SUPPLEMENTAL INFORMATION HEADER

The following pages contain supplemental information for this competitive document. The supplemental information is contained between this header and a trailer page. If you receive the trailer page, all supplemental information has been received.

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SUPPLEMENT 1

GLOSSARY

Instructional Improvement System
Glossary of Terms

	Term	Description
1	a, b, c & d parameters	These are the parameters used in Item Response Theory (IRT), a psychometric modeling technique that is used to evaluate the degree of precision and breadth of scales designed to measure latent constructs, or underlying traits of concepts. IRT is used to model the association between an individual's responses to test questions/items (in probabilistic terms) and an underlying latent trait that is also measured by the items. IRT models are said to be "invariant" – that the item parameters are not fitted to the population of students who took the original assessment and instead may characterize item discrimination, difficulty, and guessing parameters for an item regardless of the student sample taking the test. The IRT parameters are used to estimate: • a: discrimination parameter or a measure of how well a test item differentiates persons who know and do not know the content in the test item • b: item difficulty parameter measured on the person ability (theta) scale • c: a parameter designed to measure the probability of guessing on fixed response items (also indicates the lower asymptote of an item characteristic curve) • d: a category threshold parameter for partial credit models (partial credit models are used to estimate the parameters for items with a range of scores; e.g., 1-4 possible score points on a single item).
2	Accessible Portable Item Profile (APIP) Standards	A set of interoperability specifications that will enable U.S. states to cooperate on development, use, and exchange of electronic assessment items. APIP standards are particularly useful in specifying information to tailor the presentation of test items to students with particular accessibility needs.
3	anchor paper	Anchor papers operationalize the scoring of open response and essay items by providing written examples for each possible student score. The anchor papers generally comprise selected, scored student responses for the relevant test item.
4	Analysis of variance (ANOVA)	In statistics, analysis of variance (ANOVA) is a collection of statistical models, and their associated procedures, in which the observed variance in a particular variable is partitioned into components attributable to different sources of variation. ANOVA models are used to evaluate the significance of group differences in experimental studies, and to evaluate the significance of group mean differences in repeated measures models.
5	bivariate analysis	Bivariate analysis involves quantifying the relationship between two variables (often denoted as X, Y) as is done in the computation of covariance and correlations.
6	CCSSO	Council of Chief State School Officers http://www.ccsso.org
7	CEDS	Common Education Data Standards http://nces.ed.gov/programs/ceds

8	Certificate of Occupational Proficiency (COP)	The certificate of occupational proficiency shall be awarded to students who successfully complete a comprehensive education and training program in a particular trade or professional skill area and shall reflect a determination that the recipient has demonstrated mastery of a core of skills, competencies and knowledge comparable to that possessed by students of equivalent age entering the particular trade or profession from the most educationally advanced education systems in the world.
9	cognitive demand	The term “cognitive demand” is used to denote the level or degree of difficulty or thinking inherent in learning tasks, assessment items, and curriculum materials. The level of cognitive demand can vary within a given course of study, so that content with higher levels of cognitive demand may appear in basic material, and content with lower-levels of cognitive demand may appear in more difficult material. Cognitive taxonomies such as Bloom’s are often used to denote the degree of cognitive demand; and these schema range from basic recall or lower levels of cognitive demand to analysis/critical thinking and beyond or higher levels of cognitive demand.
10	constructed response test item	Constructed response items require students to write out an answer in response to a prompt. These responses may range from short to long narrative responses, or may require other types of written responses such as the presentation of math equations or the creation of a graph. Constructed response questions are generally graded against specific criterion (as operationalized in a scoring rubric, for example).
11	convergent validity coefficient	A measure of construct validity, convergent validity refers to the degree to which a measure is correlated with other measures that it is theoretically predicted to correlate with. The coefficient is the estimate of degree to which two variables are related (i.e., a correlation).
12	contingency table and cross-tabulation	A contingency table provides the observed and estimated frequencies for two or more variables in an analysis. Contingency tables are, often referred to as cross-classifications or cross-tabulations. The contingency table provide column and row observed and estimated frequencies and is used to identify a) usual and unusual observed frequencies in cells, and b) overall estimates of how much the observed frequencies in the table conforms to or diverges from the expected frequencies (this omnibus measure is captured in a chi square statistic)

