of the schemes regarding approvals and disbursement</p> <p>e. MIS for Schemes such as SSA, RMSA, MDMS,..</p>	
v.	Services to provide interfaces for private / unaided schools for reporting school particulars	
vi.	School Board Examination and Certificate Services	
vii.	School Affiliation Services	
viii.	School Regulation Services	
ix.	Admissions Management Services (Premier Schools and Private Schools under RTE)	

x.	Scheme Implementation Services – a. Scheme lifecycle services for schemes such as SSA, RMSA, MDMS including receipt and approval of proposal, allocation of budgets, and monitoring the physical and financial progress of the scheme implementation	Additional Services that may be implemented by the States / UTs
xi.	Hostel Management Services	Additional Services that may be implemented by the States / UTs
xii.	Open School Services	Additional Services that may be implemented by the States/ UTs

7.2. Implementation Components

The School Education MMP is designed to enable the States and Center to provide the identified School Education Services to the various stakeholders. The scope of the DPR is primarily focused on creating the enabling environment to deliver the services. The various implementation components factored for the project costing are listed below:

- i. Procurement and Implementation of ICT Solutions and Digital Learning Resources to realize the services identified for implementation under the MMP
- ii. Hosting Services, compute and storage Infrastructure, and Bandwidth at the Data Center and Disaster Recovery Centers
- iii. Change Management and Capacity Building for the targeted stakeholders
- iv. Client End Infrastructure (including access devices and other peripherals) and Network Connectivity at the Schools, Training Institutes and School Education Administrative Offices
- v. Institutional and Governance Mechanism for Project Implementation and Management
- vi. Process and Policy Interventions such as development of data standards, unique id for students, teachers required for successful implementation of the MMP



7.3. Coverage of the MMP

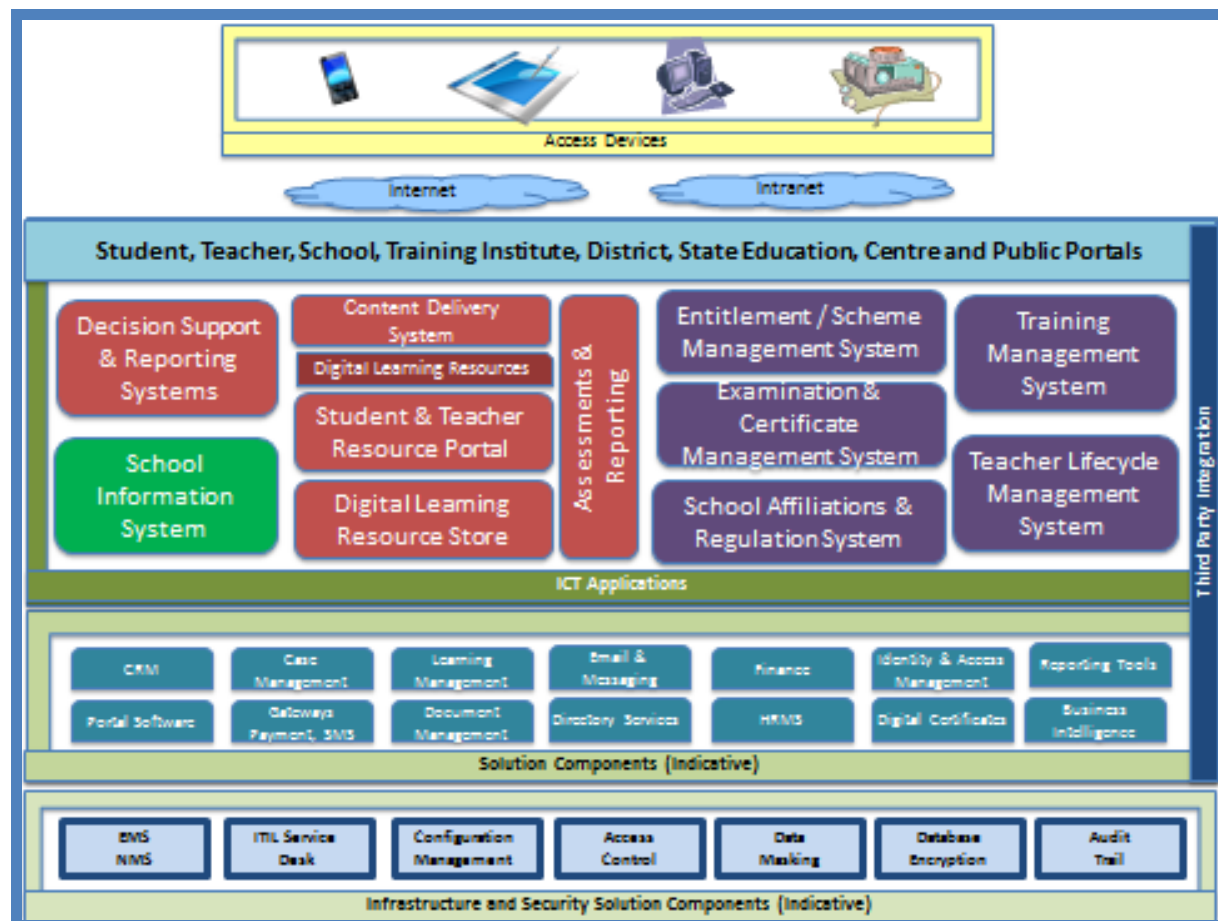
The below table provides the overview of the coverage of the MMP in terms of various implementation components factored at the different administrative / supervisory offices, training institutes, and schools.

Implementation Sites/ Units	Number of Units	Services Available	Client-end Infrastructure including Site Preparation	Connectivity	Digitization (Data / Content)	Change Management & Capacity Building	Institutional Augmentation	
Centre – School Education Administrative Offices								
DoSE&L	1	Decision Support Services	NA	NA	NA	NA	✓	✓
NUEPA	1		NA	NA	NA	NA	✓	✓
NCERT	1		NA	NA	NA	✓	✓	✓
NCTE	1		NA	NA	NA	NA	✓	NA
CBSE	1		NA	NA	NA	NA	✓	NA
NIOS	1		NA	NA	NA	NA	✓	NA
State – School Education Administrative Offices								
SHQ and Directorates (SCERT, Elementary, Secondary, RMSA, SSA, MDMS, Scheme, Textbook Corp, Open School, Adult...)	385	School Management Services, Decision Support Services, School Education Governance Services	✓	✓	✓	✓	✓	✓
Regional / Divisional Education Office*	150		✓	✓	✓	NA	✓	NA
District Education Office	653		✓	✓	✓	NA	✓	NA
Block/ Mandal Education Office / BRCs	7770		✓	✓	✓	NA	✓	NA
CRCs	74,902		✓	✓	NA	NA	✓	NA

Implementation Sites/ Units	Number of Units	Services Available	Client-end Infrastructure including Site Preparation	Connectivity	Digitization (Data / Content)	Change Management & Capacity Building	Institutional Augmentation	
Training Institutes								
NIE / RIE	8	Learning Support Services, Decision Support Services, Training Management Services	✓	✓	✓	✓	NA	
SIETs	5		NA	NA	✓	✓	✓	NA
IASEs	31		✓	✓	✓	✓	✓	NA
CTE / STEIs	104		✓	✓	✓	✓	✓	NA
DIETs	571		✓	✓	✓	✓	✓	NA
BITEs	196		✓	✓	✓	✓	✓	NA
State Level Schools – Government and Government Aided								
Hr. Secondary & Secondary	1,24,500	School Management Services, Learning Support Services, Decision Support Services	✓	✓	✓	✓	✓	
Elementary-Upper Primary & Primary (Excluding composite schools and including elementary only schools located in the 2.5 L Gram Panchayat HQs)	1,83,186		✓	✓	✓	✓	✓	✓
Central Government Schools								
KVS	1090	All Services	NA	NA	NA	NA	NA	
NVS	565		NA	NA	NA	NA	NA	
DMS	5		NA	NA	NA	NA	NA	
CTS	71		NA	NA	NA	NA	NA	
KGBV	547		NA	NA	NA	NA	NA	
Private / Un-Aided Schools								
Secondary & Elementary Schools	School Management Services, Learning Support Services		NA	NA	NA	NA	NA	

7.4. ICT Solution Overview

This section details out the ICT applications to be deployed to deliver the Central and State Educational Services. The ICT applications that need to be deployed to enable the Central and State Educational Services include:



Functional Architecture Overview

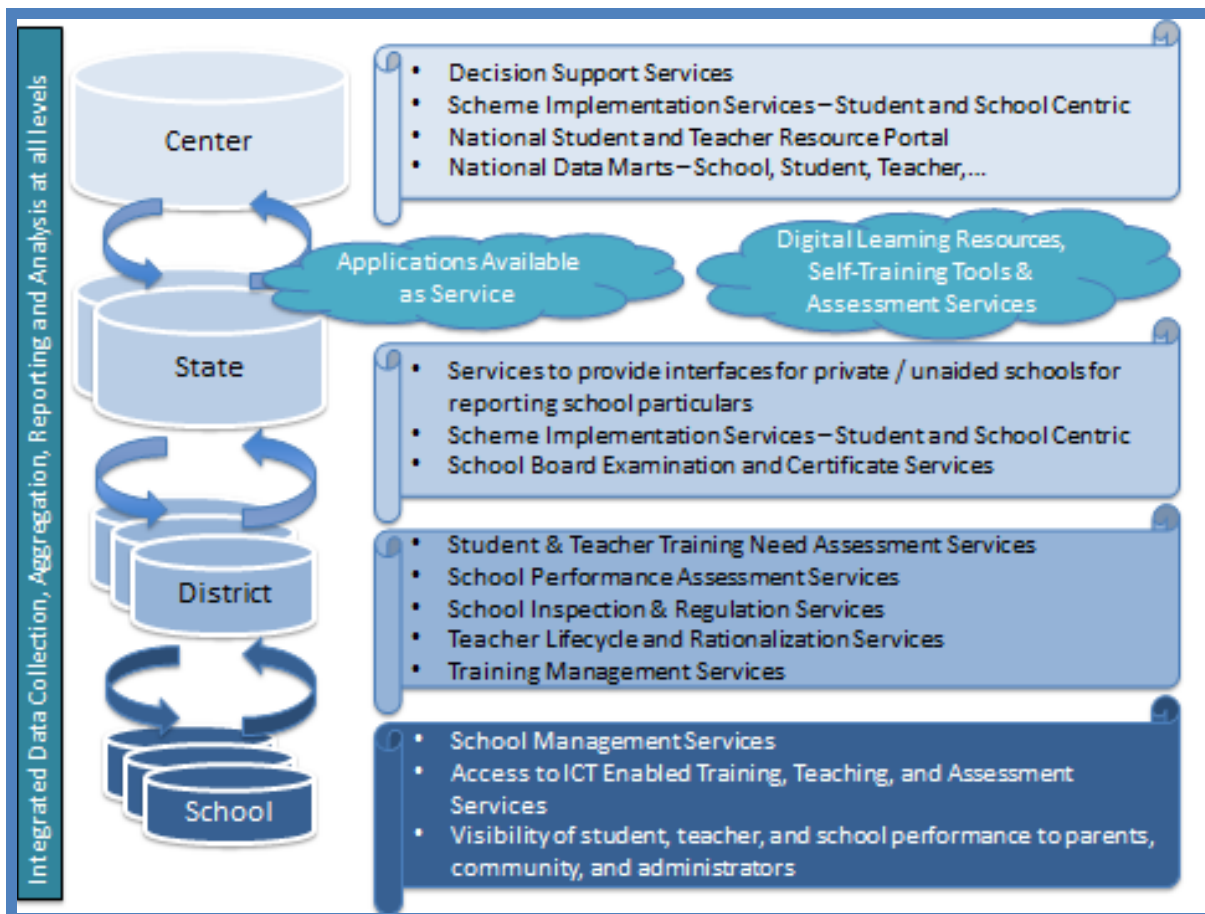
The services will be made available to the various stakeholders through the stakeholder specific portals for Students, Teachers, Schools, Training Institutes, Districts, State Education Department, and MHRD portals.

It is expected that the services will be built on the underlying solution components such as Customer Relationship Management (CRM), Portal Solution, Document Management, and HRMS.

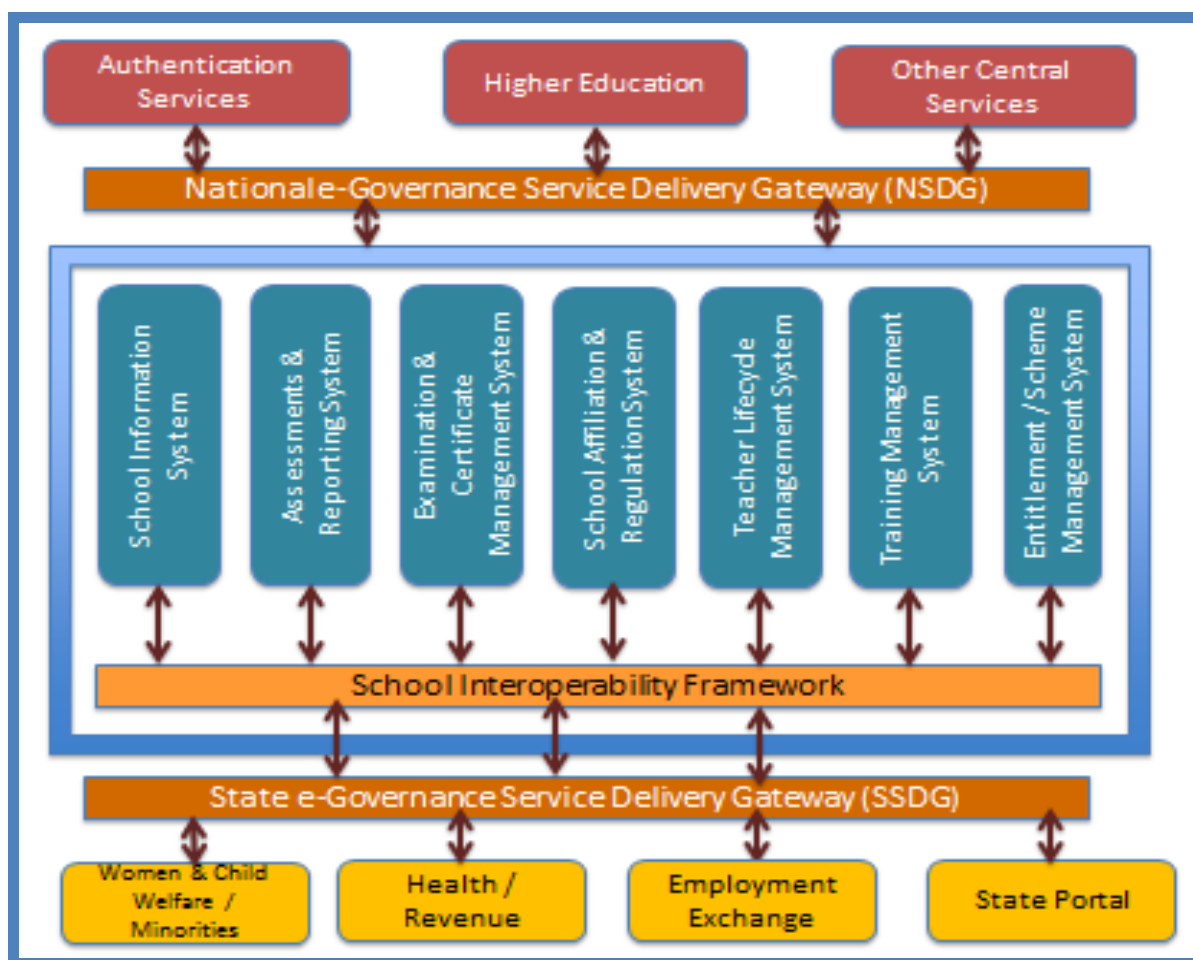
Implementation of enterprise education data systems as envisaged under School Education MMP in which private and personally identifiable information about students and teachers will be stored and managed, it is critical to have the requisite technology infrastructure to support the usage in alignment with the standards and policies regarding data privacy and confidentiality. In addition to underlying solution

components, the enablement of the School Educational Services will require the infrastructure and security solutions such as Digital Signatures, Enterprise Management, Configuration Management, Access Management, Use Authentication and Authorization and Audit Trail to ensure the manageability and security of the solutions and infrastructure.

The solutions may be deployed on the cloud for the Central Institutions and States (e.g., separate localized instance for each State) for the States to use as a service.



An interoperability framework (on the lines of School Interoperability Framework SIF <https://www.sifassociation.org/Pages/default.aspx>) needs to be designed to enable seamless integration across the multiple applications within the School Education landscape. The interoperability framework also enables integration between the ICT applications available on the cloud and used as a service by the State and the State’s local initiatives.



School Education Services will integrate with e-Governance initiatives to use the shared services and enable integrated end-to-end delivery of government services through integration with State Portal and other government solutions. The architecture should be designed in such a way that it takes common services such as authentication services of UID, payment and other services of DIT such as National e-Governance Service Delivery Gateway (NSDG), Mobile Service Delivery Gateway (MSDG) for the mobile based service delivery requirements and the State e-Governance Service Delivery Gateway (SSDG).

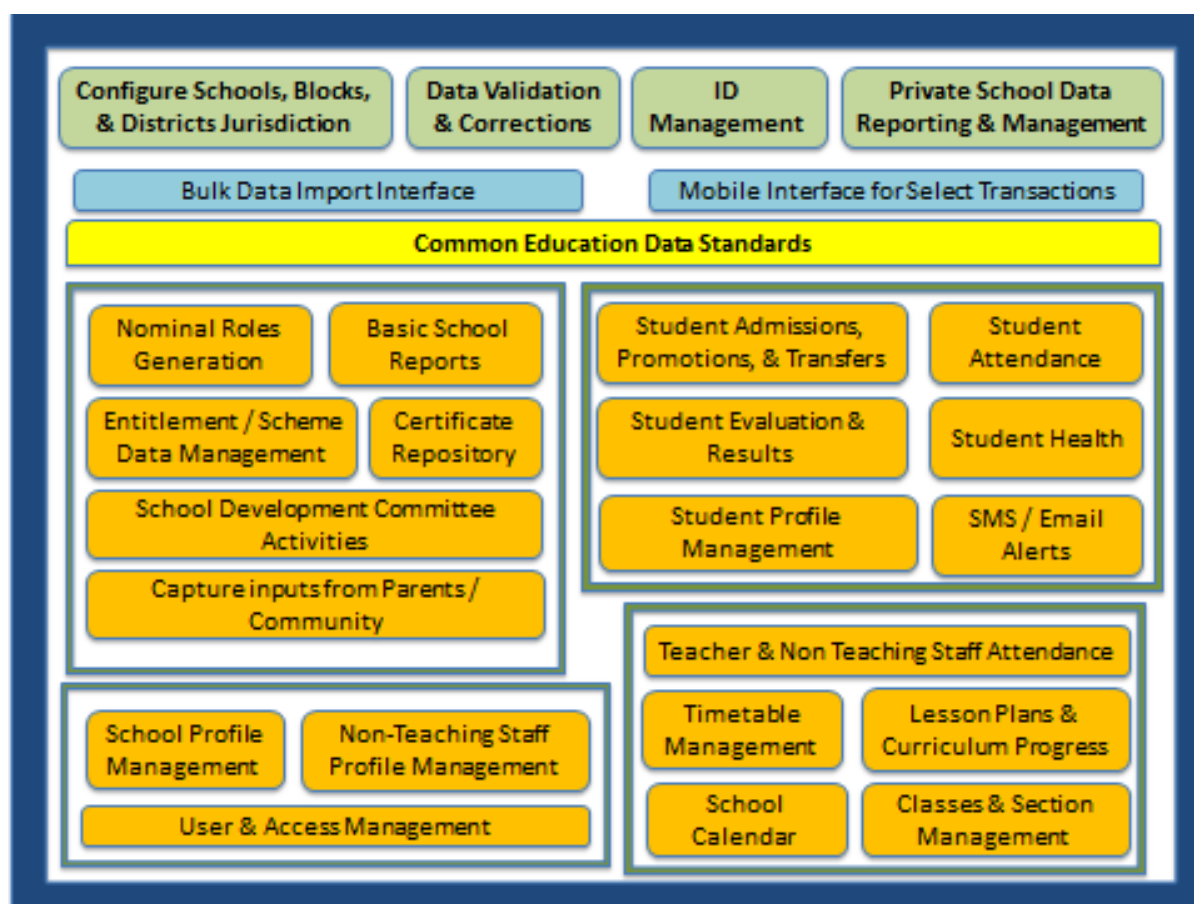
In addition, the School Education Services should provide integration with the social networking media to provide regular updates on the new content on the portal, school performance, teacher transfers and other such events of community interest.

7.4.1. School Information System

School Information System provides a platform for managing the key school operations and thereby enable capturing the school, teacher, student, academic, non-academic, scheme, and other administrative data in a format that aids better decision support and effective school governance. The aggregated student, teacher and school data including the underlying linkages form the basis for delivery of multitude of services to the stakeholders that include identification of students in need of remedial education, focused and customized teacher training, faster feedback to teacher training institutes, teacher rationalization, better governance of schools, and effective scheme design & implementation.

The School Information system should provide role based access to the various stakeholders across the hierarchy (students, teachers, school management, and school administrators) for their functioning.

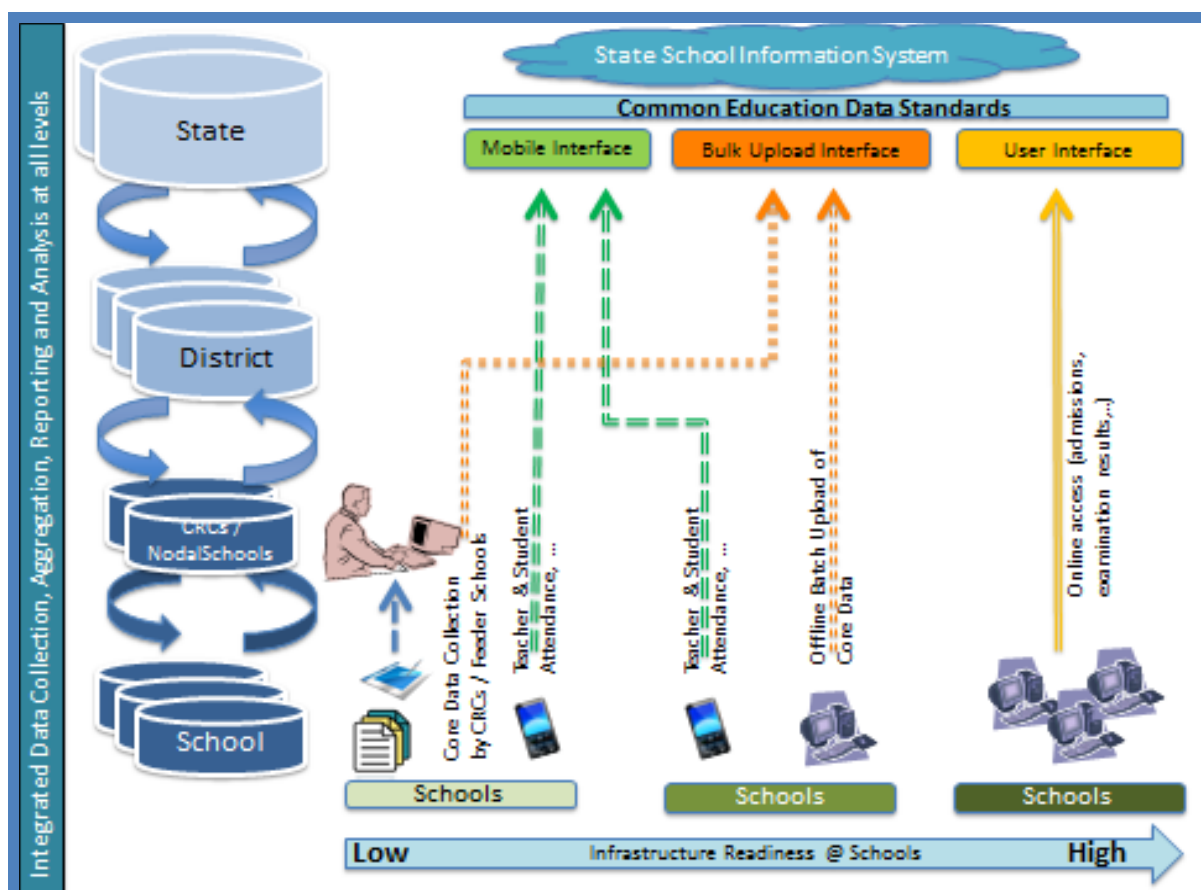
The indicative components of a School Information System are represented in the below diagram:



Implementation Approach

The School Information System deployed on the cloud at either the Center or within the State will be made available to the government and government aided schools as a service. For private / un-aided schools, the system provides an interface for reporting the private school data.

In the government and government-aided schools, where the connectivity is established and infrastructure is available, the School Information System will be accessed by the teachers and school management for their respective functions and data is captured on real or near real time basis. However, where such infrastructure is not available, it is suggested that the State formulate an implementation approach to ensure that the data from such schools are captured in the School Information System on at a predefined frequency (e.g., at least on a weekly basis). Some such options include making the nodal school (e.g., secondary school in the vicinity of the school) or the Cluster Resource Center (CRC) enabled with portable devices responsible for collection of the data from the nearby schools at a pre-defined frequency and feed into the School Information System. A hybrid model is also possible where some of the data such as attendance is collected at the origin through services exposed through the mobile interface and the remaining data is collected by the nodal schools or CRCs at the pre-defined frequency.



Once the data is captured and aggregated in the School Information System, the services of the schools will be made available to the students, teachers, DEOs, and administrators through their respective portals. As more schools receive the necessary connectivity and infrastructure, the schools will move from the manual data collection mode to the online data collection mode.

The implementation will require certain minimum data (e.g., school profile, data of current students enrolled, data of the current teaching and non-teaching staff at the school) to be digitized and captured in the system before the system can be used. While the data digitization strategy will be elaborated during the design phase, it is expected that the digitization of the historical data will be kept to a minimum, both in terms of the number of years and the data set (e.g., school leaving certificates, basic data of the students transferred or passed out) and the data will be sourced from the existing digitized sources such as DISE and SEMIS.

The data governance with respect to the data to be collected, data definitions and frequency of collection have to be established prior to the implementation of the School Information System.

Successful implementation requires focused capacity building of the key personnel that are responsible for the data capture. For the schools with infrastructure,

capacity building should be carried out for the administrative staff, teachers, and head masters. For the schools with poor infrastructure where the data will be collected by the CRC or reported to the nodal school by the head master, the capacity building has to focus on 1 – 2 personnel in the school and the CRCs responsible for the school. The schools that have the infrastructure (or being provided with infrastructure as part of this MMP) should be provided with a technical assistant in the first year for supporting the school staff in using the School Information System to capture the data and maintaining the infrastructure. For the 1,24,000 Secondary schools, such technical assistance may be provided on a part time basis (10 days / month / school) in the first year (10 months). Similarly for the elementary schools that are being considered for the school level infrastructure, such technical assistance may be provided for 5 days / month / school. The CRCs will be responsible for capturing the data of the remaining elementary schools (not being provisioned with client infrastructure as part of the MMP) into the School Information System.

The timeliness and accuracy of the data (e.g. student attendance and assessment results, teacher attendance, progress on the lesson plans,..) reported in the School Information System forms the basis for successful delivery of the majority of the downstream services. Hence, it is critical to encourage all the stakeholders including school managements, non-teaching staff in the schools, teachers, and Cluster Resource Persons to use the School Information System in their respective functions that will lead to timely capture of the data. However, for the first few years, the key stakeholders, one from non-teaching staff and one from teaching staff, designated as the nodal persons in the school for implementation in the respective schools may be provided with additional incentives, both financial and otherwise in order to sustain the usage of the school information system. However, eventually it is expected all the stakeholders in the school will receive the requisite training and use the School Information System in their respective functions.

Envisaged Outcomes and Indicative Monitoring & Evaluation Parameters

<p>Students & Parents Community</p>	<ul style="list-style-type: none"> ▪ View school calendar including class timetable, co-curricular activities, assessments, and assessment results ▪ Track progress on lesson plans ▪ Request for certificates (Students) ▪ Track Student, Teaching and Non-Teaching Staff Attendance ▪ Provide feedback / inputs to school management and administrators
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Teachers	<ul style="list-style-type: none"> ▪ Longitudinal tracking of Students
School Managements and Administrators	<ul style="list-style-type: none"> ▪ Track Student, Teaching and Non-Teaching Staff Attendance ▪ Track progress on lesson plans and syllabus ▪ Streamlining of school management (academic and non-academic) operations including student admissions, transfers, evaluations, timetables, and school profile management ▪ Streamlining of communications (including data) with school administrators and other directorates (e.g., examination) of School Education Department ▪ Basic Student, Teacher and School Performance Reports ▪ Access to near real-time and better quality data for decision support
Internal Stakeholders (Examinations Directorate, Directorate of Text Books, Education Research & Training Institutes,...)	<ul style="list-style-type: none"> ▪ Access to near real-time and better quality data for policy and planning ▪ Longitudinal tracking of students ▪ Teacher Performance Assessment ▪ Faster feedback to training institutes on the training pedagogy
External Stakeholders (Health, Higher Education,...)	<ul style="list-style-type: none"> ▪ Access to school education data for verification of records and any other integration needs ▪ Access to students' health metrics

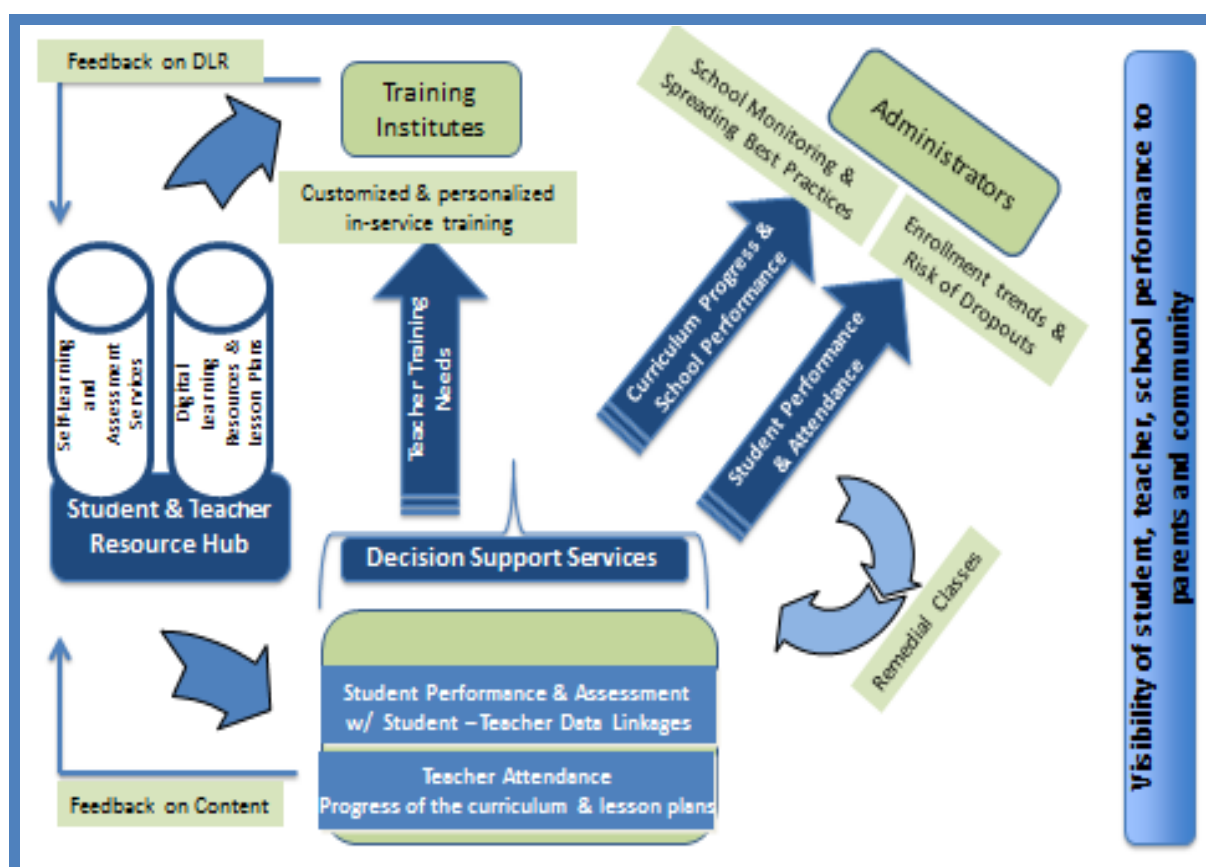
The following indicative parameters should be monitored on a regular basis to monitor the progress of implementation of the school information system:

- i. Number and % of schools using the school information system
- ii. % of student life cycle transactions conducted online
- iii. Number and % of teachers using the school information system
- iv. Number of transactions on the school information system
- v. Comprehensiveness, reliability and timeliness of data in the school information system
- vi. Sufficiency of the data in the School Information System to generate necessary education reports for various stakeholders
- vii. Efficiency gains in school management operations (e.g., receipt of nominal roles from schools, student data for scheme design and planning, ...) within the school and in the interactions with the external stakeholders with the school post implementation of the School Information System

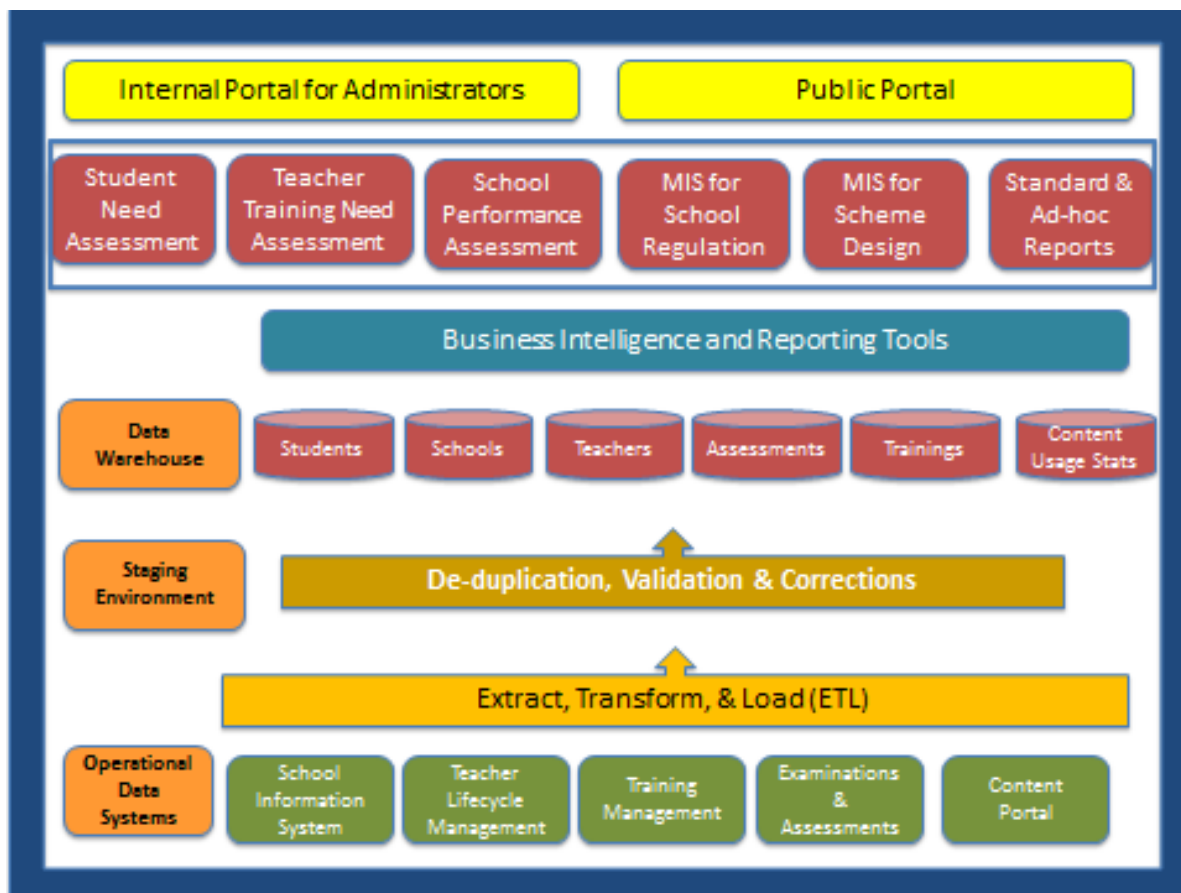
7.4.2. Decision Support and Reporting Systems

The aggregated student, teacher and school data including the underlying linkages from the implementation of School Information System in the various schools forms the basis for the Decision Support and Reporting Systems.

Decision Support and Reporting Systems can enable identification of students (and the weak areas) in need of remedial education, focused and customized teacher training, faster feedback to teacher training institutes, and better monitoring of the under-performing schools and training institutes, all of which can significantly impact the quality of learning. Decision support services built on student performance and attendance data capturing the underlying student-teacher linkages can provide continuous feedback on the student and teacher performance to schools, training institutes and administrators.



The indicative components of the Decision Support and Reporting System are represented in the below diagram:



i. Student Need Assessment

Student Need Assessment services derived from student attendance and performance provides visibility to administrators at school as well as school education officials to:

- a. Identify students who are in need of remedial classes well before the end of the academic year
- b. Identify students with increased risk of dropout based on their attendance and performance patterns
- c. Trends in student enrollment

ii. Teacher Training Need Assessment

Establishing the linkages between student and teacher performance (after taking into consideration parameters such as school working days, student attendance and earlier performance of student) enables identification of not only teachers in need of training but also the training needs of the teachers. This can aid in

delivery of more customized and personalized in-service teacher training. Such analysis can also provide feedback on the pedagogy, courses and training material to the teacher training institutes.

iii. School Performance Assessment

School performance assessment services built on the student and teacher data captured at the school can enable comparative analysis of schools with similar profiles on various parameters such as progress on the curriculum, school working days, attendance of students, attendance of teachers, performance of students and teachers. Such analysis can aid in:

- a. Visibility of the school performance relative to similar schools to the school teachers and administrators.
- b. Visibility of under-performing schools to the administrators that aids in scheduling the school inspections
- c. Identification of best practices (lesson plans, remedial classes, teacher training, school administration) in the high performance schools for dissemination to the other schools

iv. MIS for School Regulation

The student, teacher, and school performance data can provide MIS for better school regulation through scheduling the inspections of underperforming schools based on the data.

v. MIS for Scheme Design

The student admission and attendance data will provide the data for scheme design and implementation without having to go back to schools for the data.

vi. Standard and Ad-hoc Reports

The student, teacher and school data can be used to generate standard and ad-hoc reports required for policy, planning, educational research and any other such stakeholders' needs.

Implementation Approach

As with the School Information System, the Business Intelligence and Reporting Systems will be deployed on the cloud at either the Center or within the State and will be made available to the various stakeholders, primarily administrators across the School Education Department. The success of the implementation mainly depends on the timeliness and quality of the data captured by the School Information System and the effective use of the decision support services by the school administrators and education planners. Strategies such as linking the delivery

of the infrastructure (necessary for accessing digital learning resources), linking the release of funds under SSA and RMSA to the consistent implementation of School Information System may be considered for enforcing the implementation of School Information System. The administrative offices, right from the District Education Office and the directorates in the School Education department have to be provisioned with the necessary infrastructure and connectivity. A focused capacity building and change management exercise will be required to enable the administrators to effectively use the decision support systems.

A business analytics tool can be deployed on the existing DISE and SEMIS data to draw insights required for policy and planning. Such tools can be used to generate the standard and ad-hoc reports that can be made available to both internal and external stakeholders including public. Once the school information systems and other systems deployed as part of the MMP start building quality data into the system, such analytical and data mining tools can become a great tool for policy makers and researchers.

Envisaged Outcomes and Indicative Monitoring & Evaluation Parameters

Reports should be able to answer questions that will help improve the performance of the Education system at all levels, from the highest (planning at the Central Government) to the most granular (student and teacher).

Below are a few reports based on the domain area:

Organizational Information
a. Basic profile of the school and changes to it over time
b. What programs are students enrolled in?
c. How to tailor academic approaches to fit the needs of the school?
d. What schools are students coming to this school from?
e. Mobility rate questions (see below)
f. What programs are being utilized and how much?
g. Student enrollment profile
h. Students receiving special accommodations and service (Y/N)
i. Compare schools in the district in order to fine-tune approaches for needs of

a school (for example, instructional, resource allocation, programs, content being used, and so on)

- j. Compare performance of similar schools performing in an area. If some schools are performing very well, what are they doing that perhaps the lower-performing schools could try?

Student Information

- a. Understanding of students' backgrounds
- b. Gives insight to students' strengths and areas they could use improvement
- c. Programs that are students involved in?
- d. Longitudinal tracking of students
- e. Identify students who are in need of remedial classes well before the end of the academic year
- f. Identify students with increased risk of dropout based on their attendance and performance patterns
- g. Trends in student enrollment
- h. Multiple enrolments across schools

Academic Profile

- a. Time a student is spending in the classroom?
- b. Is a student missing time (and thus learning opportunities?)
- c. How is a student performing in a particular course?
- d. Are students on track to graduate?
- e. Has the student received any interventions? What were the outcomes?
- f. Does the student have any discipline infractions?
- g. Does the student adjust behavior/have a better outcome from a particular infraction?
- h. How is the student performing on annual and interim assessments?

- i. Is performance on annual and interim assessments similar to class/course performance? If not, why?
- j. Does this student move frequently?
- k. If so, does the moving appear to be affecting his performance?
- l. Is this student new to the district and the classes?
- m. Is there a way the student could be “brought up to speed” on particular material?
- n. Is the student in a program?
- o. Is there a program that the student could benefit from?
- p. What activities is the student involved in?
- q. Is there an activity that the student could benefit from?
- r. How could we tailor academic approaches to meet the needs of this student and to help this student to excel?
- s. Allows different teachers, counselors, coaches, and others to work collaboratively to maximize student performance

Attendance

- a. How often are students missing class?
- b. Is a particular student or group of students missing more frequently?
- c. If so, is this affecting their performance?
- d. Is there a school-wide issue with missed learning time?
- e. Is there a district-wide issue with missed learning time?
- f. If students are missing classroom instruction for a particular time period, how can we arrange the schedule to minimize impact on their learning and performance?

Discipline

- a. What is the discipline rate of the student? The school? The district?
- b. Are there patterns in when discipline incidents are occurring?
- c. Are there patterns in where discipline incidents are occurring?
- d. Is there a particular type of incident that occurs most frequently?
- e. What may be causing this incident?

Mobility

- a. From where are new students to the district coming?
- b. To where are students leaving the district going?
- c. From where is the school getting students (school, district)?
- d. If students leave, what school are they going to?
- e. Why are students coming to a particular school?
- f. Why are students leaving a particular school?

Dropout Rate

- a. What is the school's or district's dropout rate?
- b. How has this changed over time?
- c. Have we implemented programs or policy to try to reduce the dropout rate?
How has the rate changed since these were implemented?
- d. Are we seeing trends in the students who are dropping out? (for example, did not perform well in Algebra I, had discipline issues, had attendance issues, and so on)

Assessment

- a. How are students in specific classes, schools, across the district performing?
- b. What are the district's strengths and weaknesses (down to a standard level, if

desired)

- c. Where are students excelling?
- d. Where do students need improvement?
- e. How can we group students with similar needs and tailor instruction to meet these needs?
- f. What subject areas/content/standards are being learned well?
- g. What subject areas/content/standards are students not performing well on?
- h. How can we help students to perform better on these standards?
 - o Is there supplemental content?
 - o Should we change the content delivery method?
- i. How are students taking alternative tests performing? Are they ready to transition to normal tests?
- j. Are there differences or achievement gaps between key populations (economically disadvantaged, gender, and so on)?
- k. How is the student/class/school/district progressing over time?

Teacher Information

- a. Understanding of teachers' backgrounds
- b. Gives insight to teachers' strengths and areas they could use improvement
- c. What training programs are teachers involved in?
- d. Identify teachers who are in need of training
- e. Identify training needs of teachers

The following indicative parameters should be monitored on a regular basis to monitor the progress of implementation of the decision support and reporting systems:

- i. Number of stakeholders served by the decision support and reporting systems
- ii. Number of transactions on the decision support and reporting systems
- iii. Comprehensiveness, reliability and timeliness of data in the reporting systems
- iv. Ability to provide relevant and timely school education data to the various stakeholders including teachers, parents, community, school management, school administrators, various school education directorates, education research and training institutes, higher education department and health department
- v. Efficiency gains in the functioning (e.g., turnaround time for identification of scheme beneficiaries, better understanding of root causes for the underperforming students, teachers, and schools, customized and personalized in-service teacher training,...) of the stakeholders (DEO, training institutes, school education directorates,..)
- vi. Improvement of quality and standards of education

7.4.3. Learning Support Services: Content Platform, Digital Learning Resources, and Assessment Tools

Objective

Digital Learning Resources and Assessment tools are effectively used in School Education in many countries worldwide. Several private school chains in India are also currently using the same effectively to improve the quality of learning for the students.

The Core Scoping exercise for the School Education MMP undertaken by the MHRD through an elaborate consultative process with all States have identified the critical need to improve quality of learning for the students in government/ aided schools through deployment of ICT in school education as a core focus area by way of:

- i. ICT enabled teacher learning material (Digital Learning Resources, structured lesson plans, assessment tools..) both in schools as well as teacher training institutes
- ii. Use of IT to enable identification of students in need of remedial education, identification of skill set gap in the teachers, focused and customized teacher training, faster feedback to teacher training institutes, and better monitoring of the under-performing schools and training institutes

Stakeholders & Coverage

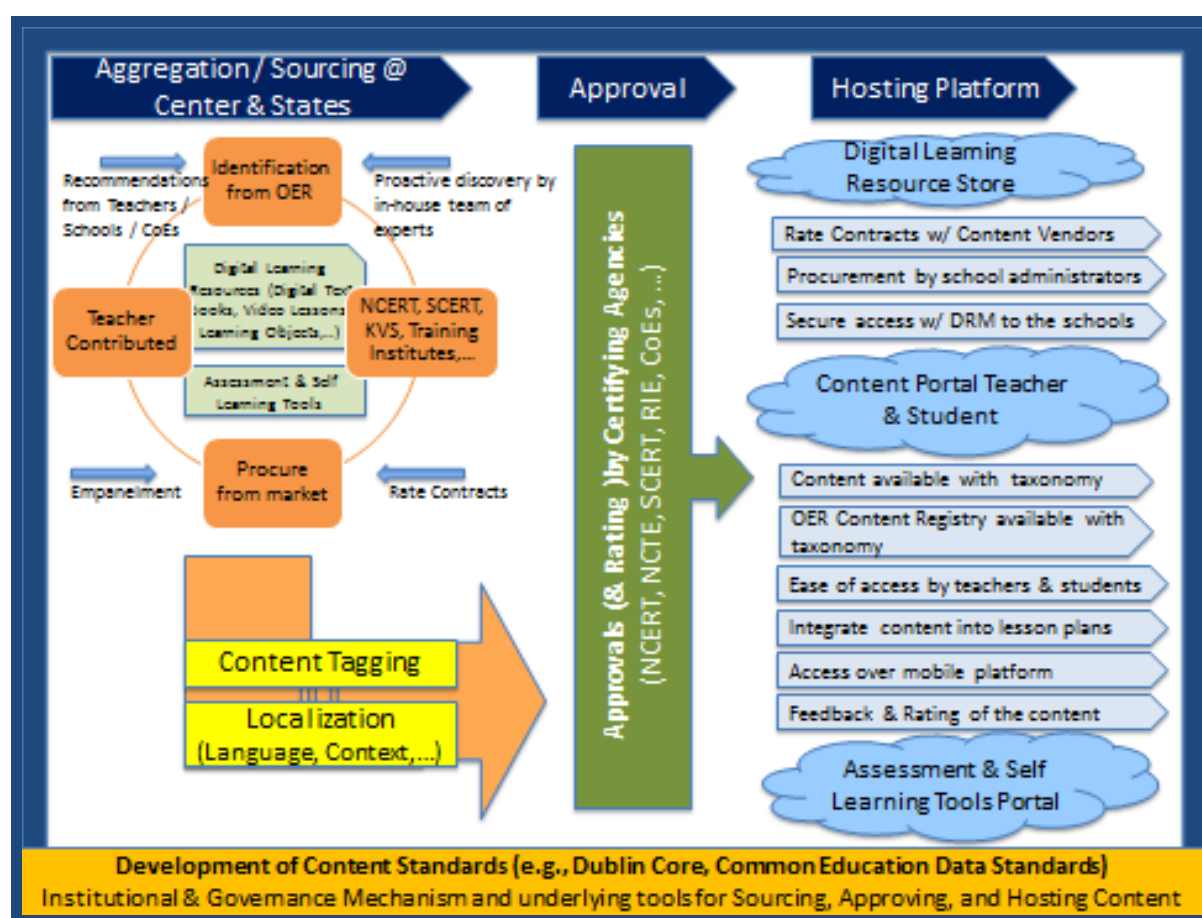
The primary stakeholders of this initiative are students, teachers, schools, school education departments, and teacher training institutes. The Learning Support Services under the School Education MMP provides emphasis on aggregation/sourcing of Digital Learning Resources (DLR) for classes 1 to 12 and hosting on Student and Teacher Resource Portal over the Internet for delivering the same to Schools.

Proposed Solution

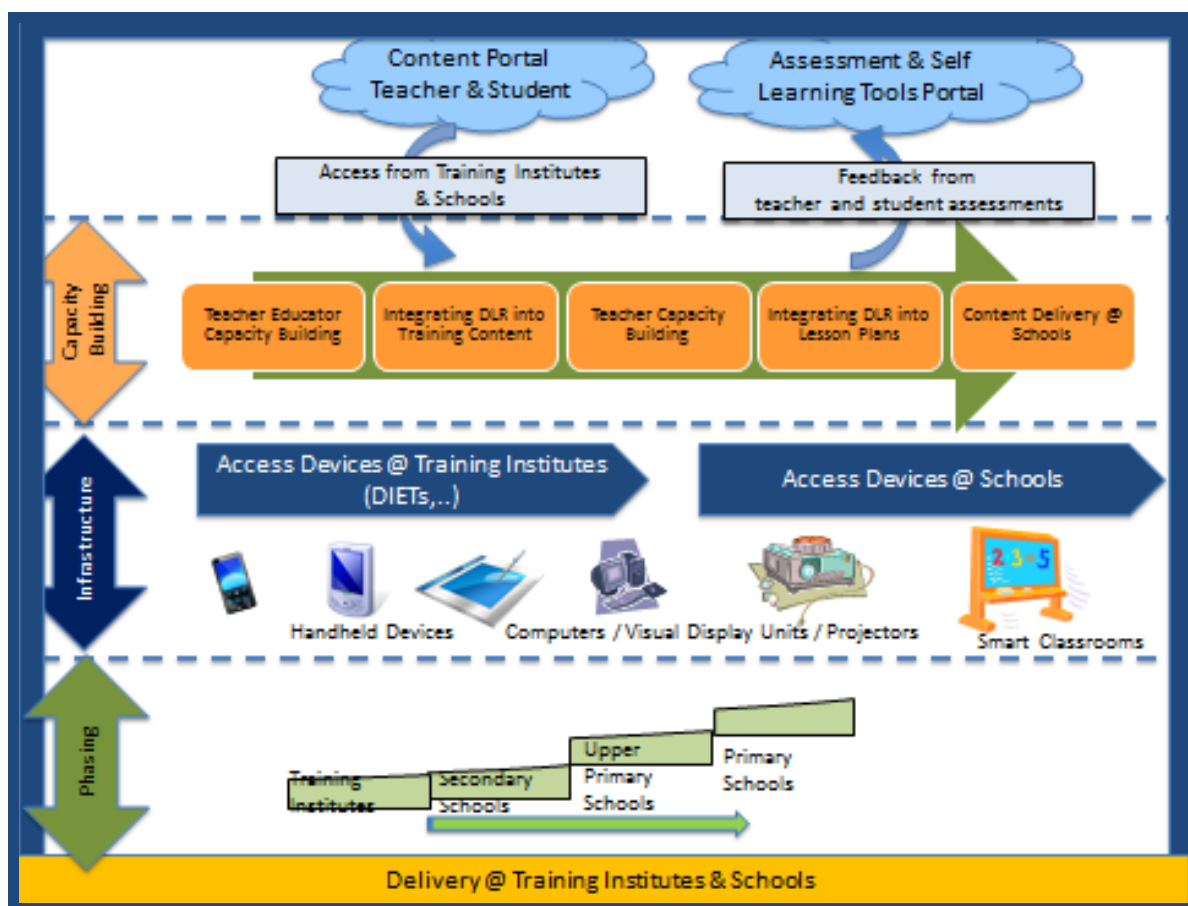
In order to deliver Learning Support Services under School education MMP, MHRD envisions establishment of the Student and Teacher Resource Portal (over the Internet) both at the National Level and State Levels, setting up a Digital Learning

Resources (DLR) Store including assessment tools through aggregation of digital Open Educational Resources (OER) available in the Internet from Government, Non-Governmental agencies, and procurement of Learning Objects from the open market, a robust content approval process, and hosting it on the Portal for access by all stakeholders including the private schools. It also endeavors to build necessary service delivery mechanism through building capacities of teachers, teacher educators and providing necessary infrastructure/devices at the School level to access the content by teachers and students for delivery of lessons in the class.

The following diagram displays the overview of proposed steps required in setting up the Digital Learning Store and Student & Teacher Resource Portal:



The following diagram displays the overview of solution elements required in making the DLRs accessible to the teacher educators and teachers in the training institutes and classrooms:



Solution Components

The core elements of the proposed Learning Support Services solution under the SE MMP are indicated below:

i. Content Platform

Presently digital learning resources exist in many forms and are spread across many locations, online and offline. As part of this initiative all digital learning resources are proposed to be hosted on a central portal (one at the Center and one for each of the States) accessible freely over the internet. The central content portal would act as the one stop location for all digital learning resources and interactive tools for students of all classes from class 1 to 12 with robust search functionality. The States may continue to host the state specific localized DLRs to suit the State syllabus in the State content portals. The portal will host standard lesson plans for all subjects from class 1 to 12 duly integrating the DLRs in their preparation. Teachers will be able to access content as well as tools to create customized lesson plans. Besides, the portals would also provide a platform for discussions and foster collaboration through various discussion

boards and forums. The central portal (at the Center) would also provide links for state specific requirements that directs users to the respective state portals.

ii. Digital Learning Resource Store

The DLRs in the store include digital textbooks, video lectures, learning objects, assessment tools and self-learning tools. The approach is to avoid reinventing the wheel in creating the large pool of digital learning resources that are required for School Education system across the country. Indicative sourcing approaches are detailed in later sections of this document.

iii. Assessment Engine/Tools

ICT based assessment engines / tools facilitate standardized measurement of learning levels. These tools are used for assessment of student performance in schools as well as for teachers as part of the teacher education and training. Student assessments are useful to identify the key gaps in the student learning and provide feedback with respect to the requirement of remedial classes. The same are also used as feedback to identify the skill gaps of teachers and aid in designing the appropriate training interventions that are required to overcome such gaps. Aggregated information about performance at the school / district/ state levels will provide information to the administrators that can be used to identify and implement the necessary remedial / procedural / systemic actions to enable further improvement in the quality of learning.

iv. Capacity Building

As the main objective is to improve the quality of learning of students, it is crucial for teachers to know how to integrate the DLRs with lesson plans, structure delivery of lessons, elicit response, generate queries, and improve participation of students in the classroom. The teachers are required to become proficient in the use of use smart boards, interactive tools, Projectors etc., in delivery of lessons to students. Teacher training institutes will play a crucial role in orienting the teachers in use of digital content in delivery of lessons, preparation of lesson plans by incorporating the DLRs, administering assessments to students and capturing the assessment data through School Information Systems. The capacity building efforts are to be targeted for both teachers and teacher educators.

In view of the huge number of teachers to be trained, it is proposed to create a battery of Master Trainers in each state at the rate of two Master Trainers for elementary and secondary sections per each development Block. These master

trainers would in turn train the targeted teachers in the elementary schools and secondary schools. While the subject teachers with IT knowhow, Block Resource Persons, teacher educators from DIETs are good candidates to be Master Trainers, the teacher's trainings would be predominantly conducted in DIET or Secondary/ Higher Secondary Schools with readily available computer labs. Specialized training modules would be developed for the training of Master Trainers and as well the teachers.

v. Delivery / Infrastructure / Devices

Infrastructural readiness of the Schools across the country varies widely. While the access to the DLRs store hosted on the content platform is over the Internet, the delivery devices include desktop/ laptop, notepads, projectors, integrated visual display units to facilitate interactive teaching in the class rooms. It is proposed to provide laptop / tablet carts to some selected Schools in a phased manner to facilitate group work by students in the classroom. The SE MMP proposes to provide the necessary connectivity, delivery devices to all Government and Government-Aided elementary schools located in Gram Panchayat HQs and all Government and Government-Aided Secondary and Higher Secondary schools across all States/ UTs. The details of the recommended client end infrastructure for schools is provided in Section 7.8. Client End Infrastructure and Connectivity.

In addition to the infrastructure, the content delivery systems including Open Online Course platforms for content dissemination will be required for teachers to effectively collate the necessary content required for the class or an individual student.

Sourcing of Digital Learning Resources

Large amount of DLRs will need to be sourced as part of this initiative. As the complexity of the content and the current base of available content varies widely, multiple sources needs to be tapped for generating the right kind of learning resources. DLR sourcing is primarily targeted from (i) OERs that are already available in the Internet and (ii) Private Education Solution Providers / Publishing Houses. As a first step in this direction, CBSE and the States will have to identify hard spots for the classes 1to 12 for their respective syllabus.

i. Identification of Open Educational Resources (OERs)

It is proposed to use digital OERs that are widely available free of cost in the Internet. The OERs provide flexibility to use the content by allowing its reuse, revision, remixing, and redistribution. The wide variety of OERs will allow users to pick and choose the material that best suits their needs.

Various government bodies such as NCERT (CIETs / RIEs), SCERTs, KVS, CBSE and other state government bodies (such as IT@School Project of Government of Kerala) have already initiated the identification or development of DLRs for school education. These efforts shall be continued and all such DLRs available with these agencies be brought under the National Repository for Open Educational Resources (NROER) initiative by NCERT.

Various NGOs in India have either customized digital OERs or created their own DLRs to suit the requirements and are being used in a few government / aided schools in some small pockets. These resources would also need to be collated to augment the OER repository.

MHRD, GoI and State Governments may set up Task Forces with members drawn from educational organizations such as NCERT/ CIET/RIE/KVS/CBSE and SCERT/ SIET, State text book boards for the Center and States respectively to identify OERs suitable for different classes and propose the same for approval and tagging. Existing guidelines and processes established by various bodies such as NCERT, KVS etc. for creating, validating, and approving digital content should also be leveraged for this initiative.

ii. Procurement from Private Organizations / Publishing Houses

A few reputed private commercial organizations/ publishing houses in India have created considerable amount of digital learning resources in the shape of Learning Objects through usage of multimedia, suitable for our curriculum and the same is being used in several private school chains across India. These private organizations/ publishing houses may employ a variety of business models such as pay per use, subscriptions, license fee, and outright purchase for monetization. It is recommended that Government may procure this potentially large source of DLRs readily available with the private sector through appropriate business model.

It is tentatively estimated that around 24, 000 Learning Objects (10-12 minutes of multimedia content) may be needed to cover concepts for all hard spots in all subjects from class 1 to 12. It is proposed that at least one set of DLRs should be sourced from the private organizations / publishing houses (outright purchase for free re-distribution across all schools) to cover all hard spots in all subjects from class 1 to 12 to be hosted in the DLR Store on the proposed Student and Teacher Resource Portal under the SE MMP.

The Learning objects should be procured through a competitive procurement process from multiple private vendors (3-4 private publishing houses) by slicing the total requirement either based on subjects or classes, on outright purchase model for classes 1 to 12 among the vendors. As, it is desirable to have multiple sets of L.Os for hard spots for the benefit of teachers and students, the selected private publishing houses may be mandated to provide L.Os pertaining to other slices on pay and use business model. These selected agencies would also be required to translate and localize the digital content to suit the requirements of various States in consultation with SCERT/SIET or any other agency identified by the respective State.

iii. In- House Development of Digital Learning Resources

In addition to the above, MHRD would fund NCERT and other government entities in a limited way for developing content in-house that will ensure not only building the in-house capacities to develop content but also act as a price benchmark for content procured from the private players.

iv. Teacher developed DLRs

In comparison to the digital OERs available from the Internet and DLRs that are already available with various existing central / state government institutions and NGOs, the DLRs created by the teachers would be more localized and directly usable in many cases. As the needs on the ground are very dynamic such teacher created digital resources may more readily map with the needs of a similarly placed teachers in schools. MHRD would provide funds to the States under the MMP to motivate and encourage the teachers to develop DLRs.

Approval / Validation Process of Digital Learning Resources

Every DLR to be hosted on the content portal will need to meet the required standards for use in school. Not only does the content need to be accurate and appropriate for a particular age group but also needs to be free from errors of commission, omission, or hurt sensibilities (religious, caste, regional etc.). Therefore every individual piece of digital content that is being sourced through OER or private publishing houses under the MMP needs to be validated and approved before being hosted on the portal.

In view of large volume of DLRs proposed to be sourced under the SE MMP, it is recommended to establish (or empanel) multiple number of Digital Content Certifying Authorities (DCCA) who will certify the digital content under the functional and technical guidelines to be issued by the MHRD. The DCCAs would be responsible for approving digital OERs and the DLRs sourced from private entities, including appropriate indexation, tagging with the right metadata such as type of DLR, subject, topic, concept, medium, educational standards etc. DCCAs could be from government or non-government entities as indicated below:

i. Governmental Entities

- a. Central Level: Some of the existing government entities such as NCERT (RIEs, CIET) and CBSE that are currently engaged in developing or certifying content can be designated as DCCAs at the central level. Besides, some of the Universities and Centers for Excellence such as CIEFL may also be designated as Certifying Agencies
- b. State Level: At the state level the respective SCERT, SIET, Text book boards of states can be designated as DCCAs for approving and validating digital content for use in the state.
- c. District Level: A few selected DIETs in a state, which are nurtured as center of excellence can be designated as DCCAs.

- ii. **Non-Governmental Entities:** Centers of Excellence in particular subjects, expert education/research agencies in the private sector, NGOs with competencies in ICT adoption without having any business interest in educational content publications can be right candidates for designating as DCCAs.