13	curriculum embedded performance assessment (CEPA**)**	Curriculum embedded performance assessments are instructional materials that engage students in developing abilities as they explore standards-based concepts. They are embedded tasks within the course of the normal instructional day and within the appropriate instructional context. In this way, curriculum embedded performance assessments are part of, not an addition to, the regular curriculum. Curriculum-embedded performance assessments serve three main purposes: (1) they illustrate the expected performances associated with an understanding of the standards covered in the state Frameworks; (2) they are models for developing additional interdisciplinary inquiry and investigations; and (3) they provide the context for the creation of questions on assessing understanding of key concepts presented in the instruction. The embedded tasks are extended, open-ended tasks that allow students to explore in depth one or more aspects of an entire curriculum unit of instruction. Students learn to design and develop ideas rather than to follow step-by-step directions to achieve a predetermined outcome. Each embedded task gives students opportunities to pose pertinent questions, collect and organize data, identify patterns, formulate generalizations, communicate findings and raise questions for further study. Each CEPA can contain one or more tasks. The CEPA is always associated with a unit of instruction. If a CEPA is constructed outside the unit of instruction framework, it is know as a "performance assessment."
14	Curriculum Learning Plans	Brief description of coherent learning activities and teaching that will evoke and develop the knowledge, skills, and understandings at the heart of the curriculum unit -Part of model curriculum template that describes a sequence of learning experiences that guide the presentation of the lesson plan. They can be thought of as the road map for the unit.
15	curriculum map	Curriculum maps offer a sequence for delivering content and provide a clear scope for what must be taught to all students, based on curriculum documents.
16	CVTE	Career/Vocational Technical Education
17	DESE	Massachusetts Department of Elementary and Secondary Education
18	desired results	*Desired Results* is a major component of the unit of instruction as specified by Jay McTighe's *Understanding by Design* (*UbD*)* methodology. Generally, the desired results contains the following items: 1) goals for the unit identified to the standards; 2) the knowledge and skills to be acquired by the students; 3) the understanding the student should be able to use in solving problems and the essential questions to be answered by the instruction of the unit; and 4) how the understanding of the knowledge can be used to solve problems of a different nature. *McTighe, J. & Wiggins, G. (2011). *Understanding by Design Guide to Creating High-Quality Units*. Alexandria, VA: ASCD.
19	Digital Library	The name used in the Massachusetts Race to the Top application to describe both the repository for learning objects/instructional resources and the ability to search the repository. The digital library encompasses both those objects created by a teacher, district, or the State through the IIS, and also objects available from independent educational sources (e.g. PBS, Thinkfinity). The Digital Library is expected to be searchable via a federated search for instructional materials across these locations. The IIS will have the capability to incorporate objects in the digital library into assessments, curriculum maps, units, lesson plans, and other instructional materials.

19	digital resources (also referred to as instructional materials)	There are two categories of digital resources – external resources (i.e., the digital library) and internal digital resources. The resources of the digital library are maintained by external organizations such as PBS LearningMedia. Internal digital resources consist of those files and documents that are created and used by the districts. These resources are generated by either the state or local education agencies. Instructional materials include (units, activities, digital resources all types of assessments and assessment items)
20	discriminate validity coefficient	A measure of construct validity, discriminate validity refers to the degree to which a measure is correlated with other measures that it is theoretically not predicted to be correlated with. The coefficient is the estimate of degree to which two variables are unrelated (i.e., a correlation).Discriminate validity is the degree to which concepts that should not be related theoretically are, in fact, not interrelated in reality. You need to show that your test measures something a bit different from other tests that purport to measure the same construct (Uniqueness of test).
21	distributed scoring	Distributed scoring allows for multiple scorers located at different places to score the same assessment or task. The method requires estimating the inter-rater reliability of the scorers to establish scoring stability.
22	Dublin Core/LRMI	The Learning Resource Metadata Initiative (LRMI) is a project led by Creative Commons (CC) and the Association of Educational Publishers (AEP) to establish a common vocabulary for describing learning resources. The vocabulary will be the first independently developed industry-specific framework designed to work with schema.org, the web metadata framework launched June 2, 2011 by Google, Bing, and Yahoo!, thereby improving the practical search and discovery of learning resources online. A common framework for tagging and organizing learning resources can enable further applications; thus, in order to maximize buy-in and the realization of future benefits for all learners, interoperability and transparency will be key criteria for the vocabulary and LRMI's development process. The Dublin Core Metadata Initiative (DCMI) is an open organization, incorporated in Singapore as a public, not-for-profit Company limited by Guarantee (registration number 200823602C), supporting innovation in metadata design and best practices across a broad range of purposes and business models.
23	ELL	English Language Learners
24	EOE	Executive Office of Education – Massachusetts Only
25	ESE	Elementary and Secondary Education – Massachusetts Only
26	ESE IDM	Identity and Access Management System at ESE
27	Evidence	*Evidence* is a major component of the unit of instruction as specified by Jay McTighe's *Understanding by Design* (UbD)* methodology. Generally, evidence contains the following items: 1) Curriculum Embedded Performance Assessment of one or more tasks that challenge students to provide evidence that they can use and apply the knowledge and skills acquired in the unit; 2) summative assessment that covers the whole unit typical of a chapter or unit test. *McTighe, J. & Wiggins, G. (2011). *Understanding by Design Guide to Creating High-Quality Units*. Alexandria, VA: ASCD
28	exemplar	A model or pattern to be copied or imitated. In the teaching and learning system, an exemplar may constitute a model curriculum unit or a CEPA.

29	formative assessment	Formative Assessment, when incorporated into classroom practice, provides the information needed to adjust teaching and learning while they are happening. In this sense, formative assessment informs both teachers and students about student understanding at a point when timely adjustments can be made. These adjustments are designed to students achieve targeted standards-based learning goals. OR Formative assessments are teacher-created tests designed to inform instructional content and delivery. These assessments assist teachers in identifying student placement and needed student supports and also assist in identifying content that has been learned and not learned by students, and conversely, to evaluate instruction and pedagogy that did and did not work with students.
30	IIS	Instructional Improvement System
31	Individual Learning Plans	These are plans designed by the school, the guidance counselor, the teacher or teachers of a student that specifically address one student's learning needs. May describe specific interventions for students to meet benchmarks.
32	Instructional Materials	a wide array of materials that may be used as part of instruction, including, but is not limited to, lesson plans, worksheets, problem sets, assessments, graphics, photographs, video clips, audio clips, on-line books and text.
33	interim assessment	Interim assessments are generally administered on a school or district-wide bases. While the results may be used at the teacher or student level, the information is designed to be aggregated at a level beyond the classroom level, such as to the school or district level. These assessments may serve a variety of purposes, including predicting a student's ability to succeed on a large-scale summative assessment like the MCAS, evaluating a particular educational program or pedagogy, or diagnosing gaps in student learning. It is these purposes that determine the necessary features of the interim assessment. OR, I prefer: Interim assessments are defined as common assessments administered across grades, schools, and districts, that are aligned to important criterion measures such as state-wide or other important summative assessments. The purpose of interim assessments is to provide schools and districts with timely and actionable data valid for informing decisions related to curriculum and instruction.
34	item banks	Item banks are repositories for test items that are available in the Online Interim and Formative Assessment System. The item banks are differentiated as follows: a. secure item banks(view restricted) i. state vetted item bank (accessible by role, e.g., administrators) ii. local vetted item bank b. non-secure i. private ii.state vetted item bank iii. non-vetted item bank
35	Item prompt	Text, graphic, video that is presented as part of the item stem or presented to provide context for an item question.