Funding and Policy leadership by MHRD

The Learning Support Services initiative under the SE MMP would be provided with 100% central funding by MHRD. MHRD would provide policy and process guidelines

required for effective implementation of the initiative. The States may adopt the guidelines in to-to or by adding a few guidelines specific to suit their environment. Such indicative guidelines include:

- i. Guidelines for creation, sourcing, tagging of DLRs
- ii. Guidelines for establishing Digital Content Certifying Authorities.
- iii. Functional and technical guidelines to DCCAs for the approval of Digital content/learning resources
- iv. Guidelines for setting up taskforce by Center/ States for identifying digital OERs

Phasing and Responsibility matrix

The center and States are needed to undertake following definite tasks jointly or severally to facilitate implementation of this initiative. An indicative responsibility matrix is proposed in the following table:

S.No	Task	Scope	Responsibility	Phasing : Year1 to Year 4
1	Hosting of Digital copies of government text books and reference books on the Portal	All classes from 1-12 in all states	SCERT, State text book boards	Year 1
2	Preparation and hosting of Video lessons	Important topics Classes 7-12 by eminent teachers in class room environment	Central syllabus- CBSE State syllabus- SCERT/SIET of respective states	Year 1- year 4; Every year 10 hours for each subject in each class
3	Learning Objects – Multi media	Hard spots in all subjects for classes from 1-12	NCERT, CBSE, KVS etc. – 20% MHRD designated agency- procurement of balance 80% centrally from private publishing houses with	<ul style="list-style-type: none"> • Y1- Classes 8 to12 • Y2 – classes 1 to7

S.No	Task	Scope	Responsibility	Phasing : Year1 to Year 4
			appropriate business model	
4.	Translation , localization, tagging of L.Os sourced from private sector by MHRD	Hard spots in all subjects for classes from 1-12	SCERT/SIET/Text book boards of respective states through the identified vendor	<ul style="list-style-type: none"> • Y1- Classes 8 to12 Y2 – classes 1 to7
5	Assessment Engines/ Tools	All classes from 1-12	NCERT , CBSE, KVS – 20% MHRD designated agency- procurement of balance 80%	<ul style="list-style-type: none"> •Y2- Classes 8 to12 •Y3 – classes 1 to7
6	Digital OER identification - Creation of OER Registry, tagging, and localization	All classes	<ul style="list-style-type: none"> • Central Task force or MHRD designated agency • State Task Forces 	<ul style="list-style-type: none"> •Y1- Classes 8 to12 •Y2 – classes 1 to71
7	Teacher and Student Resource (Content) Portal	<ul style="list-style-type: none"> • Central portal • State portal 	NCERT/ CIET or through a professional Implementation Agency identified by MHRD	<ul style="list-style-type: none"> •Y1 •Y1-Y2
8	Empanelment of Digital Content Certifying Authorities	All States/UTs	<ul style="list-style-type: none"> • MHRD • State Govts based on the guidelines issued by MHRD 	Y1
9	Access devices or			

S.No	Task	Scope	Responsibility	Phasing : Year1 to Year 4
	Client End Infrastructure	Covered under Section 7.8 of the DPR		
10	Training of Mater Trainers (M.T) and development of training modules	Covered under Section 7.7 of the DPR		
11	Teacher's training in using ICT in delivery of lessons	Covered under Section 7.7 of the DPR		
12	Preparation of Model lesson plans-integrating DLRs	All subjects for classes from 1-12	<ul style="list-style-type: none"> • CBSE, KV for central syllabus • DIETs of respective states • MHRD designated agency 	Y1, Y2
13	Policy and process guidelines	All related policies	MHRD	Y1

Envisaged Outcomes and Indicative Monitoring & Evaluation Parameters

Students Teachers Teacher Educators	<ul style="list-style-type: none"> ▪ Common platform (Central and State-wise) for Students' Educational Resources ▪ Common platform (Central and State-wise) for Teachers' Educational Resources ▪ Availability of digital copies of government text books and reference books ▪ Availability of video lessons ▪ Availability of localized and tagged Learning Objects – Multi media ▪ Availability of registry of approved, localized and tagged Open Educational Resources
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	<ul style="list-style-type: none"> ▪ Availability of assessment services (adaptive and non-adaptive) for standardized annual and interim assessments for students and where relevant, for teachers ▪ Availability of self-learning tools for students and teachers ▪ Availability of Model Lesson Plans (integrated with DLRs) for delivery of lessons
School Management and Administrators	<ul style="list-style-type: none"> ▪ Ease of Procurement of Digital Learning Resources and creation of registry of approved, localized and tagged Open Educational Resources ▪ Multiple Digital Content Certifying Authorities

The following indicative parameters should be monitored on a regular basis to monitor the progress of implementation of the digital learning resources:

- i. Number and % of schools using the Student and Teacher Resource Portal
- ii. Number and % of teachers using the Student and Teacher Resource Portal
- iii. Number and % of students using the Student and Teacher Resource Portal
- iv. Number of transactions on the Student and Teacher Resource Portal
- v. Number of subject discussion forums formed
- vi. Number of topics discussed, questions asked, questions answered in these forums
- vii. Number of teacher created material shared in the portal
- viii. Number of student created material shared in the portal
- ix. Number of subject discussion forums formed
- x. Number of topics discussed, questions asked, questions answered in these forums
- xi. Number of teacher created material shared in the portal
- xii. Number (class-wise and subject-wise) of digital learning resources (digital copies of government text books and reference books, video lessons, localized and tagged Learning Objects – Multi Media, and localized and tagged Open Educational Resources) available on the portal
- xiii. Number of content providers whose content is made available through the registry of open educational resources
- xiv. Number (class-wise and subject-wise) of assessment services available on the portal
- xv. Number (class-wise and subject-wise) of self-learning tools available on the portal

- xvi. Number (class-wise and subject-wise) of model lesson plans available on the portal
- xvii. Number of digital learning resources, self-learning tools, and model lesson plans in use in teacher training (class-wise and subject-wise)
- xviii. Number of digital learning resources, self-learning tools, and model lesson plans in use in student classrooms
- xix. Number of downloads (by training institutes, teacher educators, schools, teachers, and students) of digital learning objects
- xx. Number of deployments of assessment services for students in the schools
- xxi. Number of deployments of assessment services for teachers in the training institutes
- xxii. Feedback and rating on the digital learning resources from students, teachers, and teacher educators
- xxiii. Feedback and rating on the model lesson plans from teacher educators and teachers
- xxiv. Improvement of quality and standards of teachers
- xxv. Improvement of quality and standards of education

7.4.4. School Education Governance Systems

Effective implementation of ICT in various processes such as teacher recruitment and administration, conduct of board examinations, regulation and affiliation of schools, governance of teacher training institutes, and scheme design & implementation can not only bring in efficiency in the overall service delivery of school education department but also the much required transparency in the processes.

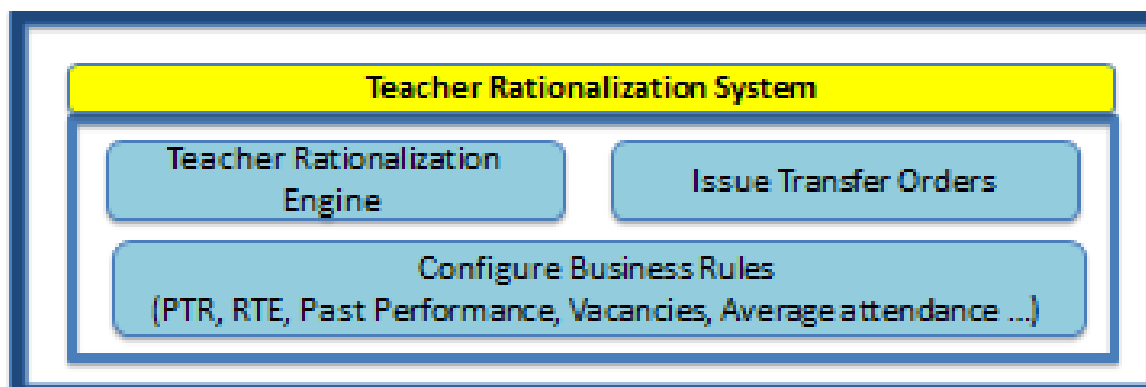
i. Teacher Lifecycle Management System

Teacher Lifecycle Management System enables delivery of services related to the service matters of a teacher in the government school system. The indicative components of a Teacher Lifecycle Management System are represented in the below diagram:



ii. Teacher Rationalization System

One of the key requirements, in addition to the deployment of teachers as per the RTE norms, is to ensure the availability of right number of subject teachers in the schools. Teacher rationalization services can be derived from the student, teacher and school data available at the State level with the implementation of school management services. The indicative components of a Teacher Rationalization System are represented in the below diagram:



iii. Training Management System

Capturing the training details including the details of the trainees (teachers), training courses and teacher educators will enable establishing the linkages between the teacher performance and the training institutes. Such linkages will aid in providing feedback to the teacher educators and training institutes based on the teachers' performance in the school. In addition, these will also include learning management services that enables the training institutes to create a central repository of the

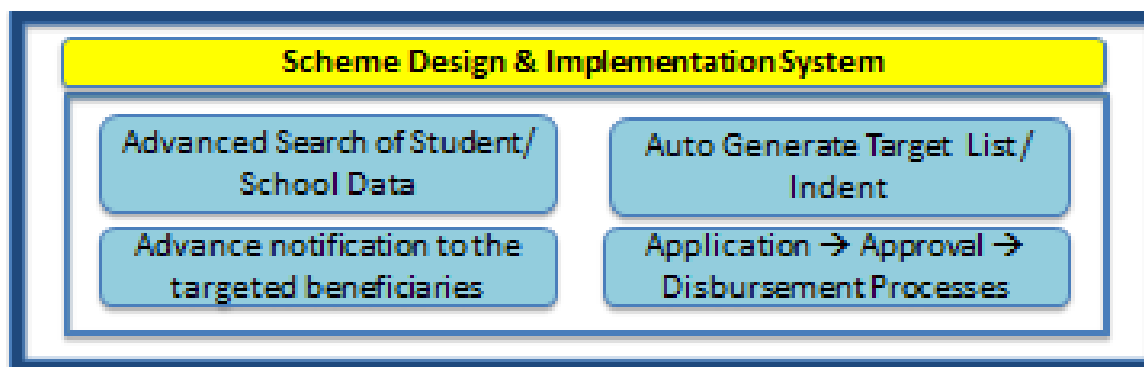
training content, design the online training curriculum and make the content available to the trainees in an online mode. Services such as feedback on the efficacy of training at the end of training programs is also planned through this system.

The indicative components of a Training Management System are represented in the below diagram:



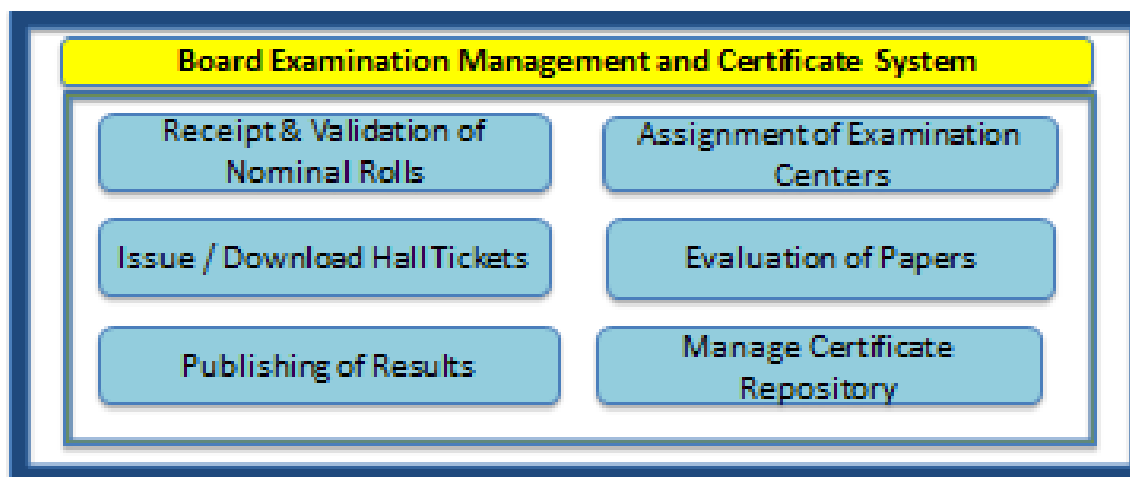
iv. Scheme Design and Implementation System

A lot of schemes implemented by States and Center are based on the student and school data available from the schools. MIS based on quality data can aid in better design of the schemes. Also such data can enable in minimizing the leakages and more effective implementation of the schemes that can ensure that the benefits or entitlements reach the targeted beneficiaries. The indicative components of a Scheme Design and Implementation System are represented in the below diagram:



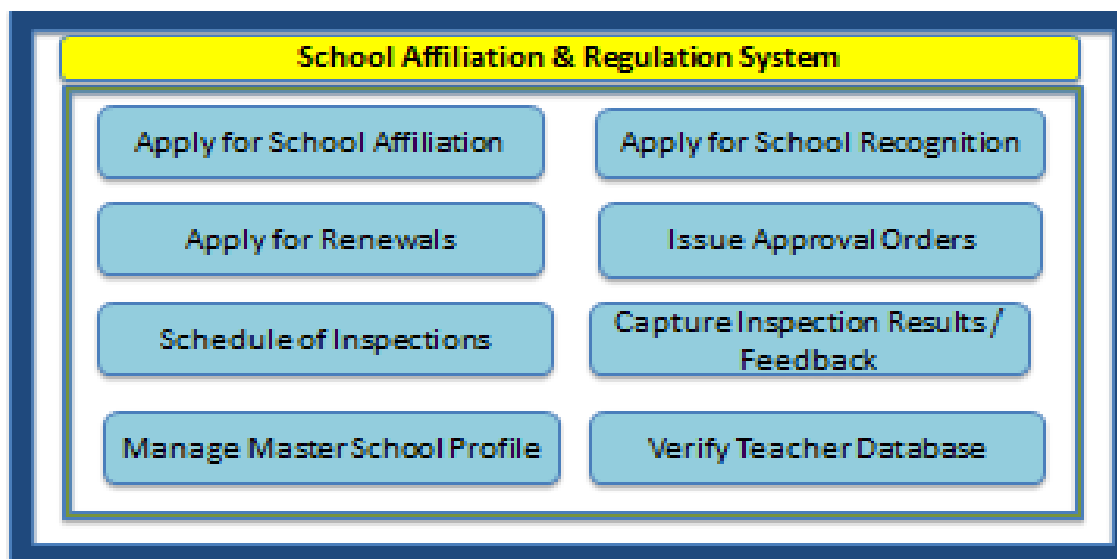
v. School Board Examination and Certificate System

Services related to entire conduct of examinations right from receiving the nominal rolls of the students from the schools, verification, assignment of examination centers, issue of hall tickets, evaluation centers, assignment of evaluators and publishing of results will be enabled through this system. Services with respect to creation of state level certificate repositories or integration with the national certificate repository will also form scope of this system. The indicative components of a School Board Examination and Certificate System are represented in the below diagram:



vi. School Affiliation and Regulation System

These are services to all the schools including private / un-aided schools related to school affiliations, recognitions, renewals, inspections related functions of the School Administrators. The indicative components of a School Affiliation and Regulation System are represented in the below diagram:



vii. Admissions Management Services

Services to students related to publishing of invite for applications, provision for online applications and enrollment to premier state schools and private schools under RTE quota can be enabled by this system.

viii. Collaboration and Productivity Tools

In addition to the above, typical collaboration and productivity tools such as email, messaging systems, discussion groups, learning management systems, document and web content management systems may also be implemented covering the teachers, teacher educators, administrators of the school education department. Collaboration tools will be required to facilitate electronic communication between the DEOs, BEOs, CRCs, and Schools. Productivity tools may include the entire content lifecycle services including content authoring, multi-step approvals, dissemination, and secure access based on the end-user.

Implementation Approach

As with the other systems, the School Education Governance Systems will be deployed on the cloud at either the Center or within the State and made available as a Service to the States. Implementation of the Teacher Lifecycle Management that can bring in transparency in teacher postings and transfers, approval of entitlements to teachers and visibility of their service records is critical to get the buy-in from the

teachers for the various IT initiatives that are envisaged to be deployed through this MMP.

Envisaged Outcomes and Indicative Monitoring & Evaluation Parameters

Teachers	<ul style="list-style-type: none"> ▪ Visibility into the recruitments, vacancies, seniority lists, promotions, and transfers ▪ Applications for transfers ▪ Visibility into individual service matters with respect to service book, payroll, PF, leave and other administrative aspects ▪ Increased transparency in recruitments, postings, transfers, preparation of seniority lists, and promotions ▪ Apply for retirement benefits, pensions ▪ Access to online training curriculum and content ▪ Apply for trainings ▪ Allocation of non-academic duties such as elections, census etc
Students	<ul style="list-style-type: none"> ▪ Apply for admissions into premier institutes ▪ Visibility of the scholarships and other entitlements ▪ Apply for scholarships or any other entitlements that require applications from the students ▪ Apply for certificates ▪ Advance notification on the entitlements due to the students
School Administrators	<ul style="list-style-type: none"> ▪ Access to data and tools for Teacher Rationalization ▪ Increased efficiency of management of teacher service matters with respect to service book, payroll, leave and other administrative aspects ▪ Increased efficiency with respect to recruitments, postings, transfers, preparation of seniority lists, and promotions ▪ Access to data and tools for scheme design and implementation (e.g., scholarships, text books, and

	<p>other entitlement distribution)</p> <ul style="list-style-type: none"> ▪ MIS on Scheme Implementation ▪ Conduct of Examinations including right from receiving the nominal rolls of the students from the schools, verification, assignment of examination centers, issue of hall tickets, evaluation centers, assignment of evaluators and publishing of results ▪ Creation of Certificate Repository ▪ Schedule of Inspections and capture inspection feedback ▪ Email, Messaging Systems, Discussion Groups ▪ Seamless communication across the school administration right from the Commissioner to District Educational Office to the School Management
Training Institutes	<ul style="list-style-type: none"> ▪ Learning Management Services ▪ Training Management including design and implementation of training calendar and Training Course Management
School Managements	<ul style="list-style-type: none"> ▪ Apply for School Affiliations and Recognitions ▪ Apply for Renewals

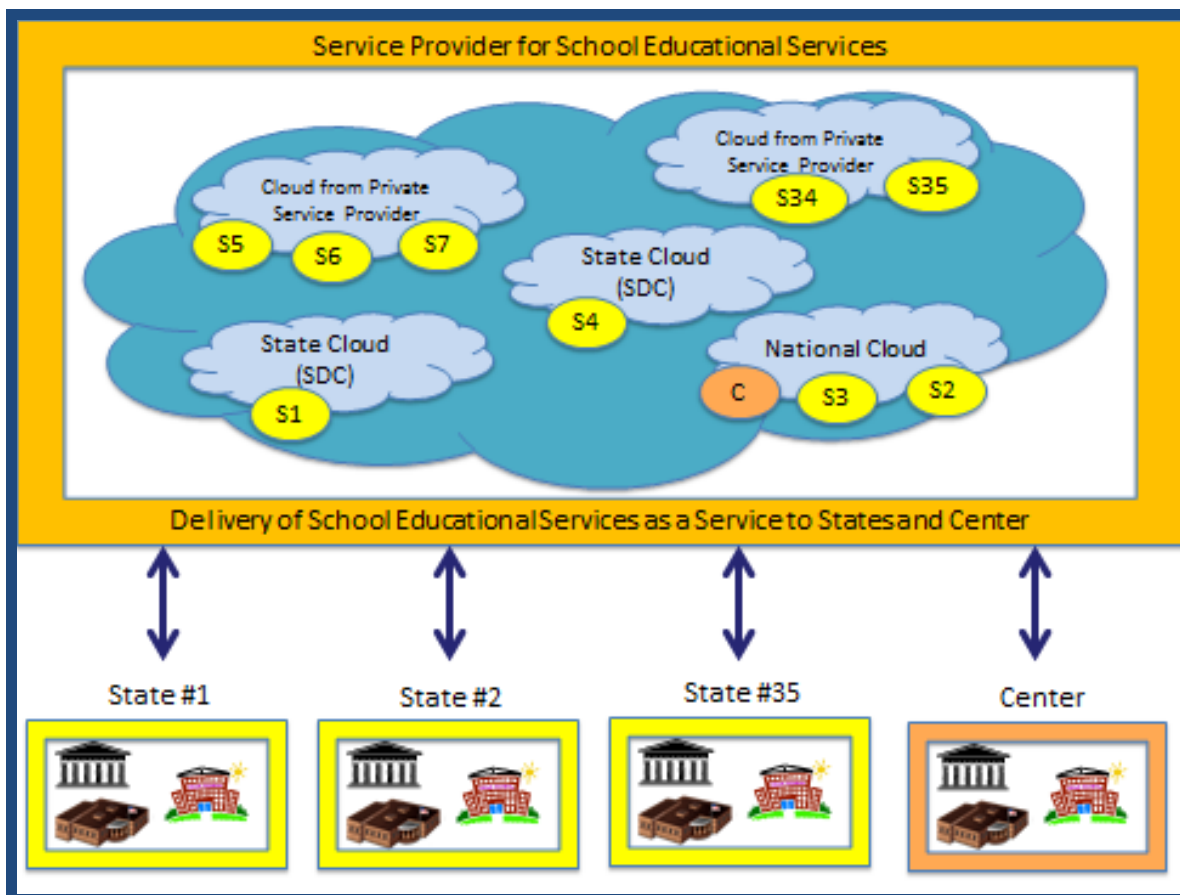
The following indicative parameters should be monitored on a regular basis to monitor the progress of implementation of the school education governance systems:

- i. Number and % of teachers using the Teacher Life cycle (HRMS) systems
- ii. Number of Services availed by teachers through HRMS system
- iii. Number and % of school administration offices using the School Education Governance Systems
- iv. Number and % of training institutes using the School Education Governance Systems
- v. Number and % of school managements using the School Education Governance Systems
- vi. Number and % of students using the School Education Governance Systems
- vii. Number of transactions (informational and transactional) on the School Education Governance Systems

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- a. Informational such as visits to the portal to view vacancies, seniority lists, individual service matters, scheme MIS, and certificates.
 - b. Transactional such as applications for teacher transfers, trainings, admissions into premier institutes, scholarships or any other entitlements that require applications from the students, teacher rationalization, school affiliations and regulations, and renewals
- viii. Improvement in student life cycle events after the implementation of new services / solutions (indicators to be established based on efficiency, accuracy, transparency, etc.)
- ix. % reduction in teacher transfers / postings related court cases after these processes are covered by SE MMP solutions
- x. Improvement in teacher life cycle events after the implementation of new services / solutions (indicators to be established based on efficiency, accuracy, transparency, etc.)
- xi. Feedback from administrators (District collectors, DEOs, etc) on the School Education Governance Systems
- xii. Feedback from teachers on the School Education Governance Systems

7.5. DC / DRC Infrastructure and Connectivity

The Service Provider for the School Education MMP is expected to procure and/or develop and deploy the necessary ICT solutions and make the solutions available as a Service to the Center and States. In such a deployment model, the Service Provider may utilize a mix of National Cloud(s), State Cloud(s), and dedicated government cloud(s) setup by a private entity as required to deploy the ICT solutions. In case of any delays in accessing services of National Cloud or State Cloud(s), the Service Provider may start delivering the services through cloud from private service providers. In case there are no viable cloud service providers, the Service provider may have to procure the necessary IT infrastructure and co-locate it in a government or private hosting facility. The States should be able to subscribe to the services offered by the Service Provider and integrate with any of their existing legacy applications where required. This model will enable States to focus on the implementation of the solution in the schools instead of each State / UT spending time and effort in procuring a solution and solution provider. The above is an indicative model and the Implementation Agency will finalize the actual deployment models during the implementation phase.



In addition to standards, interoperability, underlying licensing, vendor lock-in, the aspects of security and privacy have to be addressed by the Government if the Implementation Agency chooses to go with the Cloud from Private Service Provider. Necessary guidelines have to be issued to ensure the privacy and confidentiality of data in the cloud environment.

The estimates with respect to the compute and storage requirements are indicative only and are based on the following assumptions:

- i. Breakup of the 35 States / UTs: 14 Large States / UTs, 7 Medium States / UTs, and 14 Small States / UTs
- ii. While the content portal will be available as a service for the States / UTs (each State / UT having an instance of the content portal on the cloud), the content may have to be cached within the State for better performance. There may also be provision for local servers at the Districts to cache the most frequently used digital learning resources.
- iii. In case the applications are not cloud-ready or the States are not willing to share the same instance of the application or the business rules for the application vary significantly from State to State, there may be a requirement of deploying separate instances of the application in the cloud environment, one per each State / UT
- iv. Disaster Recovery Center's compute capacity will be 50% of the Data Center's compute capacity, but the DR storage will be 100% of DC Storage
- v. In addition to DR environment, there will be Development, Training, and Staging Environments
- vi. There will be a 20% year-on-year increase in the uptake of the services (different from phasing of the schools within the State)

In addition, the cloud hosting facilities (including the disaster recovery facilities) need to be connected to the wide area network through high bandwidth links. There will be provision for both internet and intranet links at the Data Center.

7.6. Change Management

Successful implementation of the School Educational Services under the MMP requires complete acceptance of the objectives, approach and methodology for implementation by the major stakeholders including teachers, school management, teacher educators and school administrators right from the district education officer to the Cluster Resource Person in the implementation of the services. The support of all stakeholders is very critical in the implementation,

Implementation of School Information Systems will result in complete visibility of the school level operations and data to all the stakeholders including the administrators at various levels and the community. Decision Support Services envisaged through the proposed IT systems is heavily dependent on the adoption of the School Information System by all schools and on the quality of data captured at School level. This is possible only with the complete buy-in of the teachers, school management, and cluster resource centers or any such administrative staff under the DEO responsible for data collection.

The investment into learning support services with respect to the digital learning resources, model lesson plans will yield the desired returns only when they are successfully deployed and delivered in the teacher training institutes and classrooms. This would require teacher educators and teachers to fundamentally change the way a lesson or a topic is taught in the classroom. Use of assessment tools to monitor the quality of the teachers and students will be a major shift from the current evaluation processes.

On the other hand, while the decision support services and school governance services such as teacher lifecycle management, training management, school affiliation and regulation services aid in streamlining of the processes, it may pose implementation challenges due to resistance from the department functionaries on account of enhanced transparency and perceived loss of control by them.

The proposed e-Governance solutions under the School Education Mission Mode Project will result in some fundamental changes in the processes and functioning of the School Education domain. This in turn may result in resistance from the teachers, employees for a number of reasons including increased supervision, more accountability, vested interests, loss of authority, fear of the unknown, fear of failure, lack of commitment, lack of proper communication etc. If the change and corresponding resistance is not managed properly, all the efforts put in to

implement the project may become infructuous. Success of a project of this magnitude and impact depends on the acceptance of the change by the end users.

Change Management and Capacity Building interventions become all the more critical to prepare the functionaries to manage the new work/ process environment by:

- i. Getting the acceptance of the main objectives of the School Education Mission Mode project by all stakeholders
- ii. Creating ability amongst the Teachers, Teacher Educators, Government Officials..., who will be the key end users of the services offered by MMP
- iii. Lowering resistance amongst the end users towards the changes resulting from implementation of School Education Mission Mode project by improving interfaces amongst Teachers, Teacher Educators, Government Officials...,

Given the magnitude of the implementation from the perspective of number of implementation units, number of teachers/ employees, and impact resulting from implementation of School Education MMP, it becomes even more critical that the whole transition is managed with a well thought out Change Management Process.

The following are the key challenges that are encountered in embracing the e-Governance initiatives:

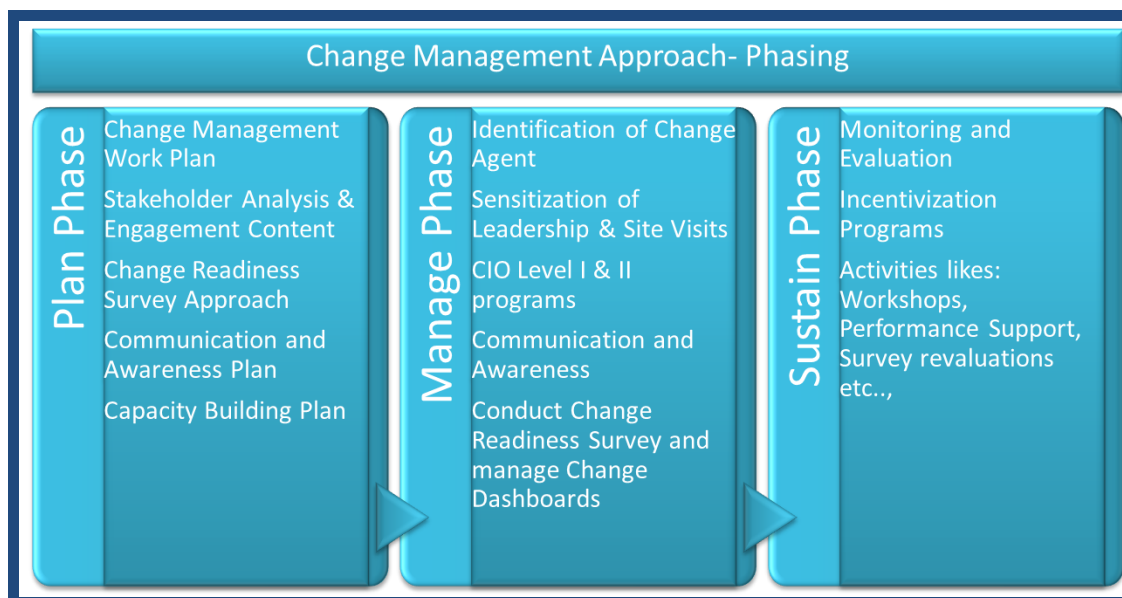
S. No	Challenges Type	Challenges
	People Challenges	<ul style="list-style-type: none"> • Low IT Education levels amongst Semi-urban and Rural School Teachers, support staff and administrators • Resistance from Teachers as availability of a large pool of DLRs, self learning tools, assessment tools for facilitating ICT enabled teaching in the class may be perceived as a threat to their profession. . • Resistance to prevent near real time monitoring of attendance and performance is imminent. • Low Motivation levels: There is a lack of incentivization in terms of promotion, awards, rewards for teachers who demonstrate usage of ICT tools for imparting teaching in the Schools. • Teacher, Teacher Educators, Government Officials., beyond a certain age may be hesitant to pick up new IT skills and hence resist usage of such system
	Process	<ul style="list-style-type: none"> • Routine Selection of Teachers/ Teacher Educators etc., for trainings

S. No	Challenges Type	Challenges
	Challenges	<p>results in wasted and repetitive trainings given to resources</p> <ul style="list-style-type: none"> • The data capture for DISE/ SEMIS is currently done at the school level on paper and data entry in the system is at the Cluster/ Nodal School level on ANNUAL BASIS. • The transparency and visibility in Teacher Lifecycle and Student life cycle processes is at different stages in different states.
	Infrastructure/ Technology Challenges	<ul style="list-style-type: none"> • Treating a Computer as a priced possession in school, kept out of reach of teachers & Students instead of a tool to be used by them. • Hardware and software maintenance issues. Lack of maintenance resource at school level to trouble-shoot the problems faced with infrastructure • The Internet connectivity is an impediment at the implementation sites where hardware may have been deployed. • Power cuts/outages in rural, sub-urban locations is an issue

A well-planned and well-designed Change Management program has to be implemented for ensuring smoother transition of Teachers, Educators and Administrative & Government officials into their new roles and ensuring they are comfortable with the new technology and processes. It is necessary to formulate a change management strategy and to plan appropriate interventions for capacity building, training and stakeholder communications right from the beginning so as to effectively implement and manage the change occurring due to School Education MMP.

The Department of School Education & Literacy, MHRD shall constitute a Core Team for Change Management initiatives. A State Level Nodal Agency shall be formed represented by various stakeholder groups including the School Education Department, the SCERTs, the directorates in Education Department..., at State level to address the Change Management Initiative. The Stakeholder analysis shall be carried out to identify all primary and secondary stakeholders who have an interest in the issues with which the project is concerned at state, district, block and school level.

It is recommended to implement a Three- Phase Change Management Approach as mentioned in the diagram below to address nuances of managing change in for the School Education MMP implementation:



Phase 1 – Plan Change

Planning the Change is the first step of the Change Management Program and needs to be built at the onset with detailed study and in-depth understanding of the environment in which change is happening including the past efforts taken vide the other government initiatives at State and Center. This phase will involve the identification of various Change Management & Capacity Building requirements for the project. As a part of this activity and to understand the nature of change and the impact on the stakeholders, particularly Teachers, due to implementation of School Education MMP, the implementation plan shall be based on the outcomes of the following activities:

- i. Based on the identified to-be state, a Change Management Work Plan shall be drafted which will include change structure and governance for SE MMP Implementation.
- ii. Stakeholder Analysis & Engagement Content study shall be carried out to understand the impact on each of the stakeholder and the influence that they can exercise on their respective areas of control, for making the project successful.

- iii. Change Readiness Survey Approach for each state, the stakeholders and the processes impacting change for Teachers, Teacher Educators, Government Officials..,
- iv. The plan phase will also detail out a Communication and Awareness Plan for the audience (Teachers, Teacher Educators, Government Officials..) and the Communications Channel Analysis, Key messages, key milestones. A comprehensive communication plan will provide the critical fulcrum needed to materialize vision of the SEMMP of bringing the forces of demand and supply of skilled manpower into equilibrium.
- v. Capacity Building plan shall be drafted during the Planning Phase of change Management.
- vi. Identification of Change Agents: The identification of the Change Manager or Change Champion who would drive the business change required as part of the engagement, effectively managing the business change and ensuring that individuals receive the support and development they need throughout the change effort is a key activity to be carried out under plan phase.

Phase 2 – Manage Change

The detailed plans as designed in the Plan Phase shall need to be implemented in the second phase of Managing change. The following indicative activities need to be performed under this Phase:

S.No.	Intervention	Initiatives
1	Sensitization of Leadership	<p>Objective</p> <p>The Change Management initiative for the senior officials from government and Training Institutes and key change agents shall include short duration programs to create the awareness and desire for the change and to further champion the cause of the MMP.</p> <p>Key Stakeholders:</p> <p>State/ Central Leadership including Directors, Heads of the Directorates, Key Autonomous Bodies involved with School Education, Heads of RIEs, IASEs..., Heads of allied departments such as Health, Revenue, Panchayati Raj , social justice, Women & child welfare etc</p> <p>Key District Level Leadership that includes District Collector, DEO, District Executive officer of Panchayati Raj institutions, DIET leadership and key teacher educators, BEO, BDO, BRCCs,</p>

S.No.	Intervention	Initiatives
		<p>and a few Head Masters</p> <p>A separate sensitization program is proposed for Teacher’s associations and School Management committees at State and District levels .</p> <p>Tentative Interventions: Workshops and Domestic Site Visits to model States to showcase the successful implementations.</p> <p>At Center: ~4 Workshops in the first year</p> <p>At State HQ: ~4 workshops in the first year with one covering the State leadership, the second one covering the secondary school administration, the third one covering primary school administration, and the fourth one covering teacher associations / groups.</p> <p>At District HQ: ~4 workshops in the first year (1 workshop for covering district leadership, 1 workshop covering teacher unions, 1 workshop for secondary school administration and headmasters from the major secondary schools in the district, and 1 workshop for the elementary school administration and headmasters from the major elementary schools in the district.</p> <p>Subsequently, for the next four years:</p> <p>At Center – ~2 workshops every subsequent year</p> <p>At State HQ: ~4 workshops every subsequent year</p> <p>At District HQ: ~4 workshops every subsequent year</p>
2	Communication and Awareness Workshops	<p>Objective</p> <p>The Change Management initiative for the administrators, teachers, teacher educators and any additional key change agents shall include short duration workshops to create the awareness and desire for the change across the target stakeholders.</p> <p>Key Stakeholders:</p>

S.No.	Intervention	Initiatives
		<p>Key Block level officials, Cluster and School Level officials including Block Education Officers, BDOs, CRPs, Headmasters, Key Teachers, Representatives from the School Management Committees, and any other key block / cluster / school level officials.</p> <p>Tentative Interventions: Workshops at the block level: 1 workshop per each 15-20 secondary schools 1 workshop per each 50 elementary schools</p>
3	Awareness Campaigns	<p>In addition to the workshops, the Centre and State should carry out awareness campaigns eg., Road shows, posters, print and electronic media to reach out to all the stakeholders who may not have been covered through the workshops. This will require design of the messages, identification of the appropriate and relevant communication channels to reach the target stakeholders.</p>

Phase 3 – Sustain Change

Sustain Change phase will aim at constructing a sustenance model for the Change Management interventions. Having built the capability and generated trust, it is important to motivate the stakeholders to drive the change. Hence the objective of this phase shall be to create a continuous augmentation process with in-built feedback mechanism. In this phase the effectiveness of Change Management activities will be measured from a long term perspective ensuring that the learning from various trainings has been imbibed and inculcated by the entire audience set of Teachers, Teacher Educators and Government Officials. Activities under Sustain Change:

- i. The incentivization schemes may include:
 - a. Rewards and recognition for exceptional work by Teachers, Teacher Educators and Govt Officials with reference to ICT interventions at workplace. Teachers and Teacher Educators shall be rewarded for creation and usage of ICT enabled Teaching Learning Methods, while department officials may be rewarded for effective ICT implementation at all levels in office.
 - b. The incentives may be in the shape of cash or kind including distribution of Laptops, Smart devices etc.to the recipients and Citations to be given at National, State, District level.

- ii. Conducting Change Management workshops, reevaluating on the Change Readiness Surveys, preparation of Performance Support Material and Taking action on various Capacity Building requirements identified in the plan stage to build appreciation of change management and develop change leadership across the stakeholder groups.

Awards and Incentivization Program

It is critical to encourage all the stakeholders including school administrators, staff in the school administration offices, school managements, training institute managements, non-teaching staff in the schools & training institutes, teachers and teacher educators to use the school educational services in their respective functions. The key stakeholders (1 or 2 per office or school) in each of the entities (Directorates, DEO, BEOs, BRCs, CRCs, Schools, Training Institutes,..) designated as the nodal persons in the respective offices for implementation of the MMP may be provided with additional incentives both financial and otherwise in order to sustain the usage of the school educational services. However, eventually it is expected all the stakeholders in the offices and school will receive the requisite training and use the school educational services in their respective functions.

In addition, it is proposed to introduce awards in the form of cash or kind and a citation under the MMP to incentivize the exemplary performers.

- a. The awards may be given to School Head Masters, Teachers, Teacher Educators, Master Trainers, Principals of the Training Institutes or such stakeholders for demonstrating exceptional use of ICT in teaching, creation of Digital Learning Resources using ICT which has benefited the student community or Teacher Educators .
- b. The awards may be given to DEOs, BEOs, CRCs, Non Teaching Staff in Schools, Training Institutes, School Education Directorates for successful usage of School Information System, Decision and Reporting Systems, and School Education Governance Systems.

The selection of the awardee may be made by the State School Education departments in consultation with the Education Officers at district level. It is suggested to select at least 4-5 resources per each District every year for awards as recognition of their efforts.

7.7. Capacity Building and Handholding Support

Capacity Building is a crucial and critical component of School Education MMP. The objective of Capacity Building (CB) initiatives is to empower the end users and other stakeholders of School Education to optimally use IT systems and enhance outcomes with respect to quality and standards of education and bringing in transparency and streamlining of teacher recruitment, transfers, postings, promotions and other service matters.

Success of School Education MMP, both in short term as well as long term has unswerving dependency on the level of penetration it is able to accomplish. Drawing upon the diverse challenges expected for the implementation of MMP, specifically the workforce challenges, it is apparent that capacity building is critical to the success of the program.

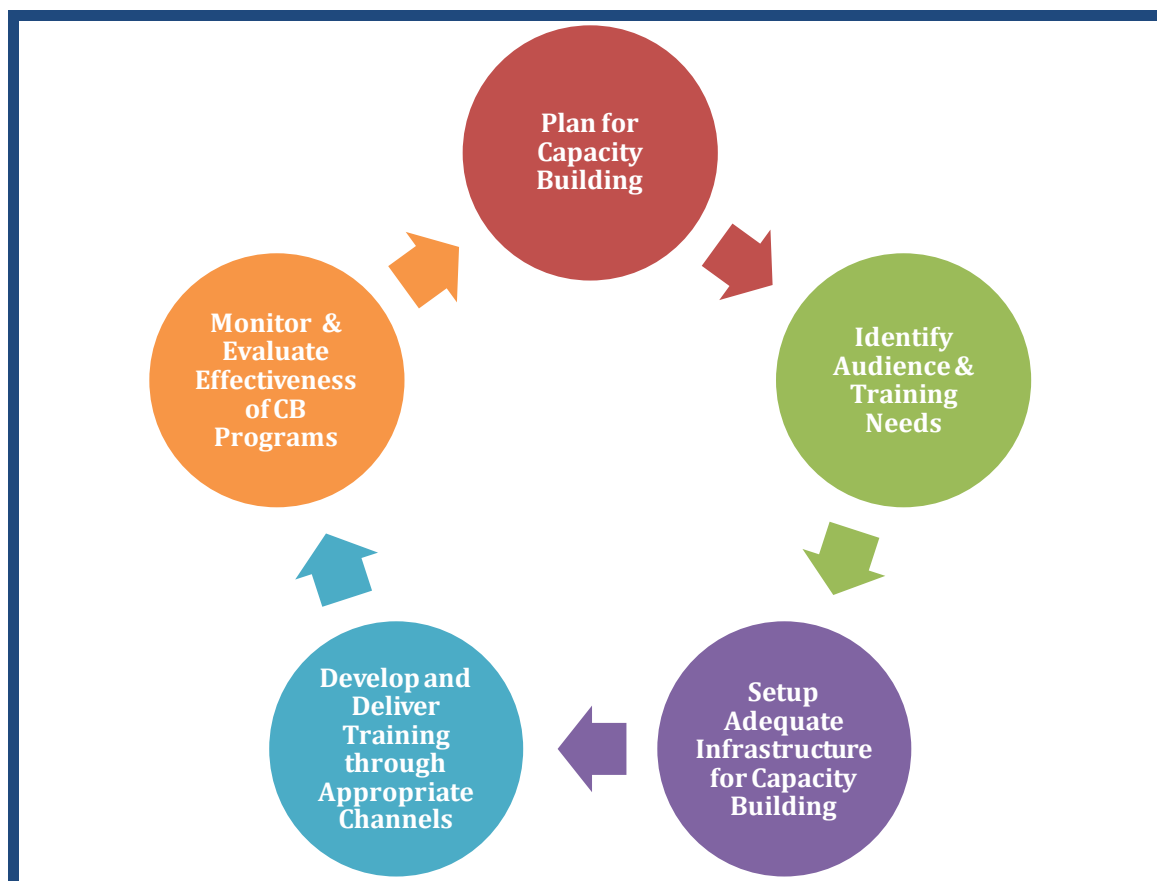
The implementation of the e-Governance systems and new processes will significantly impact the functioning of the key school education stakeholders including administrators, teacher educators, and teachers. The challenge will be to empower and support the stakeholders to understand, learn, and adopt the new way of working in order to fully realize the potential benefits of this implementation.

To manage a large scale implementation which impacts a mammoth number of users directly or indirectly, a comprehensive and well-structured Capacity Building approach is required. Capacity Building approach would include availability of requisite infrastructure and resources to support the entire program. It would also ensure that the required user groups receive sufficient training to equip them with the skills required to efficiently use or be aware of the new processes and/or systems.

Capacity Building aims to create an environment which facilitates successful implementation. Capacity Building primarily requires:

- i. Planning for Capacity Building
- ii. Identify Audience & Training Needs
- iii. Arrange for Requisite Infrastructure
- iv. Impart Training through multiple Channels
- v. Monitor & Evaluate Effectiveness
- vi. Ensure Sustainability of the CB Programs

A high level approach for Capacity Building is illustrated below in a lifecycle layout. Since Capacity Build Programs would be a continuous process, the lifecycle model has been adopted. This would provide the requisite agility and flexibility to meet the continually varying demands during the project implementation.



The key proposed capacity building interventions are given below:

Plan for Capacity Building

Comprehensive planning of Capacity Building Program for School Education MMP is fundamental as it has direct association with the success of the overall implementation. For training to be considered effective, a number of high level objectives need to be set that need to be monitored at periodic intervals. An overall plan for Capacity Building across the States has to be prepared based on the training objectives.

Identify Audience & Training Needs

With the implementation of School Education MMP, though the overall functioning of the end-users will remain the same, the way processes are executed will go

through a change. This change will impact different stakeholders in a different manner. Similarly different skills will be needed for different resources. Hence the first step is to identify the key stakeholders groups. Some of the key stakeholders include:

i. School Education Department Officials

Successful implementation of the School Information System, Decision Support Systems, and School Education Governance Systems such as Teacher Lifecycle Management System requires the school education department officials/support staff in the administrative/ supervisory offices to be sufficiently trained not only in the basic application usage but also in effectively leveraging the systems in the governance of the schools and decision support.

ii. Teacher Educators

Teacher Educators, being the key stakeholders that deliver training to both the pre-service and in-service teachers, need to be trained on the usage of the Digital Learning Resources in the subject teaching. Once the teacher educators become familiar with using the digital learning resource (DLR) in the teaching – learning process, they will be effective in imparting the training to the teachers to use the DLRs. Further, the training content needs to be redesigned by deploying the DLRs in the training content. Similarly, model lesson plans should be created incorporating the DLRs and provided to the teachers.

iii. School Managements

Similar to the officials of education department offices, the school managements including the administrative staff, Headmaster, and a member of School Management Committee need to be trained for using the School Information System and the accompanying Decision Support Systems. The school management is expected to perform several functions including student profile management, capturing teacher attendance, timetable management through the School Information System. The quality of data that gets into the School Information System is directly associated to the ease of use with which the school management and administrative staff will be able to use the application.

iv. Teachers

While the MMP can enable access to several digital learning resources to the teachers, effective use of the resources in the teaching learning process is a function of not only the acceptance of the new way of teaching by the teachers but also the ease of use with which the teachers are able to identify the relevant content / resources for the lesson / topic that is being delivered in the classroom.

This requires that the teachers be effectively trained on the learning support services including the content portal and the decision support systems. In addition, the teachers will also be expected to use the School Information System in marking the student attendance and capturing the student evaluation and results.

For each of the stakeholders, training needs have to be clearly identified that will enable bridging the identified gaps between the current skill-set and the future requirements to deliver the change. The results of the training needs analysis serve as the basis for the content of the training programs.

Setup Adequate Infrastructure for Capacity Building

All the Capacity Building Programs will be supported by infrastructure at the State Level as well as the District Level. This infrastructure will ensure all the requisite resources are provided to the CB Programs meeting the precise needs and on time. While already existing infrastructure in the DIETs and BITEs could be utilized for this purpose, it is expected that, where required, additional infrastructure will be created. Where there will be constraints for setting up additional infrastructure at the DIETs and BITEs, a secondary school with the right physical infrastructure (classrooms, power, computer lab) may be identified as a training center for the capacity building programs in the block.

Build Capacity at the State HQ and Districts

CIO Level I Training Programme

It is suggested to build at least 20 CIOs at the Center and 5 CIOs per State / UT who will become champions of the MMP and lead the implementation in the respective departments and States. The CIO program shall involve the domestic and international (if required by the design) site visits to expose the participants to the best practices and successful implementations. CIO Level I training Shall be conducted by MHRD to build: 5 CIOs per State / UT + 20 CIOs at the Center

CIO Level I and II Training Programme

In addition to the Level I CIOs at the State Level, it is suggested to build the capacity at the District Levels with at least 4 Level II CIOs per District covering both secondary and elementary schools. The CIO program shall involve the domestic (if required by the design) site visits to expose the participants to the best practices and successful implementations.

CIO Level II training shall be designed by MHRD and to be conducted by the School education departments of respective State/ UT s Level to build 4 CIOs per District.

Develop and Deliver Training through Appropriate Channels

Once the training needs are identified, the following needs to be carried out to develop and deliver the training:

i. Set Training Curriculum

A training curriculum summary should be designed, developed and delivered in order to meet the audience training needs and objectives. This curriculum determines what method of delivery will be used. There are various options for training delivery such as instructor led training, class room based training, online training through learning management system etc.

ii. Design Training Plan

Training plan should be prepared to start training of end users well in advance and the training batches are to be created by nominating candidates with similar roles.

The key proposed training interventions for each of the key stakeholders are given below:

a. School Education Department Officials

Implementation Sites/ Units	Number of Units	Services Available	Basic IT Training (Indicative numbers to be trained)	Application Training (Indicative numbers to be trained)
Centre – School Education Administrative Offices				
DoSE&L	1	Decision Support Services	N/A	~20
NUEPA	1		N/A	~20
NCERT	1		N/A	~20
State – School Education Administrative Offices				
SHQ and Directorates (SCERT, Elementary, Secondary, RMSA, SSA, MDMS, Scheme,	385*	School Management Services, Decision Support Services, School Education Governanc	1925 @ 5 per Directorate	1925 @ 5 per Directorate

Implementation Sites/ Units	Number of Units	Services Available	Basic IT Training (Indicative numbers to be trained)	Application Training (Indicative numbers to be trained)
Textbook Corp, Open School, Adult...)		e Services		
Regional / Divisional Education Office	150		600 @ 4 per Regional / Divisional Education Office	600 @ 4 per Regional / Divisional Education Office
District Education Office *	653		2612 @ 4 per DEO's Office	2612 @ 4 per DEO's Office
Block/ Mandal Education Office / BRCs *	7770		23310 @ 3 per Block	23310 @ 3 per Block
CRCs	74,902		74,902	74,902

	Basic IT Training	Application Training
Indicative Duration of Training (in Days)	2	2

* In States that have bigger Districts / Blocks that cover higher than typical average number of schools per District / Block, the number of personnel to be trained per each DEO's office and Block may be increased proportionately.

b. Teacher Educators

Implementation Sites/ Units	Number of Units	Services Available	Application Training (Indicative numbers to be trained)	Training in ICT enabled Teaching Tools* (Indicative numbers to be trained)	Advanced Training in Content Creation (Indicative numbers to be trained)
Training Institutes					
NIE / RIE	8	Learning Support	40 @ 5 per Institute	56 @ 7 per Institute	2425 @ 3 per Institute

Implementation Sites/ Units	Number of Units	Services Available	Application Training (Indicative numbers to be trained)	Training in ICT enabled Teaching Tools* (Indicative numbers to be trained)	Advanced Training in Content Creation (Indicative numbers to be trained)
SCERT	35	Services, Decision Support Services, Training Management Services	175 5 per SCERT	525 @ 15 per SCERT	105 @ 3 per SCERT
SIETs	5		25 @ 5 per Institute	75 @ 15 per Institute	15 @ 3 per Institute
IASEs	31		155 @ 5 per Institute	465 @ 15 per Institute	93 @ 3 per Institute
CTE / STEIs	104		520 @ 5 per Institute	1040 @ 10 per Institute	312 @ 3 per Institute
DIETs	571		2855 @ 5 per Institute	11,420 @ 20 per Institute	1713 @ 3 per Institute
BITEs	196		980 5 per Institute	980 @ 5 per Institute	588 @ 3 per Institute

	Application Training	Training in ICT enabled Teaching Tools	Advanced Training in Content Creation
Indicative Duration of Training (in Days)	1	4	4

* Approximately 50% of the sanctioned staff of the respective institute are considered for Training in ICT enabled Teaching Tools considering the variations between the sanctioned and actual deployed numbers.

c. Block Level Master Trainers

Implementation Sites/ Units	Number of Units	Services Available	Basic IT Training (Indicative numbers to be trained)	Application Training (Indicative numbers to be trained)	Training in ICT enabled Teaching Tools* (Indicative numbers to be trained)	Advanced Training in Content Creation (Indicative numbers to be trained)
State Level Schools – Government and Government Aided						
Hr. Secondary & Secondary	1,24,500	School Management Service	2* 7770 Master Trainers (Teachers) @ 2 Master Trainers per	2* 7770 Master Trainers (Teachers) @ 2 Master	2* 7770 Master Trainers (Teachers) @ 2 Master	5* 653 Master Trainers (Teachers) @ 4 Master Trainer per

Implementation Sites/ Units	Number of Units	Services Available	Basic IT Training (Indicative numbers to be trained)	Application Training (Indicative numbers to be trained)	Training in ICT enabled Teaching Tools* (Indicative numbers to be trained)	Advanced Training in Content Creation (Indicative numbers to be trained)
		es, Learning Support Services, Decision Support Services	Block or equivalent to 2 Master Trainers covering 15 – 20 secondary schools	Trainers per Block or equivalent to 2 Master Trainers covering 15 – 20 secondary schools	Trainers per Block or equivalent to 2 Master Trainers covering 15 – 20 secondary schools	District
Elementary-Upper Primary & Primary	11, 35, 44 5	es	2* 7770 Master Trainers (Teachers) @ 2 Master Trainers per Block or equivalent to 2 Master Trainers covering 30 elementary schools*	2* 7770 Master Trainers (Teachers) @ 2 Master Trainers per Block or equivalent to 2 Master Trainers covering 30 elementary schools*	2* 7770 Master Trainers (Teachers) @ 2 Master Trainers per Block or equivalent to 2 Master Trainers covering 30 elementary schools*	5* 653 Master Trainers (Teachers) @ 4 Master Trainer per District

	Basic IT Training	Application Training	Training in ICT enabled Teaching Tools	Advanced Training in Content Creation
Indicative Duration of Training (in Days)	2	3	4	4

* Considering only 2,50,000 elementary schools out of the total number based on the availability or planned deployment of the infrastructure in the elementary schools.

The master trainers should be provided with comprehensive training on all the aspects so that they can effectively train other teachers. The teachers with proficiency and inclination for training other teachers should be carefully selected as master trainers and deputed fulltime to the District Project e-Mission Team (DPeMT). The schools from where the master trainers are selected must be given

substitute teachers in place of the master trainers so that the master trainers are fully engaged in the MMP to provide subsequent training to the other teachers.

Refresher training should be planned for the master trainers so that the master trainers are continuously updated.

d. Training for the School Management and Teachers

The administrative / support staff including the head master and non-teaching staff dealing with the school administration and the teachers of the 1,24,000 secondary schools and 2,50,000 elementary schools will be trained by the Master trainers.

	Administrative / Support Staff - Basic IT Training & Application Training	Teachers - Basic IT Training, Application Training, & Training in ICT enabled Teaching Tools
Indicative number of personnel to be trained	Secondary Schools: 3 Elementary Schools: 2	Secondary Schools: As per the guidelines of ICT @ School Scheme Elementary Schools: As per the guidelines of SSA – CAL or at least one teacher per school (2.5 L elementary schools)
Indicative Duration of Training (in Days)	2	As per the guidelines of ICT @ School Scheme

It is suggested that the training should start with the schools that already have computers (34,268 secondary schools as per SEMIS Data) that can be used for either accessing the School Information System or the Digital Learning Resources.

Refresher training should be planned for the teachers and administrative / support staff so that the teachers and staff feel comfortable and confident in using the ICT enabled teaching tools and the applications.

e. Handholding Support for Schools and Teachers

The schools that have the infrastructure (or being provided with infrastructure as part of this MMP) should be provided with a technical assistant in the first year for supporting the school staff in using the School Information System to capture the

data and maintaining the infrastructure. For the 1,24,000 Secondary schools, such technical assistance may be provided on a part time basis (10 days / month / school) in the first year (10 months). Similarly for the elementary schools that are being considered for the school level infrastructure, such technical assistance may be provided for 5 days / month / school. The CRCs will be responsible for capturing the data of the remaining ~8,50,000 elementary schools into the School Information System.

iii. Design of Training Content

Training content for each of the modules or courses as identified in the curriculum should be built and shared with the trainers to be used during the delivery. This will include development of module content, job aids, evaluation and practice exercises etc.

To maintain consistency across the trainings, standard templates should be used for each component of the training module. An Instructor Led Training course shall have the following components:

- Course Presentation (PowerPoint)
- Instructor Demonstrations (Application training environment)
- Hands-on Exercises (Application training environment)
- Application Simulations: Miniature version of Application with dummy data providing exposure to the IOs to a real life scenario post implementation of
- Job Aids (if required)
- Course Evaluations (Inquisition)

In addition to the ILT, for the modules that may be more appropriate to be conducted through a **Computer Based Training (CBT)**, a CBT should be developed for them. CBT should involve training delivered through computers with self-instructions, screenshots, and simulated process walk-through and self-assessment modules.

A comprehensive learning management system shall also be deployed to enable the teacher educators / teachers / administrators to access the training content outside the training program and undergo self-training of the relevant modules, where required.

Further, the training content needs to be redesigned by deploying the DLRs in the training content. Similarly, model lesson plans should be created incorporating the DLRs and provided to the teachers.

Monitor & Evaluate Effectiveness of CB Programs

The most significant part of any Capacity Building Approach is to have in place a firm monitoring and evaluation processes. Hence the Capacity Building Approach for School Education MMP must also include metrics for measuring the outcomes in the areas of Capacity Building. These metrics must cover the progress of the entire implementation as well as their effectiveness. The effectiveness metrics should cover short-term metrics as well as metrics that monitor the effectiveness of the CB plans on an on-going basis. Evaluation helps in measuring the effectiveness of trainer and training program to increase the knowledge and skills of the end users. End user feedback will also be used to make improvements in the training content and delivery.

The Capacity Building in SE MMP shall not only empower the stakeholders with e-governance tools and skillset, but will enhance the competency of the Teachers and Teacher Educators to imbibe the blended teaching tools in the pedagogy. Thus, it becomes all the more important to understand the effectiveness of the capacity building and trainings conducted for them, and based on the feedback from students and self-assessment tools for teachers, improve the training programs and provide dedicated trainings to identified groups.

The effectiveness of all end users trainings shall be evaluated and analysed using electronic or manual surveys and based on the feedback received refresher trainings may be conducted, wherever needed.

7.8. Client End Infrastructure and Connectivity

The administrative / supervisory offices, training institutes and schools have to be provisioned with the client end infrastructure and connectivity for accessing the school education services.

The various client end locations are expected to be connected to the cloud(s) hosting the school educational services using the existing network infrastructure that includes SWAN, NKN and NOFN. While SWAN will provide the Points of Presence (PoP) at the State Headquarters (SHQ), District Headquarters (DHQ), and Block Headquarters (BHQ), NOFN is expected to provide the connectivity to all village panchayats.

While the above existing network infrastructure will provide for the vertical connectivity, the horizontal connectivity from the PoPs to the individual schools / offices, where required, has to be provisioned to provide the last mile connectivity to the client end locations. The mode of horizontal connectivity (wireless or P2P leased line to the PoP or VPNoBB) will depend on the distance of the school / office from the PoP and the supported architecture of the underlying backbone.

With respect to client end infrastructure, the proposed devices (and numbers) at various offices and schools such as PC / Laptop, Projectors / Visual Display Units are indicative and made for the purposes of financial projections in the DPR. It is expected that during implementation, procurement will be of appropriate devices (to be decided by the respective States / UTs) that meet the intended objectives and functionality within the approved budget.

Administrative / Supervisory Offices

Implementation of the School Education Governance Systems such as Teacher Lifecycle Management System, Examination and Certificate Management System requires provisioning the necessary client end infrastructure along with the connectivity for the administrative offices.

In view of the importance of the School Information System to enable effective governance of schools, a key aspect in improving the quality of learning, the CRCs or the appropriate administrative staff under the DEO, responsible for data collection from the schools should be provided with portable devices to ensure that the data from such schools are captured in the School Information System on at least a

weekly basis considering the low levels of infrastructure in majority of the government and government aided schools.

The table below provides the indicative configuration of client end infrastructure recommended for the administrative offices:

Implementation Sites/ Units	Number of Units	Client-end Infrastructure including Site Preparation Office Configuration – Indicative Only
State – School Education Administrative Offices		
Directorates (Elementary, Secondary, RMSA, SSA, MDMS, Scheme, Textbook Corp, Open School, Adult...)	385*	1 PC / Laptop, 1 Tablet, 1 Printer & Scanner, 1 UPS 1- 2 Mbps & Data enabled SIM Card
Regional / Divisional Education Office*	150	1 PC / Laptop, 1 Tablet, 1 Printer & Scanner, 1 UPS 1- 2 Mbps & Data enabled SIM Card
District Education Office	653	2 PCs / Laptops, 2 Tablets, 1 Printer & Scanner, 1 UPS 2 Projectors 1- 2 Mbps & Data enabled SIM Card
Block / Mandal Education Office	7770	1 PC / Laptop, 1 Tablet, For Training: 1 Laptop & Projector or Integrated Visual Display Unit (or equivalent devices that provide content projection features) 1 Printer & Scanner, 1 UPS 1- 2 Mbps & Data enabled SIM Card
CRCs / Identified Administrative Staff under the DEO / BEO responsible for data collection	74,902	1 Tablet for data capture at the source / end user location Data enabled SIM Card

Training Institutes

Capacity building of teachers is a key focus area to ensure that teachers can effectively integrate the Digital Learning Resources into the lesson plans in the

classroom learning processes. The training institutes needs to be equipped with the client end infrastructure including a computer lab and computers & projectors in the classrooms and connectivity for capacity building of the in-service and pre-service teachers .

The table below provides the indicative configuration of client end infrastructure recommended for the training institutes:

Implementation Sites/ Units	Number of Units	Client-end Infrastructure including Site Preparation Office Configuration – Indicative Only
Training Institutes		
NIEs / RIEs	8	For classrooms: 10 Laptops / Tablets & Projectors or 10 Integrated Visual Display Unit, (or equivalent devices that provide content projection features) 1 Printer & Scanner Dedicated lab for the training with 30 computers 5 – 10 Mbps
IASEs	31	For classrooms: 10 Laptops / Tablets & Projectors or 10 Integrated Visual Display Unit, (or equivalent devices that provide content projection features) 1 Printer & Scanner Dedicated lab for the training with 20 computers 5 – 10 Mbps
CTE / STEIs	104	For classrooms: 10 Laptops / Tablets & Projectors or 10 Integrated Visual Display Unit, (or equivalent devices that provide content projection features) 1 Printer & Scanner Dedicated lab for the training with 20 computers 5 – 10 Mbps
DIETs	571	For classrooms:

		<p>5 Laptops / Tablets & Projectors or 5 Integrated Visual Display Unit, (or equivalent devices that provide content projection features) 1 Printer & Scanner</p> <p>Dedicated lab for the training with 10 computers</p> <p>5 – 10 Mbps</p>
BITEs	196	<p>For classrooms:</p> <p>2 Laptops / Tablets & Projectors or 2 Integrated Visual Display Unit, (or equivalent devices that provide content projection features) 1 Printer & Scanner</p> <p>5 – 10 Mbps</p>

Schools

The two key services being made available to the schools are the School Information System and the Learning Support Services. Successful implementation of these services in the School requires the provision of the client end infrastructure and connectivity for the Schools. Improving the quality of learning for the students through deployment of ICT in school education is a key objective of the MMP. Learning Support Services include the services that can play an enabling role in improvement of quality and standards of school education. ICT can provide additional teaching aids in terms of ICT enabled teaching learning material or Digital Learning Resources, model lesson plans (for explanation of concepts), self-learning tools, and standardized assessments.

While alternate implementation approaches can ensure the implementation of the School Information System at least in an offline mode for the schools with poor or no infrastructure, the successful deployment of the learning support services in the teaching learning process can be made possible only by making available the underlying infrastructure for accessing the digital learning resources at the school level (secondary and elementary) if not in the classrooms.

There are existing schemes under MHRD for enabling the schools with IT infrastructure such as ICT @ School (presently merged with RMSA) with the intended coverage of all the 1.24 Lakh secondary schools and Computer Aided Learning (CAL) under SSA with the intended coverage of over 11 Lakh elementary schools.

- i. ICT @ School scheme has a budget provision of INR 9.10 Lakhs / School intended to cover all secondary schools. The scheme envisages providing all School with 10 PCs or 10 nodes w/ a server, accessories like printers, projection system, generator, internet connectivity, educational software & digital learning resources and teacher training. ICT @ School also has a provision of Rs. 27.50 Lakhs / School for establishing 150 additional Smart Schools for providing 40 PCs and other related infrastructure per school.
- ii. CAL under SSA has a budget provision of INR 50 Lakhs per district (covering all the primary and upper schools in the district) for IT hardware, software, development of localized digital learning resources, and training.
- iii. MHRD is also planning to provide Aakash tablet to all the students and teachers at a subsidized rate.
- iv. In addition to the above, there are several State schemes that are designed to enable the schools with the necessary IT infrastructure and connectivity.