36	item type	There can be a variety of item types for items in the item banks. Here are a few: a. multiple choice (MC) b. short answer (SA) c. constructed response/essay (CR: features anchor papers, rubrics) d. true/false (T/F) e. matching f. interpretive exercises (IE: features graphic or text prompt with multiple items associated with it) g. diagnostic (allows users to submit annotations for distracters) h. performance assessments (PA: features rubrics, checklists) i. observational assessments (includes rubrics, checklists, or anecdotal record forms)
37	JSR-168 and JSR-268	Portlets are web-based components that enable integration between applications and portals and thus enable delivery of applications on portals. JSR-168 (268 in draft) is a Java-based standard for how to code pluggable Portlets (i.e., SharePoint Web Parts) that interact with Java-based portals. Because SharePoint is a .NET-based Portal Framework it does not support JSR-168. SharePoint supports the WSRP (Web Services for Remote Portlets) standard. WSRP is an interoperability standard and a language-neutral way to request and transmit web service data. Microsoft supports services orientated architectures (SOA) and web services interoperability, by adhering to a complete set of web service specifications. JSR-286 is the Java Portlet specification v2.0 as developed under the Java Community Process (JCP) and created in alignment with the updated version 2.0 of WSRP. It was developed to improve on the short-comings on version 1.0 of the specification, JSR-168.
38	Kuder-Richardson Coefficient	The Kuder Richardson Coefficient of reliability (K-R 20) is a measure of internal consistency used for tests comprised exclusively of binary (dichotomous) items. The measure yields a coefficient of reliability that ranges from 0 to 1.
39	kurtosis	Kurtosis is a measure of bimodality (or sometimes referred to as “peakedness”) in a frequency distribution. That is, data sets with high kurtosis tend to have a distinct peak near the mean, decline rather rapidly, and have heavy tails. Data sets with low kurtosis tend to have a flat top near the mean rather than a sharp peak. A uniform distribution would be the extreme case.
40	LEA	Local Education Agency.
41	Learning Objects	A learning object is a resource, usually digital and web-based, that can be used to support learning. Learning Objects include but are not limited to assessment items, curriculum maps, Curriculum units, lesson plans, and other instructional resources.

42	Learning Plan (unit)	The Learning Plan is a major component of the unit of instruction as specified by Jay McTighe's *Understanding by Design* (UbD)* methodology. Generally, a learning plan specifies in sequence what is to be accomplished in the classroom for the unit of instruction. There is one learning plan per unit. Lesson plans are then developed from the learning plan. *McTighe, J. & Wiggins, G. (2011). *Understanding by Design Guide to Creating High-Quality Units*. Alexandria, VA: ASCD NOTE: Massachusetts refers to learning plans mainly as a component of a Curriculum Unit that is made up of multiple lesson plans. Ohio's references to a Learning Plan are in related to individual students.
43	Learning Registry	Funded by the U.S. Departments of Education and Defense, the Learning Registry provides "a communication system that allows existing educational portals and online systems to publish, consume, and share important information about learning resources with each other and the public. Basic data about resources—grade level, subject area, and author—can be shared through the Learning Registry, as well as more complex data such as curricular standards alignment information. This platform for innovative data sharing also allows user activities to be shared anonymously, such as the types of educators who find a specific resource particularly useful. Essentially, digital learning resource repositories, faculty community sites, learning management systems, and so forth that incorporate the Learning Registry will facilitate sharing of information about digital learning resources across all of the participating entities. Users of one Learning Registry-enabled repository will be able to search across all Learning Registry sites for different types of materials relevant to a particular subject or discipline, but they will also be able to access information about how the materials have been used in different instructional settings and to what degree of success (as rated by the instructors/users themselves). Established as an open, community-based system, any organization or individual interested in contributing to the Learning Registry's development can, and anyone can incorporate the Learning Registry framework into their site or platform.
44	Learning Tools Interoperability (LTI)	Learning Tools Interoperability (LTI) provides a single framework or standard way of integrating rich learning applications -- in LTI called Tools -- with platforms like learning management systems, portals, or other systems from which applications can be launched. http://www.imsglobal.org/toolsinteroperability2.cfm The basic use is to allow the seamless connection of web-based, externally hosted applications and content, or Tools (from simple communication applications like chat, to domain-specific learning environments for complex subjects like math or science) to platforms that present them to users. In other words, if you have an interactive assessment application or virtual chemistry lab, it can be securely connected to learning/course management systems, portals, etc. in standard ways without having to develop and maintain custom integrations.
45	lesson plan	Generally, a lesson plan specifies how instruction will be conducted in the classroom based on the outline of the learning plan.
46	Locked Items	Assessment or learning objects that can be used, but not copied or modified by the users. Assessment items from the statewide assessment may be locked, for example, so that users may not copy or alter them in a substantive way.