While the schemes are designed to cover all the 1.24 Lakh secondary schools and over 11 Lakh primary and upper primary schools, a limited analysis of the current schemes indicate the following limitations:

- i. Despite the schemes going on for a long time, only a small percentage of schools have the IT infrastructure. It is also quite possible that the IT infrastructure provisioned in the first few years of the scheme is close to getting obsolete.
 - a. As per the RMSA data, only ~28% of over 1.24 Lakh secondary schools have a computer lab and internet connectivity.
 - b. As per the DISE data, only 6.99% of Primary and 36.80% of Upper Primary schools have computer and only 82.81% of those are functional
- ii. The computers are setup in a lab environment and primarily deployed for teaching ICT as a subject and not for using ICT as a teaching aids in teaching Mathematics, Science, Language, and Social Science in the classroom.
- iii. The current setup limits the accessibility of the computers in the lab only to the ICT teacher (either the school teacher or an outsourced person deployed on the BOOT model) leaving outside a majority of the subject teachers.

In this regard, it is critical to conduct a thorough assessment of the existing schemes and implement interventions to not only speed up the uptake of the schemes but also enable the subject teachers to leverage the deployed assets to utilize the digital learning resources that will be made available as part of the School Education MMP.

As per the data available, the below are the numbers of secondary and elementary schools:

State Level Schools – Government and Government Aided				
	Secondary (only) Schools	Composite Schools	Elementary (Only) Schools	Total
Government Management	32,951	45,952	10,18,652	10,97,555
Aided - Private Management	24,735	20,862	49,979	95,576
Total	57,686	66,814	10,68,631	11,93,131
Total Secondary Schools (including Composite Schools)	1,24,500 of which ~89,266 schools approved under ICT @ School scheme and so far ~34,268 schools have setup the computer lab			
Total Elementary Schools (including Composite Schools)		11,35,445 of which ~1.75 L have functional computers		

As part of the MMP, it is proposed to provide IT infrastructure for the administrative access to School Information System and for delivery of subject lessons to the students through ICT that can be used in conjunction with the existing computers in the secondary schools for enabling ICT aided teaching process.

As per the National Policy on ICT School Education, the States / UTs will establish state of the art, appropriate, cost effective and adequate ICT and other enabling infrastructure in all secondary schools. Further it provides the below guidelines,

- i. Based on the size of the school, needs of the ICT programme and time sharing possibilities, States will define an optimum ICT infrastructure in each school.
- ii. Not more than two students will work at a computer access point at a given time.

- iii. At least one printer, scanner, projector, digital camera, audio recorders and such other devices will be part of the infrastructure.
- iv. Each school will be equipped with at least one computer laboratory with at least 10 networked computer access points to begin with. Each laboratory will have a maximum of 20 access points, accommodating 40 students at a time.
- v. The ratio of total number of access points to the population of the school will be regulated to ensure optimal access to all students and teachers.
- vi. In composite schools, exclusive laboratories with appropriate hardware and software will be provided for the secondary as well as higher secondary classes.
- vii. In addition, at least one classroom will be equipped with appropriate audio-visual facilities to support an ICT enabled teaching-learning.
- viii. Computer access points with internet connectivity will be provided at the library, teachers' common room and the school head's office to realise the proposed objectives of automated school management and professional development activities.
- ix. ICT enabled education can be significantly enhanced and the range of classroom practices expanded with the introduction of digital devices like still and video cameras, music and audio devices, digital microscopes and telescopes, digital probes for investigation of various physical parameters. These will also form a part of the infrastructure. States will make appropriate choices and promote the use of such devices in classrooms.

In the long run, all the 1,24,000 secondary schools and even over 11L elementary schools need to be provisioned with the ICT infrastructure as per the National Policy on ICT School Education. However, considering the commercial implications and current availability of the enabling infrastructure required to efficiently maintain the ICT infrastructure in schools, such as regular and regulated supply of electricity, physical facilities like an adequately large and secure room with appropriate lighting and ventilation, it is recommended to enable minimum infrastructure to 1,24,500 secondary schools and 1,83,816 elementary schools for the administrative access to School Information System and for delivery of subject lessons to the students through ICT.

The table below provides the indicative configuration of client end infrastructure recommended for the schools:

Implementation Sites/ Units	Number of Units	Client-end Infrastructure including Site Preparation Office Configuration – Indicative Only
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State Level Schools – Government and Government Aided		
Secondary Schools	1,24,500	<p>1 PC, 1 Printer & Scanner in the Office for School Information System related work – <i>Only for schools that are not covered under ICT @ School scheme</i></p> <p>For delivery of subject lessons to the students through ICT: 2 Laptops + 2 Projectors or 2 Integrated Visual Display Units (or equivalent devices that provide content projection features)</p> <p>512 Kbps - 2 Mbps (based on the availability of bandwidth); Preferable: 10Mbps</p> <p>Electricity Charges</p>
Elementary (standalone) Schools located at the Gram Panchayat HQs*	1,83,186	<p>For delivery of subject lessons to the students through ICT and school information system related work: 1 Laptop + Projector or 1 Integrated Visual Display Unit (or equivalent devices that provide content projection features)</p> <p>512 Kbps - 2 Mbps (based on the availability of bandwidth); Preferable: 10Mbps</p> <p>Electricity Charges</p>
Other Elementary Schools**	8,85,445	NIL

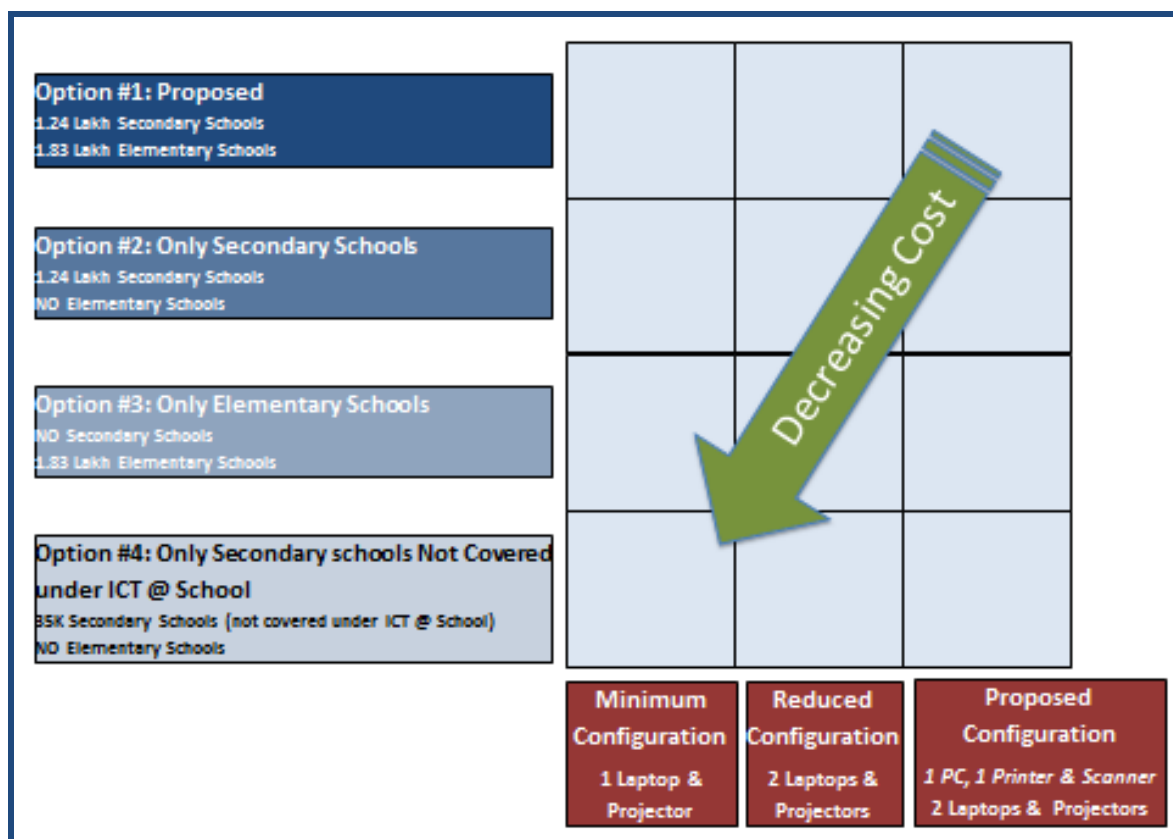
* Calculated with the assumption that each of the 2.5 Lakh gram panchayats have one elementary school and of which 66,814 schools are composite schools and covered under the 1,24,500 secondary schools

** Calculated as the ~11.35 Lakh (total elementary schools) – 66,814 (total composite schools) – 1,83,186 (Elementary Schools located at the Gram Panchayat HQs)

For rolling out the services in the schools, it is recommended that ~1.24 Lakh secondary schools and ~1.83 Lakh elementary schools in the Gram Panchayat HQs be provisioned with infrastructure as indicated in the table above. The phasing of the deployment can be tied to the school performance parameters such as student enrollment, student performance, teacher attendance, and quality of the data provided for the School Information System, wherein schools that have a higher performance will be targeted in the first phase.

Further, keeping in view of the total cost of rolling out infrastructure across the large number of schools, availability of teachers, manageability of implementation across

the vast number of schools, availability of enabling infrastructure, MHRD may consider alternative options such as below for rollout of underlying infrastructure in the schools for accessing the digital learning resources at the school level. Alternate implementation approaches can ensure the implementation of the School Information System at least in an offline mode for the schools with poor or no infrastructure:



Incentivization Program for Master Trainers and High performing schools

Implementation Sites/ Units	Number of Units	Client-end Infrastructure including Site Preparation Office Configuration – Indicative Only
State Level Schools – Government and Government Aided		
Secondary Schools 1 school per each District every year for 4 years	4*653	Laptop / Tablet Cart with 20 Laptops / Tablets per cart
Elementary Schools 1 school per each District every year for 4 years	4*653	Laptop / Tablet Cart with 10 Laptops / Tablets per cart

Secondary School Master Trainers @ 1 per block	2*7770	1 Laptop with data card
Elementary School Master Trainers @ 1 per block	2*7770	1 Laptop with data card

8. Operating Model and Implementation Strategy

This section describes the proposed Operating Model for implementing the SE MMP. As observed in the above sections, this MMP will be jointly executed by the MHRD at the Centre and by the State Education Departments in each State / UTs.

Further, this section identifies the key actors at the Centre and in the States / UTs in the implementation of the MMP and their roles and responsibilities. The delivery / procurement model for different components of the overall solution and a high level implementation plan are also proposed in this section.

8.1. Overview of the Operating Model

The School Education MMP will be implemented on the basis of the following strategies / principles:

- i. Division of responsibilities between the Centre and States
- ii. While MHRD will provide funds and implementation guidelines to States, States will have sufficient flexibility in implementing the MMP in their State / UT taking into consideration their own context and focus areas in the School Education domain.
- iii. On-going central schemes such as “ICT at School” and other State-level schemes in some States / UTs contain ICT components. SE MMP’s design and planning will take into consideration the design and current implementation status of these schemes. Overlap will be eliminated or minimized; and implementation will be phased to maximize impact in the School Education domain.
- iv. High level solution design and guidelines will be developed by MHRD and will take into consideration existing government programs in School Education and common requirements across States
- v. Necessary State-level customizations will be identified by each States / UT (which will be a combination of the solution proposed by MHRD and the specific situation in the State / UT)
- vi. The MMP will be implemented leveraging a “Public Private Partnership (PPP)” model that will combine the governments’ understanding of the school

- education organization (at the Centre and the States) and education domain knowledge with the technology management, program management, organization management and education domain knowledge that can be brought in through the participation of private entities
- vii. The MMP will leverage existing government organization and infrastructure where appropriate (institutional as well as technology infrastructure) – both at the Center and State level
 - viii. The MMP will leverage existing solutions and solution components (applications, digital content, etc.) where possible, both at the Centre as well as in the States / UTs
 - ix. The MMP will leverage to the extent possible, suitable, qualified and proven software products and solutions available in the market – a strategy that will help reduce duration of implementation, enhance the manageability of technology in the long run and also offer the benefits of continuous enhancements of products.
 - x. The MMP will leverage the advantages offered by the emerging cloud technologies and the “Software as a Service (SaaS)”, “Platform as a Service (PaaS)” and “Infrastructure as a Service (IaaS)” models (which is in alignment with Government of India’s “GI Cloud Policy”)

8.2. Implementation Strategy

MHRD, the sponsor of the MMP, will provide overall planning and management of the SE MMP. MHRD will be suitably supported by in this role by designated committees (described in detail in Section 9), a Central Project Management Consultant (CPMC) and a Central Program Management Unit (CPMU).

At the State level, State Education Departments will own and manage the SE MMP. In each State / UT, the Education Department will be supported by State and District level Mission teams, a State Project Consultant (SPC) in implementing the MMP. A governing structure formed of designated Committees will help the Education Department oversee the overall implementation of the MMP.

For providing solutions and day-to-day management of the implementation, there are two possible models that MHRD can choose from:

Option (1) – MHRD identifies one of the central education agencies – such as NUEPA or NCERT – to implement the MMP: The advantage of this model is that

existing central education agencies are familiar with the school education landscape in the country and also have the necessary expertise in the School Education domain. On the other hand, model has significant disadvantages: (a) since most of the existing agencies are already mandated with specific responsibilities, they may not be able to bring in over a long term, the day-to-day focus necessary to manage a complex nationwide MMP such as this (b) while they bring in an understanding of the school education domain and organization in India, they will not be able to bring in the necessary skills such as large scale technology management skills, experience and expertise in interacting with and managing technology / solution vendors, etc.

Option (2) – MHRD facilitates the creation of a dedicated professional program and technology management entity in a PPP mode to implement the MMP: Apart from developing / procuring the solutions identified for the SE MMP, this entity will also continue to provide these services to intended beneficiaries in States and at the Centre. This model offers the advantages of bringing in the necessary day-to-day focus as well as bringing in the necessary program and technology management skills necessary for the success of a program such as this.

The Technology Advisory Group for Unique Projects (TAGUP) setup by the then Finance Minister in 2010-11 recommended the model of forming National Information Utilities (NIU) to execute and rollout complex systems to enable key government functions and achieve project objectives and sustain high-level performance. A complete copy of the TAGUP report can be found at http://finmin.nic.in/reports/TAGUP_Report.pdf. If MHRD chooses this second strategy, they could implement SE MMP through a School Education National Information Utility (SE NIU).

This model offers several advantages:

1. Focus: Unlike existing Central education agencies that are already responsible for one or more functional areas in the domain (and therefore are not in a position to provide the required focus and thrust for implementing a full-fledged nationwide MMP), a separate dedicated entity with a specific mandate of implementing the SE MMP would bring the focus that is required to implement a nationwide MMP
2. Such an entity will be able to bring in the right kind of talent in the following areas from the professional market that may not be available in government:
 - a. Large scale technology program management skills and experience

- b. Experience of managing vendors – professional services firms, technology product firms and technology services firms
 - c. It will be able to easily bring in Subject Matter Experts in the school education domain who can make significant contribution to this MMP such as :
 - i. Experts in the school education area (researchers working in the area or NGOs) to gain access to the latest insights.
 - ii. People with domain experience and proven track record in the government school system – such as working or retired School Principals or DEOs from Central and State education departments.
3. Since such an entity will be responsible for MHRD and other client government departments / agencies for the final delivery of solutions / services in compliance with agreed service levels, government will be delinked from long term management of technology systems, which can be a complex challenge in these times of rapid evolution of technologies, delivery mechanisms and pricing models. In the proposed model, all these challenges will be the responsibility of the SE NIU
4. Existence of SE NIU will protect MHRD and State Education Departments from technology lock-in and vendor lock-in risks, because, these risks are transferred to the SE NIU.
5. This model reduces the implementation burden, especially on States. This is a significant advantage because the experience with earlier MMPs indicates that implementation in the States / UTs – often inconsistent across States – is a critical success factor for the MMP.
6. This model also ensures continuity of key personnel in the implementation team (through the staff, especially senior staff, of SE NIU) throughout the implementation duration – something that may not always be possible with a government department / agency.

Based on these reasons, it is proposed that MHRD establish a public-private-partnership in the form of an NIU (National Information Utility) in School Education which will offer the ICT based educational services to the States / UTs. After the initial equity from the government and private sector and supporting the SE NIU's working capital requirements for the first few years, it is expected that SE NIU will become a self-sustaining entity deriving its revenues from the educational services it provides to the Central and State governments.

Since the services provided by SE NIU to the States / UTs are required even beyond the MMP project period, SE NIU continues to be sustainable beyond the MMP.

8.3. Key Actors in MMP Implementation and their Roles

The following is a pictorial representation of the proposed Operating Model:

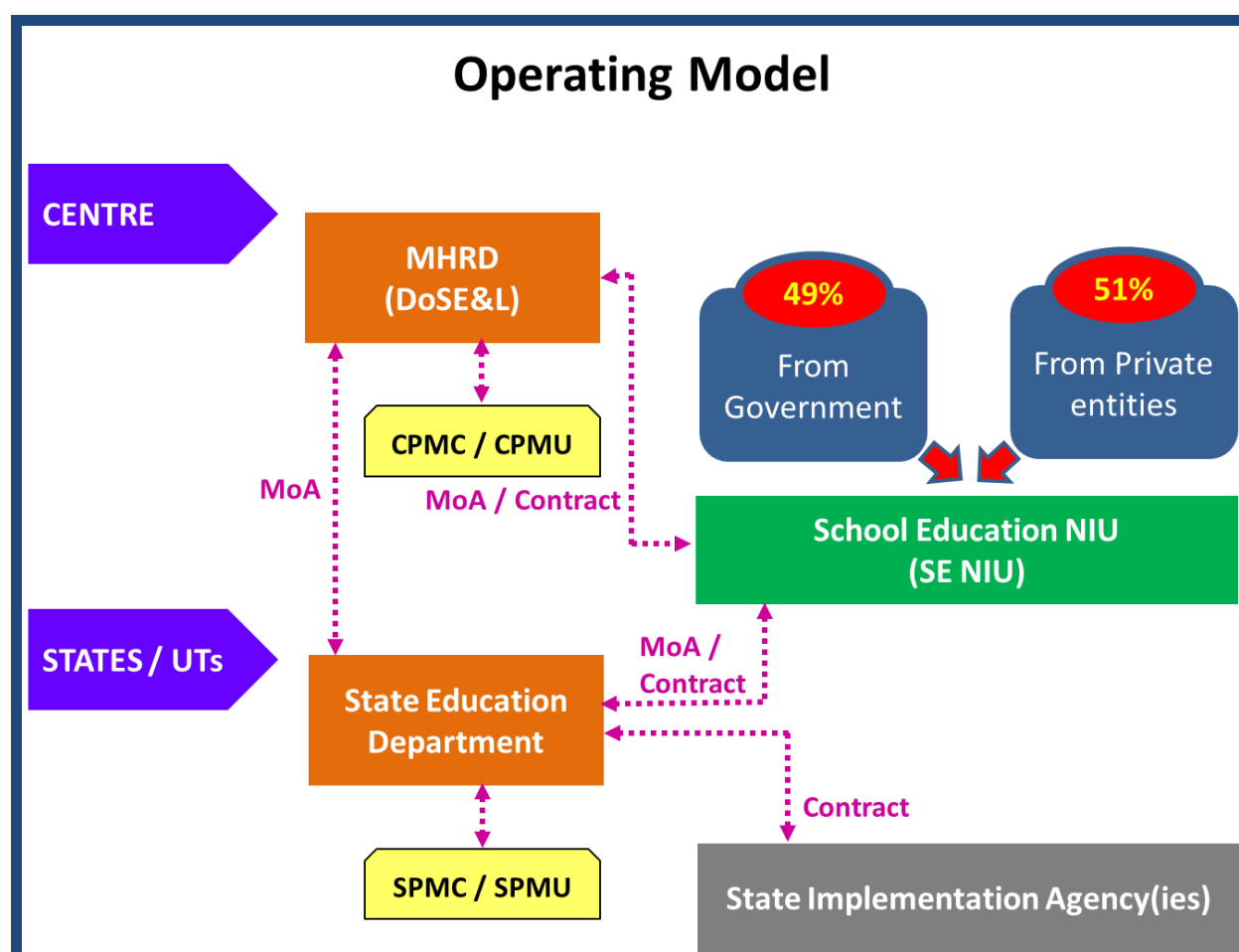


Figure 4.1 (Proposed Operating Model)

The key actors in the MMP include:

At the Centre

1. MHRD (Department of School Education & Literacy – DoSE&L)
2. Central Agencies such as NUEPA, NCERT, NCTE, CIET and CBSE

3. SE NIU, a professional program & technology management formed as a PPP
4. CPMC / CPMU

At States / UTs

1. Department of School Education (of the State / UT)
2. State Implementation Agency(ies)
3. State Project Consultant

The following sub-sections detail out the role of each of these key actors.

8.3.1. Department of School Education & Literacy (DoSE&L), MHRD

As the overall owner and sponsor, DoSE&L, MHRD is the central actor in designing, implementing and overseeing the SE MMP.

Key responsibilities of MHRD (DoSE&L) include:

1. As the sponsor ministry, MHRD will release funds to –
 - a. SE NIU for services rendered to Central agencies and
 - b. States / UTs for them to pay for services rendered at the State level either to the NIU or the State Implementation Agency.
2. MHRD (DoSE&L) will have the overall supervisory responsibility for design & implementation of the MMP, managing the engagement with SE NIU and providing guidance to States / UTs where necessary
3. Implementing the SE MMP in alignment with other ICT schemes in the School Education domain: While the proposed SE MMP itself is complex – in terms of the geographical spread, huge number of implementation units, identified services, technologies involved, criticality of the domain area in consideration (school education) and the responsibility matrix from the perspective of center-state relations. There are other programs such as “ICT at School”, SSA-CAL that target to provide secondary schools with computers and peripherals. Given the possible overlaps in functional areas and the enormous amounts of funding involved among various centrally sponsored ICT schemes in the school education domain, MHRD will perform the critical function of coordinating these programs for best overall results
4. Identification of an exhaustive set of services that will be part of the MMP, inclusion of new services based on the stakeholders’ needs /feedback; and also overseeing the design of necessary specifications
5. Facilitate the formation of SE NIU
6. Appointment of CPMC and/or CPMU

7. Preparation of implementation guidelines for States and preparation of model documents that States / UTs could use
8. Preparation of guidelines for the release of funds
9. Review and approval of Proposals for Funding from States / UTs
10. Constant overview and management of the planning and implementation of SE NIU

During the planning, design and implementation phases of the MMP, DoSE&L will be assisted by a Central Project Management Consultant (CPMC) and a Central Program Management Unit (CPMU). The responsibilities of CPMC and CPMU are detailed out in Section 9.

8.3.2. Central Agencies such as NUEPA, NCERT, NCTE, CIET and CBSE

As the key educational bodies at the Center that are responsible for setting the educational and training standards, curriculum, preparing the educational textbooks and content, and conducting educational research, the agencies such as NUEPA, NCERT, NCTE, CIET and CBSE have a key role to play for the successful implementation of the MMP. The individual responsibilities may be detailed out during the design phase of the MMP.

8.3.3. School Education NIU (SE NIU)

In the proposed model, SE NIU will source / develop / procure all core services / solutions identified for the SE MMP. And it will continue to offer these services to intended beneficiaries in alignment with its mandate.

Core services delivered by the SE NIU

In the proposed model, SE NIU will deliver all services / solution components at the central level. In States / UTs, it will deliver all services / solution components identified to form the core of the MMP. The remaining services will be delivered through State implementation partners. The core services identified include:

1. Core e-Governance applications to deliver the identified services under MMP
2. Student and teacher resource platform

3. Content (digital learning materials) including sourcing of content from the private sector
4. DC / DRC infrastructure
5. Network connectivity to all implementation units
6. Core Capacity Building and Change Management
7. Hardware and peripherals at administrative / supervisory offices and training centers (as necessary)
8. Development and management of Data Standards for the area of ICT in School Education in India.

SE NIU will deliver these solutions by itself or by engaging partners. In case of core applications, to the extent possible, SE NIU will leverage existing suitable qualifying solutions / products that already exist in the open market. It may also explore the possibilities of leveraging successful applications developed by States / UTs if they are suitable.

Formation of the SE NIU

The SE NIU will be established based on the following guidelines:

1. It will be incorporated as a not-for-profit private company under Section 25 of the Indian Companies Act 1956
2. It will be formed with equity participation from government (a minimum of 26% and a maximum of 49%) and from the private sector (a minimum of 51% and a maximum of 74%)
3. Equity holders from the government include MHRD, Central Agencies such as NUEPA, NCERT, NCTE, CIET, CBSE and as many State / UT governments as possible. Given that SE NIU may also be given the responsibility for sourcing the Digital Learning Resources, it is essential for NCERT / CIET to be part of the SE NIU to provide the guidance and direction with respect to the educational content.
4. Private sector equity will come from at least two (2) private companies / entities, but equity participation from a higher number of companies will be preferable. Guidelines for private entities that wish to participate in the PPP:

Preferred

- a. Companies of proven competence IT space including program implementation and IT services (application & infrastructure management)
- b. Non-profit entities / societies / Section 25 companies working in the domain of school education India. Participation from these entities

would be advantageous as they bring SE NIU access to grassroots level insight and latest research in key areas of learning, teaching, etc.

- c. Private School Educational Institutes of Repute

Avoidable

- a. Technology product / solution provider companies in the School Education space that may result in conflict of interest

5. **Self – Sustainability of the SE NIU:** After the initial equity from the government and private sector and supporting the SE NIU's working capital requirements for the first few years, it is expected that SE NIU will become a self-sustaining entity deriving its revenues from the services it provides to the Central and State governments. The revenues from the Center may come in from the services that the SE NIU provides to the MHRD to enable the services (School Information System, Digital Learning Resources, School Education Governance Systems,..) targeted under the MMP. The revenues from the States will come from the States that subscribe for the MMP services from SE NIU. In addition, SE NIU may generate revenue through providing relevant services (advisory, consultancy, and implementation) to the State Education Departments for any State specific requirements (during and beyond the MMP period) to become a self-sustainable entity.
6. If required, SE-NIU may establish presence in the major States or regions to support the States / UTs in implementation of the SE MMP.

A potential risk in adopting the NIU model is that it may take a long time to bring the SE NIU into existence. Important questions that need to be answered – such as who can be the private players that will participate in the NIU, how will they be selected, how to structure the equity holding, etc. – may take time to be answered.

In order to ensure that the implementation of the SE MMP is not delayed, the following course of action is recommended for MHRD as soon as the SE MMP DPR is approved:

1. Engage a team of professional consultants who will work exclusively towards setting up the SE NIU. This team will support MHRD, engage with stakeholders such as DietY towards resolving all issues and establishing the SE NIU at the earliest
2. Engage a CPMC to work on the following so that the SE NIU can launch implementation as soon as it is formed:

- a. Preparation of high-level functionality for the solutions identified (in the areas of learning support systems, school information systems and school system governance)
- b. Preparation of high-level technical requirements if any
- c. Preparation of implementation guidelines to States / UTs
- d. Preparation of framework / guidelines for funds transfer from MHRD to States / SE NIU
- e. Preparation of MoA between MHRD and States / UTs
- f. Development of frameworks for Change Management, Capacity Building, Monitoring & Evaluation, etc.
- g. Coordination with States / UTs to communicate and resolve issues related to the implementation of the MMP

MHRD may choose to appoint the same professional agency as CPMC and also to assist it in the formation of the SE NIU.

In case all planning is completed but there is delay in the formation of SE NIU, MHRD may consider launching the SE MMP through an existing NIU or an NIU-like entity or through an agency under MHRD (NCERT/ NUEPA/ CBSE) and shifting the responsibility to the SE NIU as soon as it is functional.

8.3.4. Department of Education at States / UTs

Department of School Education will be the owner of the SE MMP in States and will hold the responsibility for taking up the following activities for successfully implementing the SE MMP in the State / UT.

Key responsibilities of the Department of Education in States / UTs include:

1. The Department of School Education will have the overall supervisory responsibility for implementing the MMP in the State
2. Formation of necessary Committees; and appointment of State Project Consultant
3. As identified earlier, there are other ICT programs in the area of School Education such as *ICT @ School* that are in progress. Some of these may be managed by the Department of Education whereas others may be managed by other departments such as Social Welfare / Backward Classes and Minorities. Therefore, there is a need for aligning the implementation of

these programs, which will be a critical responsibility of the Department of Education.

4. Solution development at the State level: this will include the identification of services that will be part of the MMP at the State level and identification of customizations to the solutions provided by MHRD that will be required to meet the specific needs of the State. This is required to be done duly taking into consideration the on-going ICT initiatives, existing ICT assets and the overall requirements in the States in the area of School Education
5. Preparation of Proposal for Funding for approval from MHRD based on the guidelines provided by MHRD
6. Procurement of State Specific solution components (those not provided by SE NIU). These will be procured by the State from State Implementation Agency / ies, who will be identified based on a model RFP / guidelines provided by MHRD.

In all these activities, the Department of Education will be assisted by a State Project Consultant (SPC). The responsibilities of SPC are detailed out Section 9.

8.3.5. State Implementation Agency

States / UTs will procure all core services from SE NIU and State Specific services from a State level implementation agency.

The key responsibility of the State Implementation Agency will be providing the following services in States / UTs:

1. Development and provision of State Specific applications (if any)
2. Provisioning of computer hardware and other peripherals at schools (as necessary)
3. Capacity Building (training) services: the SE NIU will train the master trainers identified by the State / UT. The master trainers will include members of the State Implementation Agency, who in turn will continue to offer training services to all users / personnel identified by the State Department of Education based on the CB guidelines provided by MHRD. In addition, State Implementation Agency will also provide training on basic computing skills for recipients identified by the Department of Education.
4. Digitization of existing data
5. Any other component that is not in the scope of SE NIU

The State Implementation Agency (ies) will be a professional services firm that will be identified on the basis of model RFP / guidelines provided by MHRD. States will be assisted by State Project Consultant in identifying the State Implementation Agency (ies).

8.4. Engagement Model between Key Actors

This sub-section covers the key aspects of engagement between the key entities identified above.

8.4.1. Engagement between MHRD and States / UTs

MHRD enters into a Memorandum of Agreement (MoA) with each State / UT that specifies the roles and responsibilities of MHRD and the State / UT in the implementation of the MMP.