47	LRMI	Learning Resource Metadata Initiative http://www.lrmi.net/
48	MCAS	Massachusetts Comprehensive Assessment System
49	MEPID	Massachusetts Education Personnel ID
50	meta-data	The term metadata is an ambiguous term which is used for two fundamentally different concepts (types). Although the expression "data about data" is often used, it does not apply to both in the same way. Structural metadata, the design and specification of data structures, cannot be about data, because at design time the application contains no data. In this case the correct description would be "data about the containers of data". Descriptive metadata, on the other hand, is about individual instances of application data, the data content. In this case, a useful description would be "data about data contents" or "content about content" thus metacontent.
51	model curriculum unit (MCU)	A model curriculum unit is an exemplar unit of instruction designed and developed by the state. Approximately 100 model units of instruction will be provided by the state and made available to districts as examples of high quality units of instruction. Districts can copy these model units then use them as is or modify them to construct other units to fill gaps in their curricula.
52	Modular Items	A group of assessment items that are associated with a single item prompt. The prompt is presented only one time, followed by the group of associated questions such as passage-based items on the MCAS that have a group of items associated with a single reading passage. (These may also be referred to as “item sets”.)
53	OAuth	An open protocol for secure API authorization for publishing and access of data.
54	OIF SPECIFIC TO Massachusetts	The Online Interim and Formative (OIF) Assessment System is a major component of the Teaching and Learning System that allows for the construction, administration, assignment, and scoring of assessments at the classroom, school and district levels. The system also allows for the reporting of all data captured in the assessments.
55	PARCC	Partnership for Assessment of Readiness for College and Careers. http://www.parcconline.org/
56	P-20 data system	Although the P-20 data system is sometimes used synonymously with the term Longitudinal Data System (LDS), technically it is a database of information about students from the time they enter a public school system in Massachusetts through the years after high school and beyond including information about the their experiences entering the workforce or engaging in higher education.
57	Point Bi-serial	The point bi-serial correlation is a measure of item discrimination in classical test theory. Put simply, it is a correlation between binary item responses and the total test score and it may be computed for small numbers of examinees (as opposed to the estimation of a parameter in IRT, which requires a large student sample). In the case of polytomous items, a bi-serial correlation is used for the measure of discrimination.

58	PBS LearningMedia	PBS LearningMedia delivers access to a digital library aligned to Common Core State Standards and available to all preK-16 classrooms. Itcontains high-quality content drawn from more than 1,500 public media producers. Teachers and students have access for their lessons and homework to more than 14,000 research-based instructional resources – including videos, interactives, images, audio files, mobile apps, lesson plans, and worksheets. PBS LearningMedia also has content from other publicly funded organizations, including the National Archives, the Library of Congress and NPR, as well as content funded by NASA, the National Science Foundation, the National Institutes of Health and the US Department of Education, Through PBS LearningMedia, teachers can: • quickly and easily find relevant resources, localized to their needs, to differentiate instruction for a diverse range of learners; • personalize the site by tagging resources and share ideas, recommendations and comments on how they've used media assets in their teaching with their professional learning networks via email or social media tools, such as Facebook and Twitter; and • develop "class pages" -- curated content lists -- for student viewing, feedback and instruction on interactive white boards and school-based intranets and other networking tools.
59	PD	Professional Development
60	performance task	A performance task or assessment is similar to a curriculum embedded performance assessment (CEPA) with the following distinctions: • Whereas a CEPA usually covers the entire unit of instruction, a performance task is oriented toward a portion of the unit. • The CEPA is attached to the 'evidence' component of the unit, performance tasks are not. • Performance tasks are associated with specific locations in the learning plan or in lesson plans. • Performance tasks can stand alone without an association with a unit; a CEPA must always be attached to a unit.
61	pre-slugged answer sheet	A pre-slugged answer sheet, also known as a pre-coded or to pre-ID answer sheet, is an imprinted answer sheet with student and test information that can be read by the scanner as well as by students and teachers.
62	psychometrics	Psychometrics is the field of study concerned with the theory and technique of psychological measurement, which includes the measurement of knowledge, abilities, attitudes, personality traits, and educational measurement. The field is primarily concerned with the construction, validation and analysis of measurement instruments such as questionnaires, tests, and personality assessments.
63	p-value	There are two meanings attached to p-value. First, it is a statistic relating whether or not the sample supports the tested hypothesis, thus it is a measure of statistical significance in quantitative analyses. P values are the probability that a calculated test statistic as large or larger occurred by chance alone. P values range from 0 to 1. A zero P value would indicate that the probability of sampling a population and obtaining a test statistic with as large or larger a value was nonexistent. Typically, P values less than 0.05 are deemed statistically significant, resulting in rejection of the null hypothesis. Second, in a test and item analysis, a p-value is the probability for getting an item correct. It is used as a measure of difficulty of an item and corresponds to the percentage correct for dichotomous items.