The indicative responsibilities of MHRD include:

1. Formulating guidelines for the implementation of MMP, approval of proposals from the States/ UTs, transferring funds to States / UTs based on their implementation progress
2. Seeking inputs from States in finalizing the services and specifications
3. Providing model templates (for Proposal for Funding, State RFP, specifications for solutions to be procured in States, etc.) for use by States / UTs
4. Providing guidance in formulating specification of solutions to be procured by States
5. Provide necessary guidance to States in implementing the MMP
6. Providing overall supervision and management of the MMP
7. Release of approved funds based on guidelines
8. Any other reasonable assistance States may need in implementing the MMP

The indicative responsibilities of the States / UTs include:

1. Commitment to implement the MMP in their State in compliance with the guidelines provided by MHRD
2. Providing inputs sought by MHRD in finalizing the solution and other details of the MMP
3. Establishing necessary governance structures as per the MHRD guidelines to oversee the MMP implementation
4. Engaging Project Management Consultants
5. Submitting the Proposal for Funding
6. Engaging State Implementation Agency
7. Submitting periodic implementation status reports as requested by MHRD in compliance with the templates provided by MHRD
8. Submitting utilization Certificates for the grants provided the by MHRD
9. Conducting M&E Studies

8.4.2. Engagement between MHRD and SE NIU

SE NIU will enter into a Memorandum of Agreement (MoA) / Contract with MHRD that will cover an agreement on the following (the below list is indicative):

1. List of services to be provided to different agencies / entities (Central and State)
2. Service levels for each of the services
3. Pricing of the services
4. Guidelines for pricing of application customization services SE NIU will render to States / UTs

8.4.3. Engagement between States / UTs and SE NIU

States / UTs will enter into a Memorandum of Agreement (MoA) / Contract with SE NIU on the following (the list below is only indicative):

1. The list of services each States / UT will procure from the SE NIU with service levels
2. State-level customizations of Core Applications provided by SE NIU within the purview of guidelines issued by MHRD.
3. Provision of additional services, customizations of Core Applications outside the purview of MHRD guidelines. States may have to pay SE NIU for these additional services and customizations (based on the guidelines set by MHRD in the MHRD-SE NIU MoA / Contract)

8.4.4. Engagement between States / UTs and State Implementation Agency

States / UTs will enter into a contract with the State Implementation Agency (ies) selected through competitive public procurement process for the implementation of services that will be procured from the State Implementation Agency (ies). Each State may choose to procure services from one or more State Implementation Agencies.

8.5. Solution Development and Delivery / Procurement Model

As described in Section 7, the complete solution includes various components such as the application software, Digital Learning Resources, hardware at user locations, capacity building & change management services, digitization of existing data, etc. This sub-section addresses the delivery / procurement model proposed for each of these important solution components.

At the Centre, all necessary solutions will be provided by the SE NIU. In States / UTs, all “core solution components” will be provided by SE NIU and for remaining solution components, States / UTs will engage local implementation partners. Where required, SE NIU may empanel multiple solutions for the service to not only provide choice to the States / UTs and but also create competition among the empaneled vendors that will lead to continuous improvement of the offered services. The following table indicates the proposed model:

Solution Component	MHRD	States / UTs
Core applications	SE NIU	SE NIU
Digital Learning Resources	SE NIU	SE NIU
Hosting of core applications, Student teacher resource portal	SE NIU	SE NIU
DC / DRC	SE NIU	SE NIU

Network connectivity	SE NIU	SE NIU
Capacity Building and Change Management	SE NIU	SE NIU – Change management, Capacity Building on Core applications (including use of digital learning materials) State implementation partner –Basic computer skills and State Specific applications
Hardware at administrative / supervisory offices and training centers (as necessary)	NA	SE NIU
Digitization of existing data	NA	States through State implementation partner
Data Standards (develop, update and own)	SE NIU	

The following guidelines are proposed for implementation:

1. SE NIU procure application solutions from suitable, qualified software product / solution vendors in the market. This would help in reducing the implementation time and will also transfer the long term responsibility of application / product management to the product / solution providers.
2. States will provide their service customization requests to SE NIU and may have to pay SE NIU for their customization requests.
3. The network connectivity will be provided through a tri-partite agreement involving MHRD, SE NIU and PSU - Network Service Provider. SE NIU will work with PSU - Network Service Provider in executing the agreement and providing all end-user points with necessary connectivity. In the medium-long

term, the option of utilizing the National Fiber Optic Network (NOFN) will be explored once NOFN is functional.

4. In States, the Capacity Building responsibilities are divided between SE NIU and the State / UT. For training on core applications (including the use of digital learning materials), States / UTs will identify master trainers who will be trained by the SE NIU. These master trainers will in turn train all State personnel identified for training. States may identify these master trainers from their employees and/or from a State implementation partner. Training on basic computer skills and State specific applications will be delivered by the State implementation partner
5. Computer hardware and peripherals at schools will be installed by State implementation Agency as necessary

8.6. Funding of the MMP

This MMP will be wholly funded by MHRD. MHRD will issue comprehensive guidelines on SE MMP for funding and implementation. The guidelines will cover the services and components eligible for funding, adoption of core applications by State/ UT, financial pattern, MoA, release of funds to States, Program management consultants for the States, submission of proposal for funding by States/ UT, governance structures, periodic progress reports, utilization certificates by State/ UTs for the spent funds, monitoring mechanism, key performance indicators etc., For all services rendered by SE NIU to MHRD and other central agencies, the payment will be made from MHRD to the SE NIU. For all services rendered at the State level, the funds will be transferred from MHRD to respective States / UTs, who will pay SE NIU and / or their State-level implementation partners based on the services procured from each.

Each State / UT will prepare a State level Proposal for Funding for seeking funds from MHRD based on a template and guidelines-for-funding provided by MHRD. This Proposal for Funding spells out the services the State plans to implement and corresponding expenditure estimate. MHRD will review the State Proposal and approve after seeking clarifications / changes from the State if required.

The success of the MMP implementation mainly depends on multiple parameters that include timeliness and quality of the data captured by the School Information System, effective use of the decision support services by the school administrators and education planners, deployment of digital learning resources by the teachers in the classrooms, implementation of school education governance systems by the administrators to streamline the governance processes. The MMP can achieve its desired objectives only on participation of all the stakeholders and the consistent

drive by the leadership at all levels including the State and Districts. The release of the funding to the States under this MMP should be made contingent on the progress of implementation in the States / UTs, degree of adoption and usage of the services / solutions of the MMP by the intended users and the impact made by the project on the envisaged outcomes of the School Education MMP. In this context, effective monitoring and evaluation (defined in Section 14) has to be carried out with the supporting organization structure and well-defined M&E parameters.

Reporting on at least the critical M&E parameters defined based on progress of implementation in the States / UTs, degree of adoption and usage of the services / solutions of the MMP by the intended users and the impact made by the project on the envisaged outcomes of the School Education MMP should form one of the components of compliance and be mandated for release of MMP funds to the States / UTs, Districts, and Schools.

8.7. High Level Implementation Plan

This section highlights key implementation plan of the SE MMP in a sequential order.

8.7.1. Plan for run-up to Implementation

This phase starts as soon as the SE DPR is approved that includes detailed planning and preparation at MHRD as well as in States / UTs, including setting up the governing structures, appointing program/project management consultants, issuing various guidelines, preparing model documents for project proposals from state/ UT, draft Memorandum of Agreements between MHRD and State , establishing the SE NIU. The following diagram represents key activities that are required to be executed at the Centre and in States towards the implementation of the MMP.

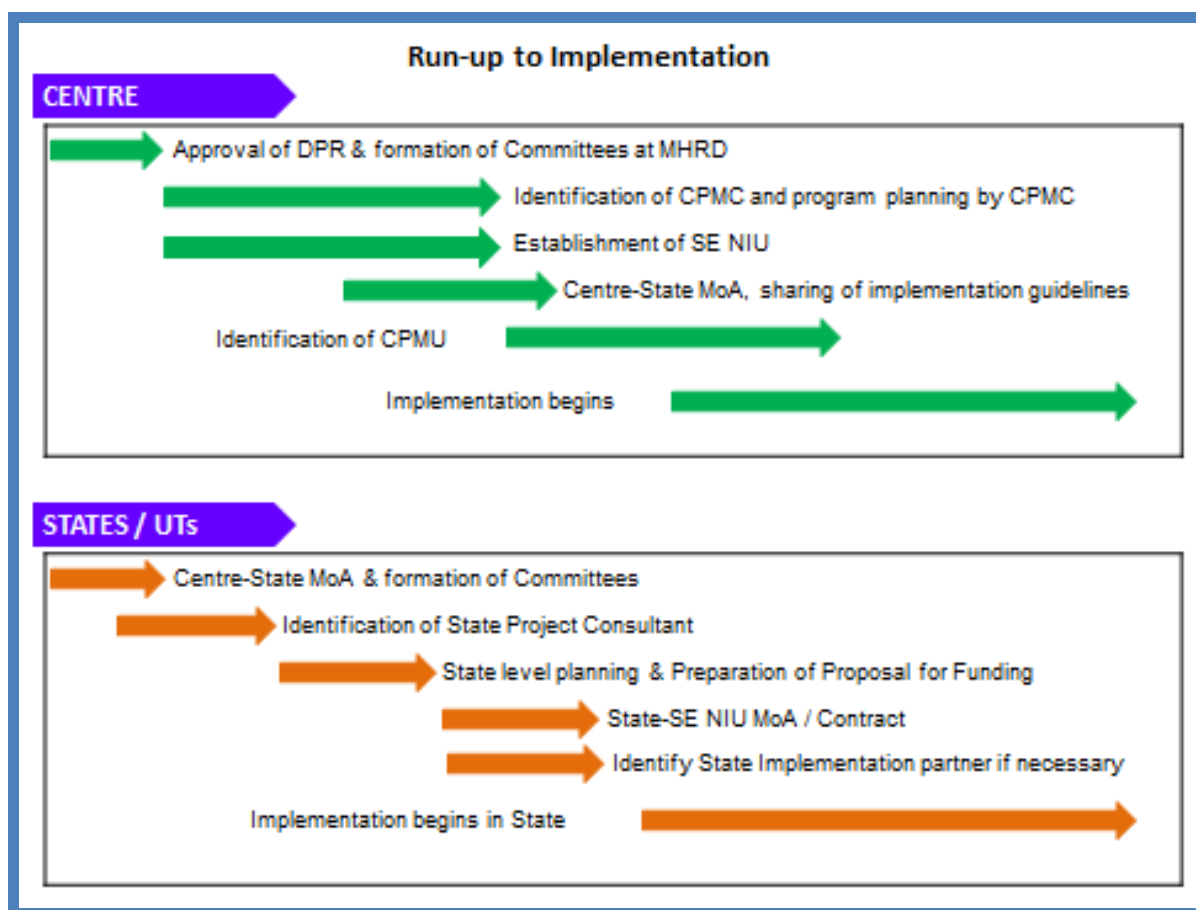


Figure: (Pre-Implementation Plan at Centre and in States)

8.7.2. Year-wise Project Milestones

Year 1 of Project: Pre-Implementation Activities

It is expected that the above mentioned activities including setting up of SE NIU, preparation of the necessary implementation guidelines / specifications, model documents including Proposal for Funding from States, evaluation of applications (School Information System, Teacher Lifecycle Management,..) either successfully implemented in the States or available for procurement, implementation of the same for States / UTs' requirements, development / identification of digital learning resources (from market as well as OERs) including their tagging, localization, and certification will take place in the first year. At the end of Year 1, the SE NIU is expected to be in a position to offer a few services to the States / UTs. The submission of Proposal for Funding from States/ UTs and their approval by MHRD will also be completed in the first year.

Year 2 of Project: Implementation of Services in the States / UTs

Completion of activities related to the implementation of the remaining services targeted under the MMP will take place in the second year. In addition, the focus in the second year will be on implementation of the services (any state level customizations, data digitization, localization of training content & documentation,..) in the States / UTs. Change Management & Capacity Building will also be taken up at State / District / Block levels in the second year. The deployment of client end infrastructure and network connectivity at the identified administrative / supervisory offices, training institutes, and schools will take place in the second year. It is expected that implementation in 25% of the Districts (including the blocks and schools within the District) will happen in the second year of project.

Year 3 and 4 of Project: Roll-out of Services across the States / UTs

Implementation in the remaining 75% of the Districts (including the blocks and schools within the District) will be taken up in the third and fourth years. Implementation of the Change Management and Capacity building interventions in the corresponding districts will happen in alignment with the implementation of the services. Any feedback from the learning of the second year of implementation will be used to fine tune the planning and design of the project.

Year 5 of Project: Stabilization and Monitoring & Evaluation

The fifth year of project will be primarily a stabilization phase where the focus will be on improving the data quality, continuous identification / development of additional digital learning resources, implementation of any advanced analytics for decision support and reporting, and monitoring & evaluation of the program.

8.7.3. Immediate Next Steps

Of the above activities, the formation of the SE NIU is a highly critical activity that has significant impact on the implementation progress of the MMP. The critical pre-implementation steps that MHRD can take right after the approval of this DPR for ensuring timely implementation of the MMP include:

1. Appointment of the governance committees and nodal agencies at Center and States / UTs
2. Appointment of a professional team of consultants to focus exclusively on the setting up of SE NIU
3. Appointment of a CPMC that will start on all planning and the development of all necessary implementation guidelines / specifications, model documents so that implementation can start in earnest once SE NIU is formed

4. Setup of SE – NIU. In case there is a delay in the formation of SE NIU, one possible alternate plan is to start implementing the MMP through an existing NIU or NIU-like entity and handover to SE NIU once it is established
5. Preparatory activities such as identification of the hard-spots for sourcing of digital learning resources, empanelment of digital content certifying agencies, identification of master trainers, and schools targeted for implementation

9. Program Management and Monitoring

School Education is on the “Concurrent List” of subjects according to the Constitution of India and falls in the domain of the Union as well as that of States / UTs. Therefore, MHRD at the Centre as well as Education Departments in the State will play a role in planning, implementing, monitoring and managing the School Education MMP. Broadly, MHRD will fully fund the MMP and will also be responsible for the high-level planning and provision of application services for the MMP. Detailed planning and execution will be driven primarily by the State Education departments and other agencies in the States. The MMP will be monitored and managed by MHRD as well as States.

Program Management at the MHRD and States should be supported by the implementation of necessary project management, collaboration, monitoring and dashboard solutions and underlying infrastructure.

The details of the proposed organization structures at the Centre and States to monitor and manage the MMP are covered in this section.

9.1. Recommended Governance Structure at the Centre

As the sponsor ministry for this MMP, MHRD will be the anchor for the overall planning and nationwide implementation. However, given the complexity of the MMP, it will be supported by several committees formed at the Centre. These committees will be composed of senior officers drawn from various government agencies and will bring significant experience and expertise in various areas relevant to this MMP (such as domain experience in School Education and technical expertise).

9.1.1. Governance and Program Management responsibilities of MHRD

As elaborated in Section 8.3.1, MHRD will carry out the following MMP governance and program management functions:

- i. Overall guidance to States / UTs and supervision of the MMP formulation, planning and implementation

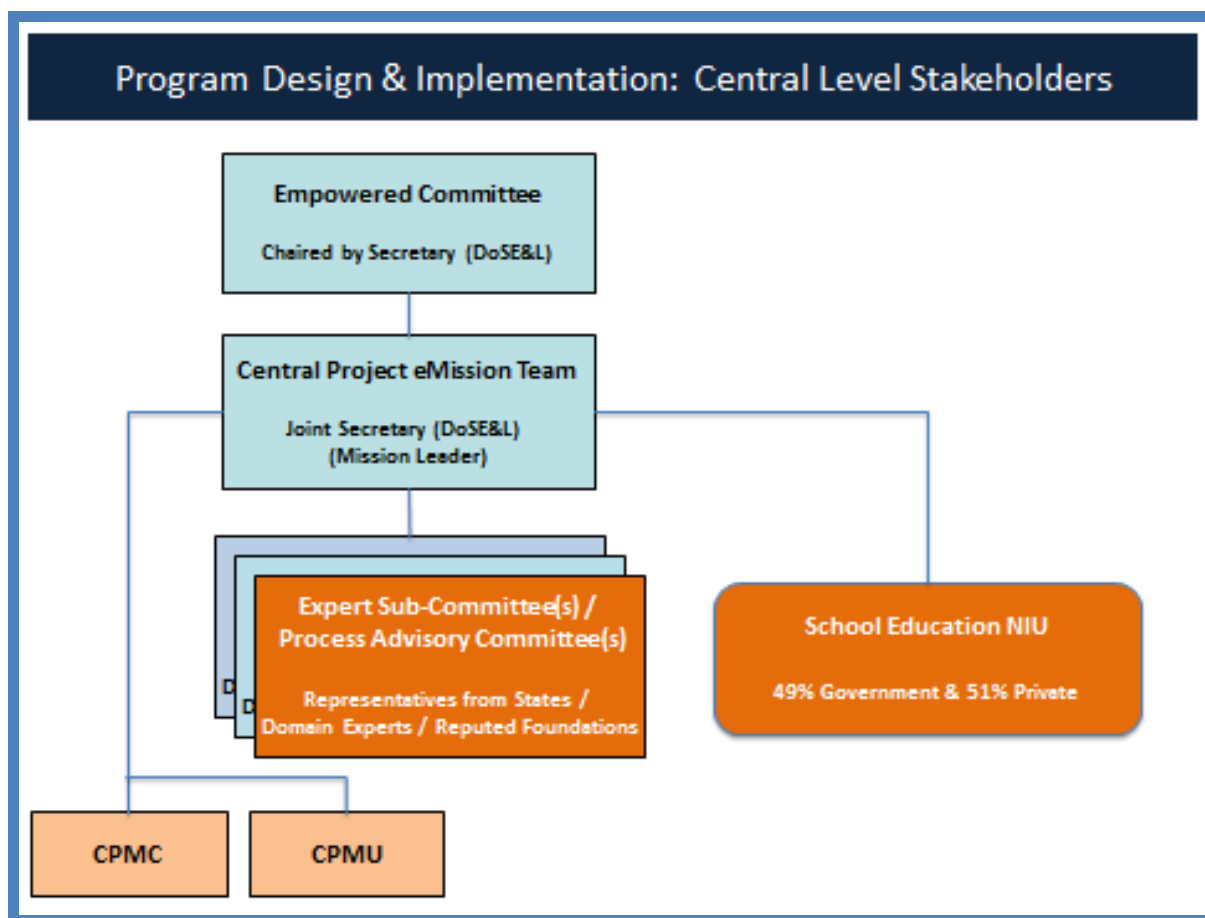
- ii. Constitute the necessary committees and teams to ensure speedy and effective decision making, provide guidance, and for constantly reviewing the progress of the MMP
- iii. Lead the formation of SE NIU in a PPP mode.
- iv. Identification CPMC and later, CPMU which will work closely with MHRD and other central committees in the planning, implementation and program management of the MMP
- v. Oversee the preparation of solution specifications (functional and technical specifications, infrastructure specifications, capacity building and change management specifications, etc.) and provide required guidance / facilitation
- vi. Ensure participation of States and UTs from the initial stages of the project to make the MMP a success
- vii. Conduct national workshops to sensitize the leadership in the State / UT school education departments
- viii. Issue guidelines and model documents to States and UTs in the preparation and approval of State Proposals for Funding
- ix. Working with States / UTs in implementation in States / UTs
- x. Facilitate coordination with other allied government agencies within and outside department to leverage existing government infrastructure and institutional structures for the MMP implementation
- xi. Collaborate closely with SE NIU in the provisioning of services / solutions identified for the SE MMP
- xii. Issue of implementation guidelines to States / UTs on all critical aspects of the MMP
- xiii. Assessment of the project and release of funds to States and UTs
- xiv. Program evaluation and impact assessment of the MMP

MHRD will perform these functions using the services of CPMC and CPMU (whose specific roles will be described in the following sub-sections). Where required, it can also seek inputs from any expert sub-committee to contribute to specific areas in carrying out the above responsibilities.

9.1.2. Committees and Teams that support MHRD

For effective program management and governance of the SE MMP during with the conceptualization and implementation phases of the SE MMP, the following governance committee / team structure is recommended to be setup within DOSE&L of MHRD. The department may make suitable changes as necessary in the proposed structures:

1. Empowered Committee (EC)
2. Central Project eMission Team (CPeMT)
3. Process Advisory Committee (PAC)



The Empowered Committee (EC)

The Empowered Committee (EC) constituted by the MHRD will be chaired by Secretary (Department of School Education & Literacy):

Indicative Composition

- i. Secretary (DoSE&L), Chairperson
- ii. Additional Secretary
- iii. Joint Secretary (School Education) & Mission Leader, Convener
- iv. Director (DoSE&L)
- v. Representative from DeitY
- vi. Representative, IFD

- vii. Representatives from important central education agencies such as NCERT, NUEPA and NCTE
- viii. Representative from CBSE, KVS,..
- ix. Representative from the divisions in the department handling flagship schemes such as SSA / RMSA
- x. Representative(s) from SE NIU
- xi. Representative from CPMC and / or CPMU (Invitee)

Indicative Responsibilities

- i. Provide strategic and policy level guidance to the planning and implementation of the SE MMP
- ii. Take into consideration other on-going schemes in the School Education domain and ensure that there is alignment between SE MMP and the other schemes
- iii. Provide guidance in the establishment of SE NIU
- iv. Review and approval of the solution and guidelines and detailed expenditure plan of the MMP
- v. Review and approve the different solution / service components and related specifications
- vi. Approval of agencies / service providers directly engaged by MHRD for this project
- vii. Review and approval of State Proposals for Funding. It will also approve individual projects within the MMP
- viii. Constant monitoring and review of the overall progress of the project
- ix. Approve release of funds based on the review of progress
- x. Provide implementation guidance to States / UTs when required
- xi. Other important policy, process and strategic issues related to the MMP

The EC will take assistance from CPMC / CPMU in carrying out the above functions. If required, it may also call in assistance from suitable and qualified subject matter experts.

The Central Project eMission Team (CPeMT)

The CPeMT will be headed by a Mission Leader of the MMP from MHRD and will take an active role in the project on a day-to-day basis.

Indicative Composition

- i. Joint Secretary (DoSE&L), MHRD (Mission Leader)
- ii. Director (DoSE&L), MHRD, Member Secretary & Convener
- iii. Representative from NCERT
- iv. Representative from NUEPA
- v. Representative from NCTE
- vi. Representative from SE NIU
- vii. Representative from DeitY
- viii. Other suitable members nominated by MHRD
- ix. Representatives from CPMC and / or CPMU

Indicative Responsibilities

- i. Own the operational responsibility for the MMP on behalf of MHRD
- ii. Program Management, procurement management (of agencies / service providers directly engaged by MHRD), and financial management
- iii. Coordination with various agencies as needed
- iv. Facilitation of the establishment of SE NIU
- v. Supervise the development of high level specifications for various solution components (functionality, infrastructure, CB, CM, etc.) and implementation guidelines
- vi. Release of funds to States and SE NIU
- vii. Work closely with SE NIU on a regular basis to speed up decision making, resolve issues and make progress in key MMP activities such as solution development, preparation of guidelines, etc.
- viii. Work closely with the Process Advisory Committee in quickly and effectively resolving functional / process related issues associated with the solutions / services of the SE MMP
- ix. Provide necessary guidance to States in implementing the MMP
- x. Coordinate and collaborate with States and UTs in making progress on the MMP
- xi. Formation of expert sub-committees, as required to get inputs on technology, process, and domain related inputs
- xii. Assist the Empowered Committee as required

The CPeMT will carry out the above responsibilities with assistance from the CPMC and the CPMU.

Expert Sub-Committee(s) or Process Advisory Committees

To ensure the success of the SE MMP, it is important to get right and timely inputs in the domain of School Education (functional aspects of teacher life cycle management, student life cycle management, school management, pedagogy and the administration of the school education system and similar areas). In order to provide MHRD, the EC and the CPeMT with these inputs, it is recommended that expert sub-committees or Process Advisory Committee (PAC) may be setup to elicit inputs from the experts, both inside and outside the government.

In addition to the members from the CPeMT, the sub-committee may have:

- i. Representatives from States (Director level officers from State Education Departments)
- ii. Representative from any other appropriate central education agency
- iii. People with practical experience in the School Education domain in India such as retired or in-service Principals, DEOs, Teacher Educators, and other domain personnel
- iv. People with school education domain expertise:
 - a. Representatives from reputed Foundations working on the field in the area of School Education
 - b. Experts in the areas of pedagogy / learning sciences

Indicative Responsibilities of the Sub-Committee(s)

- i. Provide functionality and other domain related inputs to MHRD, SE NIU, CPMC and CPMU
- ii. Review functional specifications and other relevant documents and provide feedback before they are finalized
- iii. Provide inputs to SE NIU in preparing and finalizing design documents / requirements documents / product demonstrations, etc.
- iv. Participate in solution / product testing if necessary

DoSE&L may, if necessary form multiple sub-committees to focus on the different domain areas under the MMP such as school management, school education system administration and pedagogy / digital content.

9.2. Consulting and Program Management Services at MHRD

Given the technical and implementation complexity involved, MHRD will be assisted by a “Central Project Management Consultant (CPMC)” and a “Central Program Management Unit (CPMU)” in planning and managing the implementation of the SE MMP.

The following paragraphs describe the roles of the CPMC and the CPMU in detail.

9.2.1. Central Project Management Consultant (CPMC)

The following are the key responsibilities of CPMC:

- i. Assist MHRD in the conceptualization and formation of SE NIU as necessary
- ii. Assist MHRD in detailing out the solution specifications and implementation guidelines of the MMP:
 - a. Detail out the School Education solutions that will be part of the MMP
 - b. Develop functional requirements, as required, for the solutions identified
 - c. Create the technical requirements, as required, of the solutions identified
 - d. Develop BPR requirements, appropriate business models for the delivery of MMP
 - e. Develop the Change Management and Capacity Building plan at the Centre (as applicable) and guide States / UTs and any guidelines for institutional tie ups, SME identification for implementing the CM and CB plan
 - f. Detail out the specifications necessary for data management for the MMP (including data standards and digitization requirements that may be common to all States)
 - g. Develop the framework and guidelines for the release of funds from MHRD to States
 - h. Development of implementation guidelines for States including:
 - i. Formation of governance structure
 - ii. High level project plan at the States / UTs

- iii. Draft / template / model MoA / Model Contract between SE NIU and States / UTs (which States can use to create their own Contracts with SE NIU)
 - iv. Model RFP for the States to identify State Implementation Agencies at the State level
 - i. Develop the detailed plan for monitoring and evaluating the MMP from the Centre
- iii. Assess the need for Consultants, SMEs, Committees, Implementation agencies that are required to be set up during the implementation of various solution components of the MMP, Prepare terms of reference , evaluate their responses, prepare draft contracts for the MHRD
- iv. Draft the Memorandum of Agreement (MoA) between MHRD and States for the implementation of the MMP
- v. Draft the Memorandum of Agreement (MoA) / Contract between MHRD and the SE NIU
- vi. Assist MHRD in identifying a professional agency as the CPMU (in the creation of the RFP and carrying out the bid evaluation process)

9.2.2. Central Program Management Unit (CPMU)

The CPMU will assist MHRD in all aspects of the implementation, monitoring and management of the MMP through the implementation duration of the MMP.

Responsibilities include:

- i. Providing secretarial support to the SE MMP
- ii. Coordination between MHRD and States / UTs
- iii. Assess the need for Consultants, SMEs, Committees, Implementation agencies that are required to be set up during the implementation of various solution components of the MMP, Prepare terms of reference , evaluate their responses, prepare draft contracts for the MHRD
- iv. Coordination with Consultants, SMEs, Committees, Implementation agencies to monitor the progress, review of their reports/ recommendations.
- v. Review of State / UT Proposals for Funding, obtaining clarifications if any, assisting MHRD (EC / CPeMT) in appraisal and approval of State / UT Proposals for Funding
- vi. Coordinate between MHRD and SE NIU during the implementation of the MMP

- vii. Collection of data on project implementation status from the States / UTs, compilation of reports, analysis and presenting to MHRD (EC / CPeMT) towards monitoring and management of the MMP
- viii. Assist MHRD (EC / CeMT) in appraisal and processing of requests from States / UTs and to SE NIU and facilitating the release of funds from MHRD for MMP implementation
- ix. Review and revise implementation guidelines issued to States / UTs as may be necessary
- x. Provide any other suitable guidance to States / UTs that may require in successfully implementing the MMP

Engagement model

MHRD can appoint a qualified and suitable professional e-Governance consulting agency(ies) as the CPMC and CPMU either by nomination or through a competitive bidding process. The CPMC and CPMU will report to the MHRD (the Mission Leader) and will work closely with the EC and the CPeMT in carrying out their responsibilities.

It is recommended that MHRD identify the same agency for CPMC and CPMU responsibilities to ensure the continuity and overlap of the team that assists MHRD in the design of the guidelines and specifications into the program management. However, in case different agencies are identified for CPMC and CPMU, it must be ensured that the agency that is selected as CPMC be continued (the key senior resources) in the role of a strategic advisor for the remaining duration of the program.

The CPMU may be hosted by the MHRD in the office premises of SE NIU. The infrastructure and facilities needed by the CPMU – office space, connectivity, office supplies and other facilities, helping staff, etc. – will be provided by the SE NIU.

9.3. Recommended Governance Structure in States / UTs

At the State and UT level, the Department of School Education will be the overall owner of the MMP and in-charge of planning, implementation and monitoring of the MMP in the State. State and district level agencies such as SCERT, SIET, DIET and Examinations Boards that are part of the Department of Education play important roles in managing the school education in States / UTs.

9.3.1. Governance and Program Management responsibilities of State Department of Education

The State / UT will be responsible for the following aspects of implementation of the MMP:

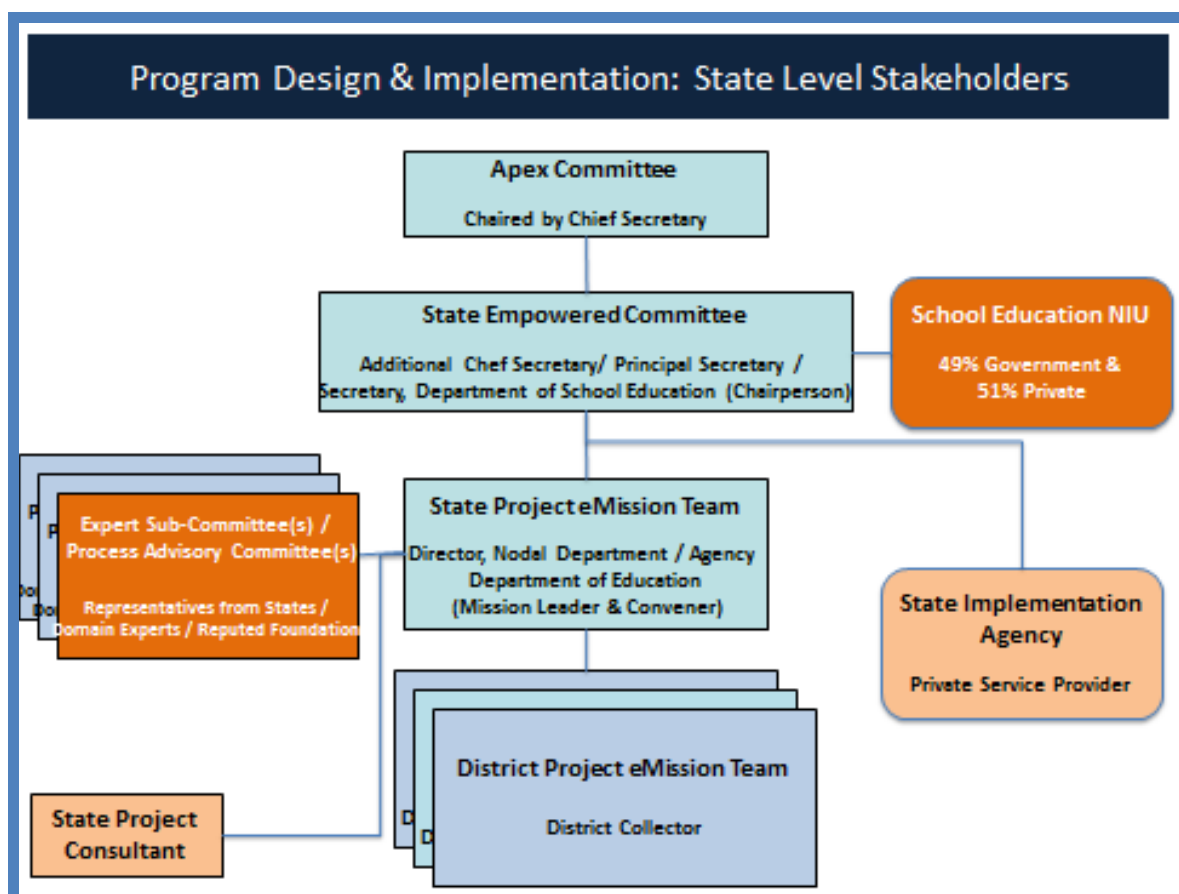
- i. Enter into MoA with MHRD for the implementation of SE MMP
- ii. Identify a nodal department in the State to drive implementation of the MMP. The head of this unit will be the leader of the SPeMT. The nodal department can be chosen by the State / UT
 - a. This nodal department would also provide Secretarial assistance to the School Education Department in the MMP implementation
- iii. Plan the implementation of SE MMP taking into consideration the implementation plans of other Central and State schemes (such as “ICT at School”) in the area of School Education
- iv. Establish the State Empowered Committee, SPeMT, DPeMTs and State Implementation Advisory Committee
- v. Act as the hub of planning and coordination of all agencies and committees – especially the SEC and the SPeMT – involved with the MMP
- vi. Prepare State Proposals for Funding and implementation / rollout plan; and other key project documents such as MoA / Contract with SE NIU, etc.
- vii. Oversee the preparation of state level solutions and specifications (including necessary State-level customizations) and provide required guidance
- viii. Procure core solutions / services from SE MMP and other solutions / services from State Implementation Agency (ies) based on the guidelines provided by MHRD
- ix. Coordinating with the various state level School education agencies (such as SCERT, SIET, DIETs), other departments with overlap in the school education system (such as Department of Social Welfare, Department of Backward Classes and Minorities, Panchayati Raj department, Urban development department), District level and Block level officers (school education department, all allied departments) and schools in implementing the MMP
- x. Communication and coordination with MHRD / CPMC / CPMU / SE NIU in implementing the MMP in the State
- xi. Identification of the State Project Consultant who will work closely with the Department of Education and all state committees concerned in planning, implementation and program management of the MMP in the State
- xii. Engage with the SE NIU in implementing the core solutions / services of the SE MMP
- xiii. Coordination with States/ UTs and SE NIU in customizing core solutions provided by NIU , User acceptance tests, and resolving implementation issues

- xiv. Guidance to States / UTs in identification of State Implementation Agencies for procuring State Specific solutions / services (those not provided by the SE NIU)
- xv. Coordination with other government departments in leveraging existing government infrastructure (such as NOFN)
- xvi. Continuously monitor and manage the progress of the MMP
- xvii. Collection of necessary information about the implementation of the program, collation of reports, sharing with MHRD and CPMU as required
- xviii. Continuously monitor the MMP and provide MHRD necessary information to make the MMP a success.
- xix. Submission of progress reports on the status of implementation, and utilization certificates for the grants released from MHRD

9.3.2. Committees and Teams that support State Departments of Education

The overall responsibility for implementing the MMP lies with the Department of School Education of a State/ UT. However, given the complexity and magnitude of the School Education system and the challenges of implementing a large-scale MMP, it is recommended that the Department of School Education is assisted by a suitable Governance Committees in the implementation of SE MMP. It is recommended that the following Committees/ teams are established for this purpose in the State/UT:

1. Apex Committee at the State (already exists in all States / UTs for NeGP)
2. State Empowered Committee (SEC)
3. State Project eMission Team (SPeMT)
4. District Project eMission Teams (DPeMTs)
5. Expert Sub-committees
6. State Project Consultant



The following sub-sections will describe the role and responsibilities of each of the Committees.