64	QTI	The Question and Test Interoperability specification (QTI) defines a standard format for the representation of assessment content and results, supporting the exchange of this material between authoring and delivery systems, repositories and other learning management systems. http://www.imsglobal.org/QTI.html
65	response probability (RP) value	A response probability identifies the scaled score points (on a large scale assessment) at which students have a strong probability of getting the item correct. On the NAEP assessment, response probability values are used for item mapping so that the NAEP scale is presented along with items mapped to various scaled score points. An item mapped at a scaled score point of 300, for example, would indicate that students scoring a 300 on NAEP would have a high probability of getting that item correct (or in other words, "know" and "can do" material represented by that test item).
66	REST	Representational State Transfer
67	SASID	State Assigned Student ID
68	SAML	Security Assertion Markup Language
69	Schools Interoperability Framework (SIF)	The Schools Interoperability Framework (SIF) is a data sharing open specification for academic institutions from kindergarten through twelfth grade (K-12). The specification is composed of two parts: an XML specification for modeling educational data, and a Service-Oriented Architecture (SOA) specification for sharing that data between institutions. SIF is not a product, but an industry initiative that enables diverse applications to interact and share data. http://www.sifinfo.org
70	scoring rubrics and scoring guides	Scoring rubrics are descriptive scoring schemes that are developed by teachers or other evaluators to guide the analysis of the products or processes of students' efforts. Scoring rubrics are typically employed when a judgment of quality is required and may be used to evaluate a broad range of subjects and activities. One common use of scoring rubrics is to guide the evaluation of writing samples. Judgments concerning the quality of a given writing sample may vary depending upon the criteria established by the individual evaluator. One evaluator may heavily weigh the evaluation process upon the linguistic structure, while another evaluator may be more interested in the persuasiveness of the argument. A high quality essay is likely to have a combination of these and other factors. By developing a pre-defined scheme for the evaluation process in a scoring rubric, the subjectivity involved in evaluating an essay becomes more objective. Scoring guides are different from rubrics in that they have a built-in analysis of the quality of each of the components of the performance task. Consequently, the assignment of a numerical grade is much easier. The important aspects of both rubrics and scoring guides are that they describe levels of performance; thus, they provide important information to teachers and parents. More importantly, they provide clear performance targets and standards for learning for students
71	SCORM Object	Sharable Content Object Reference Model (SCORM) is a collection of standards and specifications for web-based e-learning. It defines communications between client side content and a host system called the run-time environment, which is commonly supported by a learning management system. SCORM also defines how content may be packaged into a transferable ZIP file called "Package Interchange Format".

72	Secure Items	Test items (or tests) that may be accessed only by designated personnel within a school district with permissions to access secure items. These items can only be seen, or added to an assessment by someone with the designated authorization. Secure items are often reserved for school-wide or district-wide assessments.
73	SIB	Shared Item Bank – a New Schools Venture Fund initiative http://www.newschools.org/
74	SLI/SLC	The Shared Learning Collaborative (SLI) is funded by the Bill and Melinda Gates Foundation and Carnegie Corp., in a joint project with the Council of Chief State School Officers and nine pilot states, including Massachusetts. The goal is to create a personalized learning information system that can be used by any state using the Common Core State Standards. The project is only in its initial stages. The Shared Learning Collaborative is now working to develop the "architecture of the technology." The next step will be to work with technology staffs in individual districts that have been chosen to help develop the software. In-classroom piloting could begin in 2012. http://www.slcedu.org
75	SOAP	Simple Object Access Protocol (SOAP) is a way for a program running in one kind of operating system (such as Windows) to communicate with a program in the same or another kind of an operating system (such as Linux) by using the World Wide Web's Hypertext Transfer Protocol (HTTP)and its Extensible Markup Language (XML) as the mechanisms for information exchange.
76	SOA	Service Oriented Architecture
77	skewness	Skewness is a measure of symmetry in a frequency distribution, or more precisely, the lack of symmetry. With scores on a test for example, the distribution, or data set, is symmetric if it looks the same to the left and right of the center point.
78	SkilsPlus	A software program use in some Vocational Technology schools and programs to help monitor competencies for the Vocational Technology programs.
79	SPED	Special Education for students with special needs that includes those that have challenges with learning, communication challenges, emotional and behavioral disorders, physical disabilities, and developmental disorders.
80	standards	Academic standards specify what students should know and be able to do. Massachusetts has adopted the Common Core Standards. In addition, there are Massachusetts state standards that make up approximately 15% of the total. Also, the competencies associated with Vocational Technology programs will be added to the standards database for Massachusetts. Ohio will not be adding any state specific standards to the system.

81	summative assessment	Summative Assessments are given periodically to determine at a particular point in time what students know and do not know. Many associate summative assessments only with standardized tests such as state assessments such as the MCAS, but they are also used at and are an important part of district and classroom programs. Summative assessment at the district/classroom level is an accountability measure that is generally used as part of the grading process. The list is long, but here are some examples of summative assessments: • State assessments • District benchmark or interim assessments • End-of-unit or chapter tests • End-of-term or semester exams The key is to think of summative assessment as a means to gauge, at a particular point in time, student learning relative to content standards. Although the information that is gleaned from this type of assessment is important, it can only help in evaluating certain aspects of the learning process. Because they are spread out and occur after instruction every few weeks, months, or once a year, summative assessments are tools to help evaluate the effectiveness of programs, school improvement goals, alignment of curriculum, or student placement in specific programs. Summative assessments happen too far down the learning path to provide information at the classroom level and to make instructional adjustments and interventions during the learning process. It takes formative assessment to accomplish this.
82	Table of Test Specifications	A Table of Specifications is a cross tabular depiction of the test which describes the tested content (usually by listing the items along the rows) and the item types, standards, or taxonomies tests (usually these are presented along the columns). The purpose of a Table of Specifications is to establish content validity; in other words, to ensure that the test items are an intended and valid representation of the intended content domain. Teachers cannot measure every topic or objective and cannot ask every question they might wish to ask. A Table of Specifications allows the teacher to construct a test which focuses on the key areas and weights those areas based on their importance.
83	tag	In online computer systems terminology, a tag is a non-hierarchical keyword or term assigned to a piece of information (such as an Internet bookmark, digital image, or computer file). This kind of metadata helps describe an item and allows it to be found again by browsing or searching. Tags are generally chosen informally and personally by the item's creator or by its viewer, depending on the system.
84	TLS	Teaching and Learning System, the designated name for the Instructional Information System (IIS) for Massachusetts.
85	test descriptors	Data and meta-data associated with tests.
86	unit of instruction	The basic framework that establishes the foundation for a manageable piece of instructions, usually defining a portion of the curriculum map. The basic components of the unit of instruction are modeled after the Understanding by Design* methodology and are as follows: desired results; evidence; learning plan and lesson plans. *McTighe, J. & Wiggins, G. (2011). *Understanding by Design Guide to Creating High-Quality Units*. Alexandria, VA: ASCD