State Apex Committee

The State Apex Committee will be the highest committee that will oversee the MMP at the State level. It is chaired by the State Chief Secretary and will perform the following main functions:

- i. Review the overall plan and progress of the MMP in the State / UT
- ii. Oversee utilization of funds
- iii. Provide necessary policy directions / guidance in the planning and implementation of the MMP in the State / UT
- iv. Ensure the continuance of the necessary personnel (such as the Mission Leader) for sufficient duration in the program to make it a success
- v. Create a supporting environment in the State for the success of the MMP
- vi. Review impact assessment of the MMP

State Empowered Committee (SEC)

The State Empowered Committee (SEC) will be chaired by the senior most official (Addl Chef Secretary/ Principal Secretary/ Secretary) of the Department of School Education in the State / UT and oversees the planning and implementation of the SE MMP at a strategic level.

Indicative Composition

- i. Additional Chef Secretary/ Principal Secretary/ Secretary, Department of School Education (Chairperson)
- ii. Secretary/Joint Secretary of PR/UD/ SC,ST, BC, Social justice departments
- iii. Commissioner/ Director, School Education
- iv. Director/ Head of the Nodal departments selected for the implementation of SE MMP in State - Convener
- v. Director (SCERT)
- vi. Director (SIET)
- vii. Director / In-charge of SSA in the State
- viii. Director / In-charge of RMSA in the State
- ix. Director / In-charge of “ICT at School” in the State
- x. Chief Information Officer of School Education Department in charge of e-governance / IT implementation
- xi. Other representatives from the State Education Department / agencies
- xii. Representative (State Department of IT)
- xiii. Finance representative
- xiv. Representative (SPC) (Invitee)
- xv. Representative SE NIU (Invitee / Optional)

Indicative Responsibilities

- i. Ensure that the implementation of the SE MMP is in alignment with other on-going schemes in the area of School Education
- ii. Review and approve the State Proposal for Funding to be furnished to MHRD including the expenditure plan
- iii. Oversee the selection of the State Project Consultant who will assist the Department of Education, SEC and the SPeMT in planning and implementing the MMP in the State
- iv. Play a lead role in the review and approval of the solution and specifications at the State level. This will also include the review and approval of BPR / Process Reengineering if any
- v. Provide necessary guidance to State and District Project eMission Teams

- vi. Selection of State Implementation Agency/ies based on the guidelines provided by MHRD
- vii. Disbursement of funds to Districts and other relevant agencies as necessary; release of payments to SE NIU and State Implementation Agency/ies against services / solutions delivered
- viii. Constant monitoring and review of the overall progress of the project; particularly on the capacity building and change management front
- ix. Review and approval of utilization reports to be sent to MHRD
- x. Other important strategic support to the MMP

The SEC will take assistance from the State Project Consultant and SPeMT in carrying out the above functions. If required, it may also call in assistance from suitable and qualified subject matter experts.

State Project eMission Team (SPeMT)

The State Project eMission Team will be headed by a Mission Leader and will manage the project on a day-to-day basis. The Mission Leader will be the head of the nodal department / agency that will be identified by the Department of School Education to drive the implementation of the SE MMP.

Indicative Composition

- i. Director / Head, Nodal Department / Agency chosen by the Department of School Education (Mission Leader, School Education MMP)
- ii. Representative from Department of School Education
- iii. Chief Information Officer of School Education Department in charge of e-governance / ICT implementation (Convener)
- iv. Deputy Director / representative (SCERT)
- v. Deputy Director / representative (SIET)
- vi. Principal DIETs (1)
- vii. District Education Officer (1)
- viii. Representative from SSA/MDM in the State
- ix. Representative from RMSA in the State
- x. Representative from the SE NIU
- xi. Leader of the SPC
- xii. Any other suitable and qualified member(s) appointed by the Department of Education in the State / UT

Indicative Responsibilities

- i. Own the operational responsibility – planning and implementation – for the MMP in the State / UT
- ii. Preparation of key project documents such as State Proposal for Funding, RFP to identify State implementation Agency (ies), MoA / Contracts with SE NIU and other service providers, etc. in alignment with the guidelines provided by MHRD
- iii. Play an active role and guide the preparation of solutions / specifications / customizations at the State level in partnership with SPeMT, SIAC and SPC
- iv. Coordination with MHRD / CPMC / CPMU on review and approval of State level documents
- v. Closely collaborate with SE NIU and State Implementation Agency (ies) identifying software customizations, new requirements, UAT scripts, UAT approvals during implementation of the MMP in the State / UT
- vi. Coordination with various education agencies, district administrations, training centers, implementation agencies, etc. in successfully implementing the MMP
- vii. Coordination with representatives of other Central and State government schemes in the School Education area
- viii. Actively involvement in planning out the details of the rollout in collaboration with the Department of Education, other state education agencies, district administrations, etc. and oversee the details of implementation
- ix. Resolution of functional, technical, training and project management issues
- x. Assist the Apex Committee and SEC on the MMP as required
- xi. Formation of expert sub-committees, as required to get inputs on technology, process, and domain related inputs

To ensure the success of the SE MMP, it is important to get right and timely inputs in the domain of School Education (functional aspects of teacher life cycle management, student life cycle management, school management, pedagogy and the administration of the school education system and similar areas). In order to provide State / UT, the SEC and the SPeMT with these inputs, it is recommended that expert sub-committees or Process Advisory Committee (PAC) may be formed to elicit inputs from the experts, both inside and outside the government.

In addition to the members from the SPeMT, the sub-committee may have:

- i. Representatives from Districts
- ii. Representative from any other appropriate State education agency

- iii. People with practical experience in the School Education domain such as retired or in-service Principals, DEOs, Teacher Educators, teachers, and other domain personnel
- iv. People with school education domain expertise:
 - a. Representatives from reputed Foundations working on the field in the area of School Education
 - b. Experts in the areas of pedagogy / learning sciences
- v. Any others who may be able to contribute to the implementation of the MMP in the State / UT

Indicative Responsibilities of the Sub-Committee(s)

- i. Participate in discussions and provide advice on the customizations necessary in the State / UT
- ii. Review relevant project documents such as functional and technical specifications and provide inputs where helpful
- iii. Participate in application testing and product demonstrations and offer inputs
- iv. Provide functionality and other domain related inputs to State / UT
- v. Review functional specifications and other relevant documents and provide feedback before they are finalized

If necessary, multiple sub-committees may be constituted in area such as:

- i. Digital learning content
- ii. School management
- iii. School education systems administration / decision support systems
- iv. Capacity building and change management (including communications)

The SPeMT may carry out the responsibilities with the assistance of the SPC.

District Project eMission Teams (DPeMTs)

DPeMTs are responsible for the implementation of the MMP at the District level.

Indicative Composition

- i. District Collector / District Magistrate (District Mission Leader)
- ii. District Education Officer (DEO), Member Secretary & Convener
- iii. District Project Officers of SSA/RMSA/ MDM/ ICT at School
- iv. Chief Executive Officer of District level Panchayati Raj institution

- v. District Officer of Municipal and Urban development department
- vi. District Officer of SC/ST/BC/Health departments dealing in School Education
- vii. Principal from DIET
- viii. Block Education Officer (1)
- ix. Block Resource Person(1)
- x. Head Masters (2)
- xi. District CIO of school education
- xii. Any other suitable and qualified members from the civil society including teacher's associations as e decided by the Department of Education in the State / UT

Indicative Responsibilities

DPeMTs will be responsible for the implementation of the project at the district level and will be responsible mainly for the following:

- i. Provide necessary data from district level that will go into the preparation of the State Proposal for Funding
- ii. Ensure proper roll out of the project at the District level – in all schools, district training centers, district education / administration offices, etc. (rollout includes commissioning hardware, connectivity, user training, handholding services, digitization of old records and change management)
- iii. Identify Mater Trainers, Training facilities, Training schedules for the training of teachers, and other users of e-governance systems
- iv. Training and handholding support of all identified users
- v. Ensure separate accounting kept for all activities related to this project
- vi. Provide necessary information from district level to the Department of Education / SPC on all aspects of implementation, utilization of funds, etc. to enable the preparation of State level implementation reports and utilization certificates to be sent to MHRD

DPeMTs may seek guidance from the Department of Education and SPeMT in implementing the MMP in the State / UT.

9.4. Consulting and Program Management Services in States / UTs

Given the complexity of the project and the specialized technical and program management skills required in its implementation, it is proposed that States and UTs are assisted by “State Project Consultant” in implementing and managing the MMP. It is proposed that the role State Project Consultant be played by qualified and

suitable professional services firms. Each State / UT will identify their own State Project Consultant.

9.4.1. State Project Consultant (SPC)

In each State / UT, the SPC will work closely with and assist the State Education Department and the SPeMT in planning and initiating the implementation of the MMP.

Key responsibilities of the SPC in the design phase prior to roll-out of services include:

- i. Assess the ICT in School Education in the State and detail out the State level solution based on the high-level plan and guidelines of the MMP provided by the MHRD. This will also include identifying the customization required to adopt the application software services that will be provided to the State / UT by the SE NIU. Further, this effort may also include identification of State-specific services / solutions
- ii. Develop requirements / specifications for solution components such as capacity building and change management, digitization of existing records, etc. These specifications will be in compliance with the solution guidelines provided by MHRD
- iii. Prepare the State Proposal for Funding based on the template provided by MHRD. This will include estimating funding requirements at the State, preparing the implementation plan, etc. – all in compliance with the guidelines provided by MHRD.
- iv. Assist the Department of Education in creating and finalizing MoA / Contract with the SE NIU (based on the model MoA / Contract provided by MHRD)
- v. Based on the State Proposal for Funding approved by MHRD, prepare a State RFP to identify State Implementation Agency (ies) to provide solutions / services not provided by the SE NIU. This RFP shall be prepared based on the guidelines and Model State RFP provided by MHRD.
- vi. In case the State / UT decides to engage a different agency for the program management responsibilities, prepare the RFP required to identify a professional services firm to act as the program management consultant for the project. The RFP shall be based on the State Model RFP provided by MHRD
 - a. Further to this, the SPC will assist the State in evaluating the responses to the above RFP, managing the bid process and after identifying the winning bid, enter into a contract with the winning agency

- vii. Prepare any status reports / documentation / any other information requested by MHRD

Key responsibilities of the SPC in the program management phase include:

- i. Act as the Secretariat for the MMP at the State level
- ii. Coordination between State Education Department / SPeMT in the State and MHRD / CPMU at the Centre
- iii. Coordination with Consultants, SMEs, Committees, Implementation agencies to monitor the progress, review of their reports/ recommendations.
- iv. Collection of data on project implementation in the State / UT, compilation of reports, analysis and presenting to State Education Department, SEC, SPeMT and sharing them with MHRD / CPMU towards monitoring and management of the MMP
- v. Assist State Education department, SPeMT and SEC in evaluating the MMP and in requisitioning the release of funds from MHRD to the State / UT
- vi. Assist the State Education Department, SEC, SPeMT and all beneficiaries of the MMP in the State in successfully implementing the MMP in the State, provision of services to intended beneficiaries, meeting of service levels, etc.
- vii. Assist the State Education Department, SEC and SPeMT in managing the work of SE NIU (as they implement the services to the State and train master trainers) and the work of the State Implementation Agency/ies that will implement rest of the solution components
- viii. Provide any required assistance that State Education Department / SPeMT may require in successfully implementing the MMP

Engagement Model

One result of the chosen operating model – of establishing an NIU for implementing core solution of the MMP and providing solutions as services to States / UTs – is that the project consulting and program management effort (especially the consulting part) required in States / UTs is reduced. Therefore, it is recommended for States / UTs to engage a single entity that will perform the responsibilities both during the design phase prior to roll-out of services and the program management responsibilities.

For States / UTs that choose to implement the solutions provided by SE NIU with minimal customizations and do not have too many State-specific solutions / services as part of this MMP – it may be a better option to engage one agency for delivering both the responsibilities during design phase as well as the program management

phase.. On the other hand, for States / UTs that require significant customizations to the solutions provided by SE NIU and/or have several additional State-specific services / solutions as part of the MMP – it may be a better option to appoint two different teams / agencies respectively as State Project Consultant.

State Education Departments may either appoint a qualified and suitable professional e-Governance consulting agency as the SMC either by nomination or through a competitive bidding process or identify the resources from the State eMission Team (SeMT) funded by DeitY. In case the department decides on SeMT resources as the SPC for this MMP, SeMT may be suitably augmented to ensure availability of dedicated resources for the department.

The SPC will report to the Mission Leader (of SPeMT) and will closely work with the Department of Education, SEC, SPeMT, DPeMT, SE NIU and State Implementation Agency (ies) in performing its functions.

10. Recommended Process and Policy Interventions

For the SE MMP to succeed and demonstrate targeted impact in the school education domain, it is necessary to support it with some important enabling interventions in areas of policy, process, data management, governance, organization, etc. These are core issues that ensure effective, efficient and sustainable systems over the long term. This section identifies and explains some such interventions. Failure to successfully implement these interventions may result in adverse impact on the achievement of desired outcomes of the MMP.

i. Unique ID for students and teachers

Longitudinal tracking of students and teachers as an intervention to improving quality of education is one of the key drivers for the MMP. Longitudinal tracking enables schools, training institutes, and administrators to identify the student and teacher needs through their life cycle activities in the school education domain and enable design of appropriate digital learning resources, lesson plans, and other teaching & training aids for a more personalized teaching – learning experience for the students and teachers. Such a tracking also enables design of effective governance mechanisms for improving the quality of school education. Longitudinal tracking requires unique identification of the student and teacher in the school

education systems across the classes and is a key requirement implementation of the School Education MMP. Such a unique ID is also a pre-requisite to design and effectively implement the scholarships / aids to the students eligible under several government schemes. Aadhar may be leveraged in providing a unique ID to the students and teachers.

ii. Policies on Computer and Internet Usage in Schools

With the proposed increase in use of computers and digital learning resources in schools, it is critical to formulate the necessary security policies for usage of internet, intranet, and other services made available through the computers deployed in the schools and other administrative offices. Such policies should be distributed and proactive efforts should be made to educate all the stakeholders on the relevant policies and guidelines to prevent abuse and / or unauthorized use of resources made available to the stakeholders.

iii. Data Standards

It is recommended that MHRD include the development and management of data standards a central part of the SE MMP. Development and management of data standards and overseeing their adoption entails a consistent policy and governance structures; and dedicated effort in carrying out all these activities.

Standards and policies are the core issues required to address effective, efficient and sustainable systems which will allow for comparability, compatibility, and maintainability. Education data is pervasive and creating standards allow that data to be effectively collected, coalesced, and compared to provide meaningful insight for all stakeholders. The goal to establishing data standards is to ensure that the data and information available within the system can be used to help improve future outcomes. Establishing data standards can have a significant impact on the data usage, collection, management, and analysis.

The data standards need to be backed by policies that mandate vertical reporting from the district and state level up to the MHRD. Through this vertical reporting, MHRD can mandate the types as well as the formats in which data must be reported.

The standards need to be comprehensive and managed to support changes over time. At the same time, it should also balance the transactional requirements of conducting educational operations and compliance report generation with the evolving requirement for coalescing multiple sourced data into researchable data extractions for policy relevant analysis.

Although standards are important for effective education data management, they are only one component of the overall ecosystem. MHRD needs to establish entities or identify existing entities that will become responsible for helping enforcing the standards to support required adoption. In addition, MHRD should create certain audit requirements to ensure the accuracy and completeness of the collected and reported data. These entities are required to help guide the implementation of standards, drive data accountability and enhance data quality.

From our study of the practices outside India, it is understood that the United States has the following entities to guide the School Education Agencies on data standards and data quality:

The Institute of Educational Sciences (IES): Provides rigorous and relevant evidence on which to ground education practice and policy and share this information broadly. By identifying what works, what doesn't, and why, IES aims to improve educational outcomes for all students, particularly those at risk of failure.

National Center for Educational Statistics (NCES): The data research arm of IES and the primary federal entity for collecting and analyzing data related to education in the U.S. and other nations. NCES is responsible for:

- **NCES Data Handbook:** Provides guidance on consistency in data definitions and maintenance for education data, so that such data can be accurately aggregated and analyzed.
- **National Education Data Model (NEDM):** A conceptual but detailed representation of the education information domain. The Education Data Model strives to be a shared understanding among all education stakeholders as to what information needs to be collected and managed at the local level in order to enable effective instruction of students and superior leadership of schools.
- **Common Education Data Standards (CEDs):** A national collaborative effort to develop voluntary, common data standards for a key set of education data elements to streamline the exchange, comparison, and understanding of data within and across institutions and sectors.

- Responsible for Data Improvement Project looking at improving the comprehensiveness, comparability, and timeliness of data collected, analyzed, and reported by NCES

Data Quality Campaign (DQC): A nonprofit, nonpartisan, national advocacy organization in the US that supports states and other key stakeholders to promote the development and effective use of statewide longitudinal data systems.

School Interoperability Framework (SIF) Association: A unique, non-profit collaboration composed of over 3,200 schools, districts, local authorities, states, US and International Ministries of Education, software vendors and consultants who collectively work to define the rules and regulations for educational software data interoperability.

iv. Policies on Data Governance

Implementation of enterprise education data systems as envisaged under School Education MMP in which private and personally identifiable information such as students' and teachers' data will be stored and managed, it is critical to establish the underlying standards and policies to promote only authorized use / release of data and ensure data privacy and confidentiality. At the same time, the policies should also mandate for the release of school educational data related to the performance of teachers, schools, and districts to the public and other research institutions that will promote better school governance and school educational research.

v. Development of Content Standards

Content standards are key paths for the content interoperability, alignment and usage in the converging worlds of Open Education Resources (OER) and commercial resources. Content standards will allow for the level of alignment and self-discovery of educational resources for educators and learners and will help to support the usage and management of education content. Content standards enable creation of content portals such as Learning Registry in the US for capturing, sharing, and analyzing learning resources data provides a structured index—not a repository—of digital educational content from various free and paid sources. Content standards makes things easier for teachers to find, in one place, related content and lesson plans by subject, grade level or other criteria.

Content metadata standards (e.g., Learning Resource Metadata Initiative) makes it easier to publish, discover, and deliver quality educational resources on the web. It provides a taxonomy to consistently tag digital learning content so it can be easily found in web search by teachers.

vi. Development of model lesson plans integrated with digital learning content

Feedback from States as well as meetings with various stakeholders in the school education domain have indicated that enhancing a teacher's capacity to perform in the classroom will be central to the success of the SE MMP. The digital learning resources can be effective only when they are made part of the lesson plans and provided to the teachers. Model lessons plans integrated with digital learning content can be highly effective instruments in improving teacher capacity in the classroom. Lesson plans are detailed guidelines addressed to teachers that help in delivering lessons on a particular topic in the classroom: they include a recommended flow of communication, suggested examples, suggested use of digital content, exercises to engage students deeper, etc. It is recommended that the MMP should ensure that teachers are not only provided with model lesson plans but are also adequately trained in using the lesson plans.

Educational and education technology related conferences within the States as well as across the States need to be encouraged to provide various stakeholders and partners with venues to share ideas, feedback on the lesson plans and digital learning resources, new developments and new initiatives.

vii. Institutionalization of standardized assessments for students and teachers

The eventual success of SE MMP lies in the improvement of teacher capacity and student learning; and therefore, these two parameters have to be regularly measured from time to time. The most effective way to do this across several lakhs of schools is through standardized assessments that assesses the teachers and students learning levels (e.g., reading, math) against the learning level standards defined for the respective classes. While the school level evaluations will continue, the standardized assessments need to be institutionalized and should be carried out on an annual basis or alternate years to evaluate the impact of the MMP. These assessments will be designed so as to form the basis for identifying performance benchmarks and for allowing comparison of the student learning across the years. These assessments, while being important from a feedback and measurement perspective, need not be used as evaluation parameters for teachers or students. It is recommended that MHRD find ways to approve multiple assessment agencies and tools for assessments in different areas. Results of assessments from all MHRD-accredited agencies will be recognized across the nation.

viii. “ICT @ School” & SSA - CAL should be augmented and implemented at greater pace

There are existing schemes under MHRD for enabling the schools with IT infrastructure such as ICT @ School (presently merged with RMSA) with the intended coverage of all the 1.24 Lakh secondary schools and Computer Aided Learning (CAL) under SSA with the intended coverage of over 11 Lakh elementary schools. However, despite the schemes going on for a long time, only a small percentage of schools have the IT infrastructure. It is also quite possible that the IT infrastructure provisioned in the first few years of the scheme is close to getting obsolete. As per the RMSA data, only ~28% of over 1.24 Lakh secondary schools have a computer lab and internet connectivity. As per the DISE data, only ~20% of the over 11 Lakh elementary schools have computers. Also, since the computers are setup in a lab environment and primarily deployed for teaching ICT as a subject and not for using ICT as a teaching aids in teaching Mathematics, Science, Language, and Social Science in the classroom. The current setup limits the accessibility of the computers in the lab only to the ICT teacher (either the school teacher or an outsourced person deployed on the BOOT model) leaving outside a majority of the subject teachers.

In this regard, it is critical to conduct a thorough assessment of the existing schemes and implement interventions to not only speed up the uptake of the schemes but also enable the subject teachers to leverage the deployed assets to utilize the digital learning resources that will be made available as part of the School Education MMP.

ix. Aligning phasing of MMP with existing schemes (SSA, RMSA, Technology in Teacher Education)

Sarva Shiksha Abhiyan (SSA) and Rashtriya Madhayamik Shiksha Abhiyan (RMSA), flagship schemes of MHRD, are implemented with an objective to improve the school level infrastructure. ICT @ Schools Scheme provides support to States/UTs to establish computer labs on a sustainable basis. Phasing of School Education MMP should be designed to align with the phasing of such schemes so that the infrastructure becomes available in the schools and schools are ready to adopt the e-Governance initiatives. The geographies with mature infrastructure should be included in the first phase of implementation and the subsequent phases may have a roll-out to locations with insufficient infrastructure with a definite infrastructure improvement plan. It is recommended that the governance structure at the Center and States for the MMP has active representation from the mission leaders / project directors / other officials at the appropriate levels of the other schemes to ensure synchronization of implementation of IT related components (infrastructure, capacity building, ..) within the multiple schemes including the MMP.

Further, the phasing of the deployment of services can be tied to the school performance parameters such as student enrollment, student performance, teacher

attendance, and quality of the data provided for the School Information System, wherein schools that have a higher performance will be targeted in the first phase.

x. Empaneling multiple authorized entities for approval of e-content

All digital Content / digital learning resources to be provided to States / UTs through SE MMP will have to be approved for its quality and compliance with curriculum. Since it is expected that there will be a high number of digital learning objects that will be provided through SE MMP, there is a possibility that they are stuck waiting for approval in a situation where there is only one or a few authorizing entities. Hence, it is recommended that MHRD authorize multiple entities from both government and non- government sector as approving entities at center and state level for approving and tagging digital content. These authorities would approve the digital content based on the technical, academic, tagging guidelines to be issued by the MHRD. Approval from any of the authorized bodies will qualify a digital learning resource to be made available as part of SE MMP. The parameters for assessment, however, will be managed by a single entity that is identified for this purpose by MHRD.

xi. Linking release of funds under other schemes to the implementation of SE MMP

The success of the MMP implementation mainly depends on multiple parameters that include timeliness and quality of the data captured by the School Information System, effective use of the decision support services by the school administrators and education planners, deployment of digital learning resources by the teachers in the classrooms, implementation of school education governance systems by the administrators to streamline the governance processes. The MMP can achieve its desired objectives only on participation of all the stakeholders and the consistent drive by the leadership at all levels including the State and Districts. In this context, in addition to a focused capacity building and change management exercise, strategies such as formulation and implementation of policies to mandate data (schools, teachers, and students) reporting from Districts to States and States to the Central Government, linking the delivery of the infrastructure (necessary for accessing digital learning resources) and /or linking the release of funds (at least for a few components) under SSA and RMSA to the consistent implementation of MMP services may be considered.

The implementation progress on the MMP can form one of the components of compliance initiatives on which States / UTs and district entities would have to report in order to receive requisite funding.

xii. Teachers Capacity Building on continuous basis to earn a minimum number of credits

Teacher Capacity Building is a crucial and critical component of School Education MMP. The objective of Teacher Capacity Building initiatives is to build the teacher capacity on many levels including use of technology and integrating use of DLRs in lesson plans etc. Advances/changes may have to include new methodologies in some elements of the teaching learning process such as new methods of combining teaching aids, lesson delivery etc. Therefore regular periodic training of teachers and teacher educators would be required for best results. In order to incentivize teachers for the required training, training mechanism may be formulated with a system that allows trainees to earn credits towards their trainings. With teachers required to undertake a certain amount of training equivalent to a predetermined amount of credits every year, progress can be monitored on a continuous basis.

11. Financial Implications of the Project

11.1. Costing Summary

11.2. Component-wise expenditure estimates

Component A: Total Budgetary Estimate for enabling the School Education MMP Services

i. ICT Solutions

- a. Development / Procurement & Implementation of ICT Solutions
- b. State Level Implementation Effort (including underlying s/w licenses for application solution components, digitization, localization of training content & documentation) across all the 35 States / UTs

ii. Learning Support Services

- a. Hosting of Digital copies of government text books and reference books on the Portal
- b. Preparation and hosting of Video lessons
- c. Sourcing of Learning Objects – Multi media
- d. Translation, localization, tagging of L.Os sourced from private sector by MHRD
- e. Assessment Engines/ Tools
- f. Digital OER identification -Creation of OER Registry, tagging, and localization
- g. Certification of Digital Learning Resources
- h. Preparation of Model lesson plans- integrating DLRs

iii. Client End Infrastructure & Connectivity

a. Client Side Infrastructure - Administrative / Supervisory Offices

- i. SHQ and Directorates (SCERT, Elementary, Secondary, RMSA, SSA, MDMS, Scheme, Textbook Corp, Open School, Adult...)
- ii. Regional / Divisional Education Office*
- iii. District Education Office
- iv. Block/ Mandal Education Office/ BRCs
- v. CRCs

b. Client Side Infrastructure - Training Institutes

- i. RIEs, SIETs, IASEs, CTE / STEIs

- ii. DIETs
- iii. BITEs
- c. Client Side Infrastructure - Master Trainers and High Performing Secondary & Elementary Schools: Incentivization Program**
 - i. Laptop Carts - High Performing Secondary & Elementary Schools
 - ii. Laptop w/ Data Cards for Master Trainers
- d. Connectivity - Administrative / Supervisory Offices**
 - i. SHQ and Directorates (SCERT, Elementary, Secondary, RMSA, SSA, MDMS, Scheme, Textbook Corp, Open School, Adult...,)
 - ii. Regional / Divisional Education Office*
 - iii. District Education Office
 - iv. Block/ Mandal Education Office/ BRCs
 - v. CRCs
- e. Connectivity - Training Institutes**
 - i. RIEs, SIETs, IASEs, CTE / STEIs
 - ii. DIETs
 - iii. BITEs
- iv. DC - DRC Infrastructure, System Software, Hosting, & Connectivity**
- v. Change Management & Capacity Building**
 - a. Change Management**
 - i. Interventions @ Center (Change Readiness Survey, Sensitization of Leadership, Awareness Campaigns, Rewards & Recognition for Teachers / Teacher Educators)
 - ii. Interventions @ States (Change Readiness Survey, Sensitization of Leadership @ State HQ, Districts, Communication & Awareness Workshops @ Blocks, Awareness Campaigns, Rewards & Recognition for Teachers / Teacher Educators)
 - b. Capacity Building**
 - i. Interventions @ Center (CB Guidelines, Training Curriculum, Training Content, CIO Level 1 Program,)
 - ii. Interventions @ States (Training Need Analysis, CB Plans, Training Curriculum, M&E, Localization of Training Content, CIO Level II Program)
 - iii. Training Costs (Central Level Stakeholders, State Level School Administrative / Supervisory Offices, Teacher Educators in Training Institutes, District Level Master Trainers for Schools)
- vi. Institutional & Governance Mechanism**

- a. Central Project Consultant (Assistance in setting up NIU, Preparation of Guidelines, Appraisal of Proposals for Funding from States, Coordination w/ States,..)
- b. State Project Consultants for all the 35 States / Uts (Preparation of Proposal for Funding, Coordination w/ Center, Selection of State Implementation Agency (where required)
- c. Project Management, Monitoring & Collaboration Tools: Software & Implementation for all States
- d. Audits & Assessments - M&E
- e. NIU related expenses (including equity from MHRD, operating expenses for the first few years, payment to NIU for secretarial assistance,...)
- f. Miscellaneous Expenses (Committees, Honorariums for External Experts, Education Domain Specific Consultancy Projects...)

vii. Implementation of Process & Policy Interventions

- a. Data Standards and Governance
- b. Development of Digital Content Standards

viii. Contingency & Flexi Funds

- a. Flexi Funds for State Specific Initiatives (15% of the Total Project Cost)
- b. Contingency Costs (10% of the total Project Costs)

Component B: Total Budgetary Estimate for providing Training for Teachers & Support Staff, Handholding Support and School level infrastructure to enable schools to utilize the School Educational Services

i. Secondary Schools

- a. Capacity Building (Teachers)
- b. Capacity Building (Support Staff)
- c. Handholding Support
- d. Digital Learning Resources
- e. Infrastructure, Connectivity, & Electricity Charges

ii. Elementary Schools

- a. Capacity Building (Teachers)
- b. Capacity Building (Support Staff)
- c. Handholding Support
- d. Digital Learning Resources
- e. Infrastructure, Connectivity, & Electricity Charges

11.3. Costing Assumptions

- i. Master Data**
- ii. Unit Costs**
- iii. Phasing**

12. Project Risks

This section identifies key risks associated with the SE MMP and proposes risk mitigation mechanisms. Various program risks are classified under the following categories:

- Risks relating to the Operating Model
- Risks associated with the proposed solutions / services
- Risks relating to implementation at MHRD and in States / UTs
- Risks relating to Technology / Vendor

The key risks in each of the above categories and associated mitigation measures are given below:

No.	Risk	Mitigation
Operating Model related risks		
1.	Time lag in the establishment of the NIU, which could set back the implementation of the MMP	<p>The associated risk of delay in implementation can be mitigated in 2 ways:</p> <ul style="list-style-type: none"> • Establish a team of professional consultants whose exclusive focus will be to work with MHRD towards the establishment of SE NIU • Identify a CPMC at the earliest so that the CPMC will assist in developing all necessary specifications (solution, capacity building,..) and guidelines that are required for MMP implementation till the time SE NIU is established • In case the SE NIU is not yet formed by the time all specifications are ready, identify an existing NIU or an NIU-like entity or an existing agency under MHRD that can carry out the responsibilities of the SE NIU temporarily. This entity will hand over all the work along with the novation of any contracts and licenses to SE NIU as soon as it is operationalized.