87	Vocational Technical Competencies	Vocational competency is defined as broad industry knowledge and experience, usually combined with a relevant industry qualification. A person who has vocational competency will be familiar with the content of the vocation and will have relevant current experience in the industry. There are approximately 45 vocational technology programs available to students in Massachusetts. Each program has a set of competencies that students are required to fulfill during their engagement in the program.
88	Vocational Technical Education Frameworks (VTEF)	The Vocational Technical Education Frameworks are organized under Career Clusters. Each Framework consists of six strands as follows: • Strand 1: Safety and Health Knowledge and Skills • Strand 2: Technical Knowledge and Skills • Strand 3: Embedded Academic Knowledge and Skills • Strand 4: Employability Knowledge and Skills • Strand 5: Management and Entrepreneurship Knowledge and Skills • Strand 6: Technological Knowledge and Skills Recent Changes • Horticulture: Greenhouse & Floriculture combined sections on wildlife & concepts fundamental to Natural Resources and Park Management added. Natural Resources are now called Natural Resources & Park Management. • Environmental Technology: Now called Environmental Science and Technology. • Radio-Television Production: Redundant standards removed. • Sheet Metalworking: Redundant standards removed. • Diesel Technology: Redundant standards removed. • Agricultural Mechanics: Electrical and plumbing skills for which a license is required removed. • Facilities Management: Electrical and plumbing skills for which a license is required removed.
89	VTCTS	The Vocational Technical Competency Tracking System is the current system in Massachusetts that allows Vocational Tech teachers to track the various competencies that students in Voc Tech programs must fulfill. This function will be incorporated into IIS.
90	WIDA	World-Class Instructional Design and Assessment http://www.wida.us/
91	WGBH	PBS Boston affiliate – curriculum content provider for MA IIS.
92	WSRP	Web Services for Remote Portlets

SUPPLEMENT 2

IIS System Requirements Matrix

This supplement is provided as an Excel spreadsheet on the State of Ohio Procurement Website

SUPPLEMENT 3

MASSACHUSETTS –SPECIFIC REQUIREMENTS

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A. Current State and General Information

The Massachusetts Executive Office of Education (EOE) oversees education in Massachusetts from early childhood through higher education. EOE has responsibility for providing information technology (IT) services to the Massachusetts Department of Elementary and Secondary Education (ESE) and other educational agencies in the Commonwealth. ESE is the state agency charged with guiding and improving public education in Massachusetts for grades K through 12.

ESE and EOE have worked together to define the business or programmatic requirements for the IIS to ensure that it meets the business and technical needs of Massachusetts educators. EOE is the lead agency for the physical/technical implementation of the teaching and learning system. This procurement will be funded and implemented by EOE.

Once the Core Phase of the project has been completed and the IIS meets all of the requirements common to both Ohio and Massachusetts, the state-specific phases of this procurement will begin. During the Massachusetts-specific phase of this procurement, EOE will purchase subscriptions from the Contractor on behalf of participating Massachusetts Local Education Authorities (LEAs). The subscriptions provided by the Contractor must meet all Massachusetts requirements. Massachusetts-specific requirements for the IIS are articulated in the Massachusetts section of the IIS System Requirements provided in Attachment Three of this RFP. Further description of Massachusetts requirements for the IIS is provided below.

This Supplement also includes information about the planned implementation of the IIS subscriptions in Massachusetts, including:

- Strategy
- Expected participation rates
- Outreach, Training and Rollout
- Post-RttT strategy

B. Statewide Implementation Strategy and Timeline

The Contractor's solution must meet both the Core and the Massachusetts-specific requirements provided in Supplement Three of this RFP. The Contractor's solution must also provide integration with EOE/ESE's relevant data stores to support the ongoing use of the IIS.

EOE/ESE plans to collect student, educator, and course data from Massachusetts LEAs through SIF. This data will undergo Level 1 and possibly Level 2 validation before being moved to the IIS through web services. LEAs are in the process of implementing SIF and will complete this process so that they can transfer data to ESE for use by the IIS. In the event that any LEAs have difficulty in implementing SIF in time to meet the IIS implementation schedule, it may be necessary to have an alternative method for transferring student, educator and course data. IIS solutions that contain existing functionality that enable LEAs to upload this data directly from their SIS should leave these capabilities intact should this alternative become necessary to move data.

Strategy

Massachusetts envisions a two-track implementation strategy for the Massachusetts phase of the project. The goal of this strategy is to provide initial IIS functionality to Massachusetts LEAs as quickly as possible, with full functionality and integration to follow rapidly. This approach requires the Contractor to deploy the core system immediately upon completion to a targeted group of LEAs, while simultaneously completing any configuration and integration necessary for full implementation of the IIS.

Track 1 will focus on rapidly deploying the IIS in LEAs as soon as UAT for the Core functionally is successfully completed. Track 1 will begin before the IIS is integrated with EOE/ESE systems. EOE's goal is to begin Track 1 implementation in October 2012; however the start date of Track 1 will be dependent on Core UAT or as negotiated. By beginning Track 1 rollout prior to Track-2, we will enable some Massachusetts LEAs to begin using the IIS as early as possible. LEA student and educator data will be made available to the Offeror from the state SIF ODS in a SIF compliant format to be loaded into the IIS. The IIS will then be implemented with Massachusetts LEAs.

Track 2 will focus on completing any additional work necessary to meet the Massachusetts-specific requirements and to integrate with other relevant ESE/EOE systems, as described below. The fully functional, integrated software will then be piloted with Massachusetts LEAs. Track 2 will include acceptance of those requirements by EOE/ESE prior to wider implementation.

Once the fully functional, integrated software has passed acceptance of all Massachusetts-specific requirements, we will conduct a phased-in implementation.

Expected Timing and Participation Rates

171 Massachusetts Local Education Agencies (LEAs), serving approximately 547,000 students, have indicated that they plan to implement the IIS as part of their RttT efforts.

EOE/ESE's goal is to roll out the IIS to participating Massachusetts RTTT LEAs using a phased-in approach between October 2012 and July 2014. In the event it is impossible to begin initial implementation in October 2012, the implementation schedule will be revised. Any revisions to the schedule must nevertheless plan for and result in full implementation to all RttT IIS districts by July 2014.

The following table represents ESE/EOE's target implementation schedule. If necessary, the Offeror must provide a revised implementation table that reflects the Offeror's expected implementation schedule.

EOE will guarantee a minimum participation rate based on the accepted implementation table; if the Contractor exceeds the timetable, subscription, payment will reflect the actual implementation.

		Current Quarter		Cumulative	
	Fiscal Quarter	**Number of LEAs**	**Number of Students**	**Number of LEAs**	**Number of Students**
RTTT Performance goals by 2014		171	547,000		
SY 2012-13	Oct - Dec	6	19,193	6	19,193
SY 2012-13	Jan – Mar	15	47,982	21	67,175
SY 2012-13	Apr – Jun	25	79,971	46	147,146
	Jul-Sep	45	143,947	91	291,093
SY 2013-14	Oct - Dec	30	95,965	121	387,058
SY 2013-14	Jan – Mar	30	95,965	151	483,023
SY 2013-14	Mar – June	20	63,977	171	547,000

NOTE: The number of students presented in the table above is based on the average number of students in the 171 RttT districts currently registered to implement the IIS. These averages have been used for planning and calculation of the minimum participation rate.

To meet the implementation timeline, the Contractor must have the ability to implement the IIS software service rapidly, successfully scale-up required hardware and support, and to provide required outreach, training and customer support.

ESE/EOE anticipates that the IIS developed and implemented through this procurement will be of interest to many Massachusetts LEAs that have not yet indicated that they intend to participate. The Contractor must provide IIS subscriptions to additional Massachusetts LEAs should they choose to implement the IIS. Massachusetts has a total of 393 LEAs, serving nearly one million students.

Access

Access to the IIS must be provided for all LEA users and for appropriate users from the SEA, including both ESE and EOE. Access to certain IIS content must also be provided to the public.

State Education Authority (SEA) System Access

ESE and EOE will require the Contractor to provide a set of user IDs for their staff to access the IIS. SEA Access will allow SEA users to use the IIS for a variety of purposes, including, but not limited to:

- Search, edit and report on curriculum standards
- Upload new sets of standards
- Create, edit and upload model curriculum units
- Upload curriculum resources
- Review usage statistics for curriculum tools and resources
- Review usage statistics for assessment, items, and tools
- Generate existing reports
- Develop new/customized reports
- Export data as needed

Public Access

Educational content developed using federal funds must be made available for public access. Because the IIS will include content developed using federal funds, the Contractor must provide a method for public access to this content. At a minimum, the public access requirement can be met using the existing SSO/Security requirements for the IIS such that the Contractor creates a role designated as 'PUBLIC' and configure the related access rights such that relevant content will be made publicly accessible. Other cost-effective methods may also be considered if approved by EOE.

Data Conversion

Massachusetts anticipates that some data and curriculum resources will be loaded into the IIS on a one-time basis. During the Massachusetts phase of the project, EOE will provide the Contractor with a limited number of data sets that will be converted to the relevant IIS format so it can be accessed through the IIS. This will likely include information from existing EOE systems that will be loaded initially, and then maintained through the IIS from that point forward. Data to be converted will come from two existing Massachusetts systems:

- MassONE – MassONE is a web-based system that provides basic educational tools to Massachusetts educators, including some functions that will be part of the new IIS. Existing instructional materials, such as Lesson Plans, currently housed within the MassONE system will be migrated to the new IIS so educators will have continued access to them. Usage of MassONE has been declining, with just 2-5% of educators accessing the system regularly. The current total volume of MassONE data is less than 160 GB and only a portion of this may need to be migrated to the IIS in preparation for sun setting this system

- Vocational Technical Competency Tracking System (VCTCS) – fewer than two-thirds of Vocational Technical schools in Massachusetts used the system on a regular basis in 2011. The volume of project plans (similar to lesson plans) and other documents required for transfer and load is not expected to be large, and will reflect this usage.

Plans for the conversion of this data will be determined during the project-planning phase.

Post RttT Contract Strategy

During the life of the RttT grant, EOE will purchase IIS subscriptions from the Contractor based on the terms the participating addendum between the Contractor and Massachusetts as a result of this RFP. After the conclusion of the RttT grant funding period, Massachusetts cities, towns and LEAs will have the option of purchasing IIS subscriptions directly from the Contractor. This process is described in the Massachusetts subscription documents contained in Supplement Nine.