2.	Getting the right kind of private sector participation in the SE NIU	<p>Two parameters that will ensure the right kind of participation are:</p> <ul style="list-style-type: none"> • Inclusion of those entities that bring an important domain competency – either school education or technology – to the table. Ideal candidates include (i) reputed non-profits / foundations working in the domain of school education in India (ii) companies with proven competence in the ICT space including program implementation and IT services (iii) Private schools/ school chains of repute • Exclusion of entities that might have a possible conflict of interest in the implementation of the MMP. Examples include technology solution / product companies operating in the school education space
3.	Some States/ UTs may view SE NIU as MHRD thrusting a central agency on them for implementation	<p>It is important to create an environment wherein States / UTs view SE NIU as an entity that will assist them in the implementation of the SE MMP.</p> <p>In this direction, MHRD should ensure that all the major States (or as many as possible) participate in the SE NIU by putting in equity into SE NIU.</p>
4.	Ability to attract appropriate talent / experience for senior management roles in the SE NIU	<p>This risk can be mitigated by:</p> <ul style="list-style-type: none"> • Identifying suitable qualifying parameters with clarity • Provide for attractive and appropriate compensation for key / senior roles • Empower the roles so that the professionals occupying key positions can bring in the benefit of their experience and insight in to the operations of the NIU

5.	Possible overlap of (or confusion regarding) responsibilities between SE NIU and existing education agencies in Centre and in States	<ul style="list-style-type: none"> • The key existing central educational agencies should be asked to put in equity stake in the SE NIU. • Clearly defining and demarcating responsibilities of all entities (in the context of the implementation of SE MMP) at the time of formation of SE NIU • Resolving any issues through the Empowered Committee, which has representation from MHRD, SE NIU as well as all key central education agencies
6.	<p>Long term business viability of SE NIU: this may be considered in cases such as:</p> <ul style="list-style-type: none"> • When we consider that States have flexibility in prioritizing / sequencing the implementation of various solutions / services, and may already have existing solution providers in some areas • PPP schools: schools managed as public-private partnerships, adopted by foundations, etc. might have existing solutions and solution providers; and may not procure solutions / services from SE NIU 	<ul style="list-style-type: none"> • States / UTs will be advised to procure core services from SE NIU to the extent possible / advisable, which will ensure minimum business from States / UTs • In the long term, SE NIU shall conceptualize, design and offer more solutions / services (beyond the core scope of the SE MMP) specific to States / UTs

7.	<p>The success of the MMP is dependent on a single entity – the SE NIU, which constitutes a key risk</p>	<ul style="list-style-type: none"> Stakeholders in the formation of SE NIU will include several reputed private agencies in addition to government agencies, thus ensuring that many responsible and able entities support the SE NIU, minimizing any risks of failure. The Board of Directors representing the government shareholders needs to play a proactive role in the board meetings to set the goals for SE NIU and guide it to achieve the same. During the implementation of the MMP, SE NIU will be continually supported by several committees and teams such as the EC, the CPeMT, CPMC, CPMU, etc. which bring in expertise and experience in several areas – thus minimizing the risks of SE NIU failing to deliver in its mandate. These committees and teams will not only offer necessary guidance and advice to the NIU, but will also monitor its progress from time to time
Risks associated with proposed solutions / services		
8.	<p>Integration with other schemes that may have overlap with the SE MMP (such as “ICT at School” and SSA – CAL that targets providing hardware in secondary & elementary schools respectively and “Aakaash tablet” scheme that aims to provide teachers and students with tablets).</p> <p>Overlapping schemes may also lead to confusion among the stakeholders at the State level responsible for implementation</p>	<p>The following measures have to be taken both at MHRD and in States / UTs:</p> <ul style="list-style-type: none"> MHRD shall communicate right message to the various stakeholders in the States/ UTs about the SE MMP objectives, services and outcomes to eliminate any misgivings about duplication of services across the schemes Dovetail the ICT related components of the existing schemes into SE MMP to facilitate effective delivery of envisaged services to the target group. A close watch on conflicts / confusion at the implementation phase to be closely monitored and resolved by the program governance structure in both Centre and in States, particularly – the EC, CPeMT and CPMC/CPMU in the Centre and the State EC, SPeMT and SPC in States. District mission teams also play an important role in making the integration seamless.

9.	Different States may have different priorities in delivering e-Governance services in the School Education domain. These varied priorities among differences between States may pose a risk in achieving the goals of SE MMP	<ul style="list-style-type: none"> • The goals and scope of SE MMP have been finalized through a consultative exercise with all the States / UTs. Therefore, most of the core scope of SE MMP is in alignment with the priorities of most States. • The SE MMP is designed to provide a suite of services from which States / UTs may pick one or multiple services based on their priorities and existing implementations • The design of SE MMP provides flexibility of implementation for States / UTs. So States can choose (i) the solutions / services they will procure from SE NIU (ii) phasing of implementation (iii) additional solutions / services that may be in alignment with their priorities, etc. States / UTs can present their own plans as part of their Proposals for Funding
10.	Dependence on the availability of computer hardware and peripherals in government and aided schools (especially Learning Support Solutions)	<p>Learning Support Services is a core element of MMP to improve the quality of school education. MMP provides some basic minimum client end hardware to Schools to facilitate delivery of lessons using ICT tools in the class.</p> <p>However there is a requirement of implementing standardized student assessments that require access devices at the student level. Hence, MHRD shall provide sufficient funds and impetus to the schemes (SSA – CAL, ICT @ School,...) so that all Schools targeted under MMP are equipped with necessary infrastructure.</p>
11.	Dependence on the implementation of NOFN	In case the implementation of NOFN is going to be delayed , MHRD shall have an alternate plan to provide connectivity to Schools through public sector or private telecom service providers (based on the network availability) till the NOFN is ready.

12.	Dependence on data collection from schools and ensuring the quality of the data collected from schools in the School Information System	<p>Data collection and quality assurance are the corner stones of SE MMP. Hence it is proposed that a separate entity (existing or a new entity) under MHRD with presence in all States / UTs is made responsible for data collection and quality.</p> <ul style="list-style-type: none"> • At the Centre, this body will develop, maintain and own data standards for the domain of school education in India. They will also provide guidelines to States on the collection of data and quality assurance mechanisms. This independent entity will report into MHRD and work closely with SE NIU and States • The corresponding entity in States will focus exclusively on the collection of data and data quality assurance in States. This entity reports into the Department of Education of the State • Simplifying the data requirements and collection forms • Implement the necessary policy interventions to mandate the data reporting by the States and linking the release of funds in the other school education schemes to the timely reporting of data by the States • Though the student records are to be created and updated by teachers in the School Information System, in the short term, it is unlikely to be done by teachers either due to lack of IT awareness or perceiving it as an additional responsibility. Hence a data entry operator is proposed to be provided to Schools on part time basis for the first one year. For the elementary Schools that are not covered under the MMP, the CRC resources equipped with a tablet would visit schools and input the data at a predefined frequency .
13.	Reluctance on the part of States to implement MMP	MHRD shall mandate through a policy to ensure implementation of SE MMP and link release of funds for other schemes within School Education to the progress in implementation of the MMP.

14.	Lack of choice for the States/ UTs to choose the IT solutions in each solution area of MMP	In order to mitigate this risk, SE NIU will be advised to empanel multiple solutions in each of the key solution areas (such as School Information Systems, Teacher Life Cycle management system, Digital learning resources etc.) so that the States/ UTs can choose the solution of their choice
15.	Dependence of the solutions / services on enablers such as data standards, linking with Aadhaar, etc.	<ul style="list-style-type: none"> • Time-dependence on the key aspect of data standards management will be minimized by having an initial set of data standards developed by CPMC or any other qualified professional agency before the SE NIU is established and is ready to function • Rework on solutions to link delivery of services to <i>Aadhaar</i> number of stakeholders (such as students and teachers) can be minimized by designing <i>Aadhaar</i> compliant solutions
Risks relating to implementation at MHRD and in States / UTs		
16.	Retention of key personnel during the implementation of the program at center	<ul style="list-style-type: none"> • To an extent, this risk is addressed through the NIU model. SE NIU would be in a better position to retain the resources of senior management and key operational personnel involved in the implementation of the MMP continue for significant periods of time • Continuation of the Mission Leader (Joint Secretary, DoSE&L, MHRD), Director, DoSE&L, MHRD and other other key personnel at MHRD are to be ensured by the Secretary of School Education
17.	Expertise of SE NIU to procure Digital Learning Resources	<ul style="list-style-type: none"> • While SE NIU is primarily designed as a National Informational Utility, that will have expertise in implementing the e-governance solutions (School Information Systems, Decision Support Systems, Content Portal, School Educational Governance Systems), there may be a risk in making SE NIU responsible for procuring the Digital Learning Resources. To mitigate this risk, it is required that the key central educational agencies such as NUEPA, NCERT, NCTE, CIET, and CBSE have a stake in the form of equity in the SE NIU to bring in the right expertise and guidance for SE NIU in procuring the Digital Learning Resources.

18.	Limited number of Digital content approval authorities such as NCERT, SCERT at center and State would be a potential risk as these entity turning into a bottleneck in bringing adequate Digital Learning Resources to support teachers, which is one of the key goals of the SE MMP	In order to mitigate this risk, it is proposed that MHRD authorizes multiple government and non- governmental agencies at center and state / UT level for approval of digital content. While the frameworks for content evaluation is developed and managed by any central agency identified by MHRD, the Digital content approval authorities would approve digital content based on the common framework issued by MHRD. This arrangement will minimize the risk of e-content / digital learning materials getting stuck in pipeline for want of approval while the IT infrastructure is ready under MMP.
19.	Program management at States, especially in terms of coordinating the activities of SE NIU that provides core services and those of State Implementation Agency (ies) that provide other services	This is a very important risk and its mitigation lies in the establishment of an effective nodal agency at the State / UT for program management that is adequately empowered and ably supported by consultants.
20.	Retention of key personnel during the implementation of the MMP	<ul style="list-style-type: none"> • Establishment of a dedicated nodal implementation cell and staffing it with suitable personnel for the duration of the project will help partially mitigate this risk • Retention of senior officers playing key roles in the SE MMP • Even if some senior officers have to be transferred due to unavoidable reasons, retaining the State Project eMission Team Leader / head of the nodal cell and senior officers of the nodal cell will help retain continuity in the management of the implementation

21.	<p>Implementing SE MMP in States involves the participation of multiple agencies (Directorates of Education, Examination Boards, SCERT, SIET, etc.)of the School Education dept and other allied departments (Panchayathi Raj, Social welfare, revenue, health etc) . Managing the involvement of each of these agencies in terms of ownership, responsibility, overlap, etc. and achieving targeted results poses risks</p>	<p>These risks could be mitigated through:</p> <ul style="list-style-type: none"> • Inclusion of senior officials from all allied departments in the empowered committee and District eMission Teams. • Establishment of a dedicated nodal cell associated with Department of Education (or the Directorates of Primary & Secondary Education) that focuses exclusively in the implementation of the MMP on a day-to-day basis, acts as a hub and is adequately empowered – that will help coordinate between the various agencies involve • All key agencies are represented on the State Empowered Committee as well as on the SPeMT(s) that act as platforms of coordination and joint decision making / supervision at various levels • Presence of a SPC that helps coordinate action from all involved agencies
22.	<p>Risks associated with not properly aligning / synchronizing the implementation of other relevant schemes with SE MMP</p>	<p>This risk will be mitigated through diligent planning and monitoring of the implementation through coordinating bodies such as the State EC and the SPeMTs; state nodal agency as well as State Project Consultant that act as nodal bodies in planning / managing the implementation; and grassroots level planning and implementation through DPeMTs and district education bodies such as DEO's office, DIETs, etc.</p>
23.	<p>Low IT skills among teachers , especially in rural schools</p>	<ul style="list-style-type: none"> • Dedicated Master trainers at each block to train teachers and support them through, conducting teacher trainings throughout the year at block/ district level at regular intervals • Refresher training on yearly basis to teachers in usage of ICT tools/ DLRs in classroom teaching • Provision for Block level sensitization workshops for teachers in regular intervals

24.	Low adoption of data driven decision making and the usage of Learning support services (digital learning resources) in State/ UTs education departments that is critical to the success of the MMP	<ul style="list-style-type: none"> • The key lies in the effective design and implementation of change management and capacity building initiatives • Data driven decision making can be made pervasive when State , District level education officers adopt it quickly to demonstrate that it is an important part / instrument of their functioning • Adoption of digital learning resources by teachers (for use in classrooms) can be increased by following up initial training with continued handholding support that will help teachers gain familiarity and comfort in using the material for teaching in class • It is also proposed to enhance adoption by providing suitable incentives for teachers (details provided in the sections on Change Management and Capacity Building)
25.	Dependence on infrastructure (such as power supply) in States / UTs	<p>This is a key risk and cannot altogether be addressed in this MMP. It is expected that States will be in a position to address these issues in due course of time.</p> <p>However, with respect to the MMP, the phasing of the schools should take due consideration of the underlying infrastructure (power, building,..) and the schools with better infrastructure should be considered for the initial phases.</p>

26.	<p>Slow rate of implementation / penetration/adoption of MMP services by stakeholders would render the program only a partial success. This poses risks in several areas: (i) infrastructure / solutions already developed / procured / enabled by SE NIU lying underutilized (ii) hardware commissioned in the early rounds becomes obsolete before the usage gains momentum.</p>	<ul style="list-style-type: none"> • Quick implementation along with effective change management / capacity building measures would increase adoption of school information systems and Digital learning resources in class room teaching in urban schools under the MMP • Incentives to teachers and Schools would enhance quicker and effective adoption • Continuous monitoring and measurement of the outcome indicators and showcasing the improvements in the initial schools across the State • Implementation coverage can also be hastened through effective alignment and synchronization with other schemes such as “ICT at School”
27.	<p>State funding: Even though this is a centrally funded scheme, there may be areas where State funding may be required. In such cases, if the States are unable to provide the necessary funding, the implementation of the MMP is at a risk.</p>	<p>In order to mitigate this risk, SE MMP is designed in such a way that the all the costs required for the enablement of core school educational services / solutions should be fully funded by MHRD.</p>
28.	<p>Teacher’s associations may perceive the MMP services to be intrusive and threat to their professional freedom</p>	<p>Teachers are the most important stakeholders in the MMP implementation. Hence, the teachers associations play a critical role in either making or breaking the MMP. Awareness and sensitization workshops are proposed to be conducted exclusively for teachers associations at the State, District and Block level. The education department officers of appropriate levels should participate in these meetings to convey right message to the teachers associations that the new technological interventions through the ICT means such as HRMS solutions and availability of various digital learning resources would empower the teacher community . The MMP services should be seen as value addition to the teachers .</p>

29.	<p>Inadequate learning impact and low realization of the perceived benefits: the risk that even though implementation targets (such as availability of hardware and e-content to all teachers / schools; completion of change management, capacity building and handholding activities, etc.) are met, targeted results are not achieved</p>	<p>This reflects the risk that the impact of the MMP is compromised despite diligent implementation. The risks on this front can be mitigated by:</p> <ul style="list-style-type: none"> • Design and implementation of an effective monitoring and evaluation system (including base lining and annual post-implementation audits performed by independent agencies as well as standardized assessments) • Catching early symptoms and effectively intervening with remedial measures where needed at the earliest
Technology / Vendor related risks		
30.	Technology lock-in and technology obsolescence risk	SE NIU setup would address the technology lock-in related risks, thus relieving MHRD / States of it
31.	Vendor lock-in and transition risk	SE NIU setup would address the vendor lock-in related risks, thus relieving MHRD / States of it
32.	Long term technology management	SE NIU assumes long term technology management related risks, thus relieving MHRD / States of it

13. Expected Outcomes

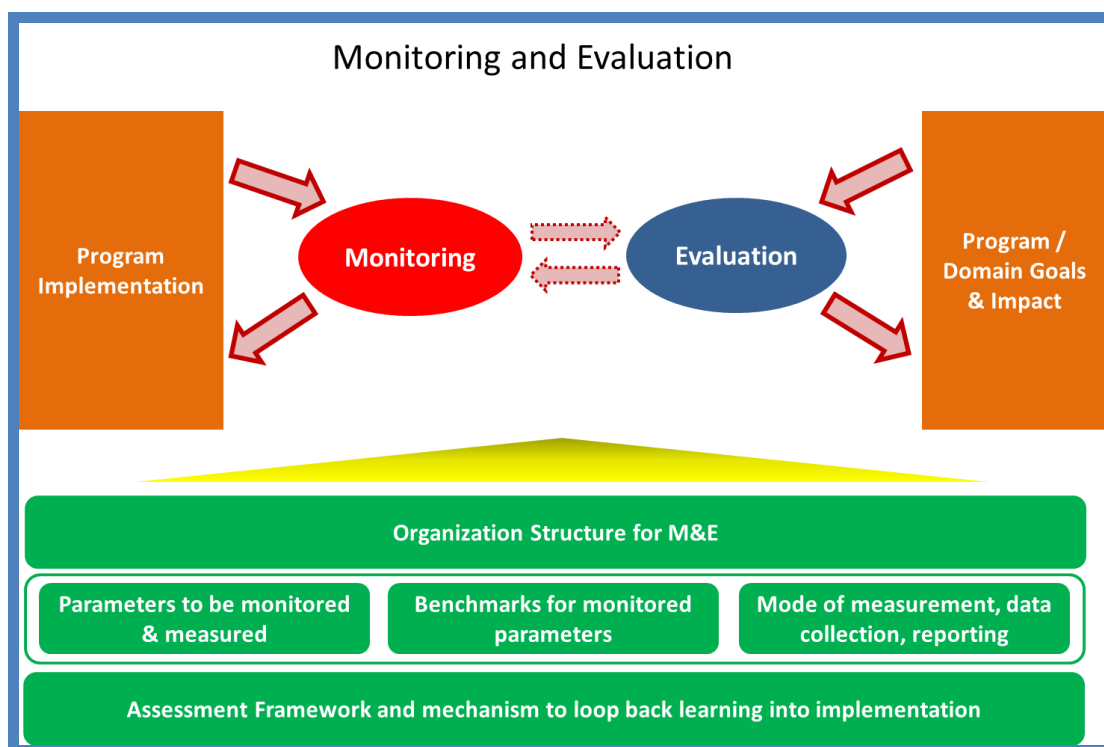
The expected outcomes of the MMP in the School education are:

- a) Improvement of quality and standards of education
- b) Visibility of student, teacher, and school performance to parents, community, and administrators
- c) Customized and personalized in-service teacher training
- d) Enhanced service delivery to teachers through streamlining the recruitment, posting, transfer, and other service matters (payroll, leave,..) through ICT
- e) Availability of reliable and timely data of students, teachers, and schools to school administrators in a format amenable for analysis to aid better decision support
- f) Better monitoring of schemes and financial management
- g) Creating single platform to address diverse needs of different stakeholders and implement schemes with large number of beneficiaries
- h) Improved interfaces of schools with administrators, boards, and allied departments such as Health, Higher Education

14. Program Monitoring and Evaluation

Monitoring and evaluation form two key activities that determine the eventual success of the MMP. Broadly:

- i. *Monitoring*: involves identifying parameters to be closely monitored and measured, collecting data around those parameters and reporting the data meaningfully
- ii. *Evaluation*: involves comparing the measured data to goals / objectives / targets / standards so as to assess progress, understand underlying reasons (for meeting or not meeting the targets) and making necessary course correction.



Monitoring & Evaluation

Monitoring and evaluation will be performed with respect to:

1. The implementation plan of the MMP (to assess if the MMP is progressing as per plan); and
2. The impact of the MMP (to assess the impact of the MMP against the intended results in the area of School Education). In the medium term, this may also include the measurement and analysis of the usage of services / solutions by the intended users.

In order to carry out the monitoring and evaluation activities effectively, the following need to be determined:

- i. Organization structure necessary for carrying out monitoring and assessment
- ii. Identification of parameters to be tracked, monitored and measured; benchmarks for the above mentioned parameters; and the mode and method of their measurement
- iii. Assessment framework and mechanism for corrective action if necessary

14.1. Organization Structure for Monitoring & Evaluation

The organization structure necessary for monitoring and evaluating the SE MMP is described in Section 9. The various committees and teams – at the Central and State levels – will meet with specific frequency and monitor the identified parameters. The indicative frequencies of meetings for each of the overseeing committees are provided below:

Central Level:

1. *The Empowered Committee*: The EC will meet once every month to review the implementation progress of the MMP. They may also meet in between in the context of important milestones of the project or when the EC's guidance is required for specific purposes to help move the MMP along.
2. *The Central Project eMission Team*: the CPeMT will meet every week to review the implementation progress of the MMP
3. *The Central Program Management Unit*: the CPMU will be involved with the M&E activity on a continuous basis and will assist the CPeMT and the EC in monitoring and evaluating the program. As stated in Section 9, the CPMU will act as the point of contact for all the States and UTs in the implementation of the MMP. The CPMU will also act as a point of contact with the SE NIU and the M&E structure at MHRD.

State / UT Level

1. *The Apex Committee*: the State Apex Committee, led by the Chief Secretary of the State will meet every quarter to review all eGovernance programs in the State.
2. *The State Empowered Committee*: The State EC will meet once every month to review the implementation progress of the MMP. They may also meet in between in the context of important milestones of the project or when the EC's guidance is required for specific purposes to help move the MMP along.
3. *The State Project eMission Team*: the SPeMT will meet every week to review the implementation progress of the MMP
4. *The District Project eMission Teams*: the DPeMTs will meet once every week to review the implementation
5. *The State Program Management Unit*: the SPC will be involved with the M&E activity on a continuous basis and will assist the SPeMT and the State EC in monitoring and evaluating the program. As stated in Section 9, the SPC will

also closely engage with SE NIU and State Implementation Agency (ies) involved; and will also manage communication with the CPMU.

Annual Independent Audits

In addition, there will also be independent annual third-party audits performed annually after the implementation begins. The auditors will share their reports with MHRD as well as with States / UTs, who will analyze the reports and take necessary action.

14.2. M&E Parameters: Identification, measurement and benchmarking

As explained above, the governing agencies at MHRD and the State will monitor and evaluate two different aspects of the MMP: (i) the progress of implementation and (ii) the impact made by the MMP on the functional domain, in this case, School Education. In the short-medium term, they will also measure and analyze the degree of adoption and usage of the services / solutions of the MMP by the intended users. Therefore, the M&E will identify parameters on both these aspects to track. For each of these parameters, the following will be tracked and used for analysis (indicative):

- i. Measure (metric) of the parameter
- ii. Mode of measurement
- iii. Frequency of measurement
- iv. Benchmark measure

Implementation parameters to be tracked: The following are some of the milestones / activities that lie on the critical path of the MMP implementation. Their completion marks the achievement of a significant milestone and/or forms the necessary basis for the start of critical activities. These parameters may not be measured on quantitative terms, but the status on their progress offers important insights into the health and progress of the implementation of SE MMP.

M & E of MMP Implementation (indicative parameters)

At the Centre

- i. Formation of SE NIU
- ii. Appropriate staffing of SE NIU
- iii. Identify CPMU
- iv. Development of high-level solution requirements

- v. Development of implementation guidelines to be shared with States
- vi. Development / sourcing of solution applications by SE NIU
- vii. Readiness of DC / DRC and other infrastructure
- viii. MoA between MHRD and States

In States / UTs

- i. Formation of Committees
- ii. Identify State Project Consultant
- iii. Prepare Proposal for Funding
- iv. Enter into MoA / Contract with SE NIU; and identify State Implementation Agency (ies)if necessary
- v. Readiness of core services for for launch
- vi. Commissioning of Client end infrastructure at all user points
- vii. Network connectivity at all client end points
- viii. Capacity building activities
- ix. Change management activities
- x. Progress in digitization of old records

M & E Post-implementation parameters in States / UTs (indicative parameters)***Adoption***

- i. Number & % of schools where computers and other peripherals are commissioned
- ii. Number and % of schools with network connectivity
- iii. For each service / solution – number and % of schools using the service / solution
- iv. Number and % of schools using the school information system
- v. % of student life cycle transactions conducted online
- vi. Number of transactions on the school information system
- vii. Comprehensiveness, reliability and timeliness of data in the school information system
- viii. Sufficiency of the data in the School Information System to generate necessary the education reports for various stakeholders
- ix. Number of stakeholders served by the decision support and reporting systems
- x. Number of transactions on the decision support and reporting systems
- xi. Comprehensiveness, reliability and timeliness of data in the reporting systems

- xii. Ability to provide relevant and timely school education data to the various stakeholders including teachers, parents, community, school management, school administrators, various school education directorates, education research and training institutes, higher education department and health department
- xiii. Number and % of schools using the Student and Teacher Resource Portal
- xiv. Number and % of teachers using the Student and Teacher Resource Portal
- xv. Number and % of students using the Student and Teacher Resource Portal
- xvi. Number of transactions on the Student and Teacher Resource Portal
- xvii. Number (class-wise and subject-wise) of digital learning resources (digital copies of government text books and reference books, video lessons, localized and tagged Learning Objects – Multi Media, and localized and tagged Open Educational Resources) available on the portal
- xviii. Number of content providers whose content is made available through the registry of open educational resources
- xix. Number (class-wise and subject-wise) of assessment services available on the portal
- xx. Number (class-wise and subject-wise) of self-learning tools available on the portal
- xxi. Number (class-wise and subject-wise) of model lesson plans available on the portal
- xxii. Number of digital learning resources, self-learning tools, and model lesson plans in use in teacher training (class-wise and subject-wise)
- xxiii. Number of digital learning resources, self-learning tools, and model lesson plans in use in student classrooms
- xxiv. Number of downloads (by training institutes, teacher educators, schools, teachers, and students) of digital leaning objects
- xxv. Number of deployments of assessment services for students in the schools
- xxvi. Number of deployments of assessment services for teachers in the training institutes
- xxvii. Number and % of teachers using the School Education Governance Systems
- xxviii. Number and % of school administration offices using the School Education Governance Systems
- xxix. Number and % of training institutes using the School Education Governance Systems
- xxx. Number and % of school managements using the School Education Governance Systems
- xxxi. Number and % of students using the School Education Governance Systems
- xxxii. Number of transactions (informational and transactional) on the School Education Governance Systems

- i. Informational such as visits to the portal to view vacancies, seniority lists, individual service matters, scheme MIS, and certificates.
 - ii. Transactional such as applications for teacher transfers, trainings, admissions into premier institutes, scholarships or any other entitlements that require applications from the students, teacher rationalization, school affiliations and regulations, and renewals
- xxxiii. Degree of completion of training of master trainers (in numbers and as percentage of total to be covered)
- xxxiv. Degree of completion of training of all identified users (in numbers and as percentage of total to be covered)
- xxxv. % of teacher life cycle transactions conducted online
- xxxvi. % of student life cycle transactions conducted online

Impact

- i. Capacity improvement for teachers after the use of digital learning materials (indicators to be established; based on the teacher assessments)
- ii. Student learning improvement after the use of digital learning materials in classrooms (indicators to be established; based on the teacher assessments)
- iii. Improvement in teacher life cycle events after the implementation of new services / solutions (indicators to be established based on efficiency, accuracy, transparency, etc.)
- iv. % reduction in teacher transfers / postings related court cases after these processes are covered by SE MMP solutions
- v. Efficiency gains in school management operations within the school
- vi. Efficiency gains (e.g., receipt of nominal roles from schools, student data for scheme design and planning, ...) in the interactions of the internal and external stakeholders with the school post implementation of the School Information System
- vii. Efficiency gains in the functioning (e.g., turnaround time for identification of scheme beneficiaries, better understanding of root causes for the underperforming students, teachers, and schools, customized and personalized in-service teacher training,...) of the stakeholders (DEO, training institutes, school education directorates,..)
- viii. Improvement in student life cycle events after the implementation of new services / solutions (indicators to be established based on efficiency, accuracy, transparency, etc.)
- ix. Feedback from administrators (District collectors, DEOs, etc) on the assistance provided by the Decision Support Systems that are part of the SE MMP (indicators to be established)
- x. Feedback from parents on the new services provided to students / parents (indicators to be established)

- xi. Feedback and rating on the digital learning resources from students, teachers, and teacher educators
- xii. Feedback and rating on the model lesson plans from teacher educators and teachers
- xiii. Improvement of quality and standards of teachers
- xiv. Improvement of quality and standards of education

The benchmark values for each parameter will be drawn from the Center and State level Program Implementation Plan (in the case of MMP Implementation M&E) and Program Implementation Plan and Functional / Technical Specifications (in the case of M&E of Impact of the MMP on the School Education domain).

A complete set of parameters to be used for M&E will be identified by the CPMC (and if required, refined in States / UT by SPC) during the analysis / specifications design stage. At the same time, related details such as measurements of different parameters, mode and frequency of measurements, reporting structures, etc. will also be defined.

The implementation of the SE MMP has to be closely monitored and evaluated for two aspects – the progress of implementation and the impact of its implementation in the school education domain. A significant part of inputs to manage the MMP implementation will come from implementation bodies such as DPeMTs, SPeMTs, SPCs, CPMU, etc. In order to monitor and manage the impact of the MMP in the school education domain however, a regular (annual) audits performed by independent 3rd party audit agencies is recommended. It is recommended that annual audits (to be funded by MHRD) be performed in all States / UTs for at least 5 consecutive years following the implementation of SE MMP in the State / UT.

14.3. Assessment Framework and Corrective Action

At both Central and State levels, each Committee will focus on parameters most relevant to them. States will collect data on the identified parameters and will share them regularly with MHRD, say on a monthly basis during the implementation phase of the MMP. In case gaps are identified between the actual performance and the benchmark / targets, the Committees may seek more information and conduct an analysis of the gaps. And based on the analysis, take appropriate corrective action.

As mentioned above, the details of the M & E framework will be identified by the CPMC and the State Project Consultant at the time of creating detailed specifications of the MMP.