C. Outreach, Training and Documentation

ESE/EOE's goal in implementing the IIS is to provide highly valuable tools and resources to educators throughout Massachusetts. As outlined in the table above, ESE/EOE requires a rapid, but steady implementation of the IIS. In order to meet the requested implementation timeline, and for Massachusetts educators to obtain the maximum benefit from the IIS, implementation will require the Contractor to provide outreach, training and rollout. Outreach efforts and materials must be designed and implemented to help LEAs and educators understand the value and potential benefits of the IIS, as well as how to use the IIS most effectively.

Outreach

171 LEAs have indicated that they want to adopt the IIS as part of the RttT. In order for the IIS to achieve the objectives for the system, it must be consistently utilized by educators in these districts. Reaching the many educators in these districts, engaging them in the implementation and training process, and providing the outreach needed to support continued use will require a significant effort on the part of the Contractor. ESE/EOE's goal is to have a high level of adoption and use for the IIS. Offerors must provide the outreach needed to ensure a high level of adoption and use of the IIS. Contractor outreach communications must be approved by the ESE/EOE Communications Committee prior to being distributed to Massachusetts LEAs. During the grant period, the SEA IIS Program Manager will receive Contractor communications and review them with the Communications Committee. Following the grant period, the IIS Administrator will assume this task.

Examples of these efforts could include, but are not limited to electronic newsletters, educator forums, refresher training, online communities and other professional development**.** Offerors should describe the outreach and support activities that they offer.

Training

As part of the software-as-a-service subscription, training and documentation will be required for all subscribing LEAs. The IIS will be used by a large number of users across all project phases. The Contractor must provide training to address the training needs of these users in each phase of the project. ESE/EOE's goal is to phase-in implementation throughout the project, requiring an ongoing training program from initial pilot and UAT throughout implementation of the full system.

The 171 districts that plan to implement the IIS include approximately 40,000 educators across Massachusetts. Given this volume of educators, Massachusetts envisions a train-the-trainer model, where the Contractor will provide face-to-face training sessions for representatives from each participating LEA and for representatives of the State Education Authority (SEA). This training must cover how to use the IIS and also best practices for conducting training sessions in their district. The training program must also include, but not be limited to web-based training, and reference materials such as a one-page quick guide on how to

use the application. Online Help describing how to accomplish desired tasks using the system must also be available for the users.

The Contractor must develop a training plan, to be approved by EOE/ESE that describes the type of training to be offered, objectives and goals for each training module, a proposed schedule, and the training materials to be provided in support of the training. The training plan must include a variety of methods to accommodate the breadth of locations, schedules and learning styles of all users. Training must be adapted to meet the needs of users during each phase of the project, from initial UAT, through implementation of the full system. The train-the-trainer audience and delivery may vary depending on the way training is addressed in different LEAs/regions. In some cases, regional support personnel in ESE's District and School Assistance Centers (DSACs) may require training so that they can train educators. Some LEAs may have trainers that will provide the end-user training, and may need to be trained early in the process. In-person trainings and any webinars targeted at the end users must be recorded and made available online for personnel who are not able to attend the trainings and webinars in person.

Documentation Management

The Contractor must maintain all documentation, including workflows and business process flows that support IIS operations.

Documentation Repository

The Contractor must maintain a documentation library, which is accessible to State staff.

The documentation library must include, at a minimum, the following:

a. Contract related materials (e.g., RFP, Proposal, Contract, Amendments, Whitepapers);
b. Design documentation;
c. Change Requests;
d. IIS Procedures Manual;
e. Training Materials (e.g., User Guide Training Manual);
f. Incident and Help desk Reports;
g. Marketing Materials;
h. Business Continuity Plan;
i. Disaster Recovery Plan; and
j. Security Plan.

Minimum Requirements: The Contractor must:

a. Use version control numbering with detailed history including dates to reflect amendments and additions;
b. Update documentation within 30 days of processes, procedures and system functionality changes; and
c. Secure access to workflow documentation to prevent unauthorized changes.

D. System Integration

In the following section the background and required integration with EOE systems is described. A conceptual diagram of the IIS in the context of other ESE systems is provided on the following page.

The IIS must have comprehensive integration features that enable it to interface with both EOE and external systems. The IIS must interface with external systems based on industry standards, both technical and domain. The IIS must integrate seamlessly with ESE educational, compliance and reporting systems for meeting teaching and learning goals of the user community.

D1 Overview of Integration Points

There are several RttT and Longitudinal Data Systems (LDS) initiatives in-progress, resulting in a dynamic nature of EOE Enterprise Architecture. As these projects move forward, EOE will determine the priority and specific need of integration requirements; EOE will work with the Contractor to refine integration specifications during the relevant planning phase.

The major areas that influence SEA IIS integration requirements:

- Enterprise Data Warehouse (EDW, our P-20 data warehouse)
- Identity Management
- Enterprise Portal
- Massachusetts educational standards database
- Adaption/Transition towards various standards and initiatives:
    - Standards: Schools Interoperability Framework (SIF), CEDS

In addition to these EOE/ESE systems, Massachusetts is participating in several current and future external systems, including the Shared Learning Infrastructure (SLI), the Learning Resource Metadata Initiative (LRMI)/Learning Registry (LR) and WGBH Boston affiliate of PBS Learning Media.

- LRMI/LR and SLI are interrelated initiatives through the Gates Foundation and the United States Department of Education around sharing of digital content through common tagging with the goal of being able to utilize usage results of this content toward improved education outcomes
- WGBH/PBS Learning Media is a main resource for digital curriculum content for Massachusetts; WGBH content must be available to Massachusetts educators through the IIS; content must be reachable through the single sign-on and must be searchable and linkable to curriculum materials such as lesson plans and assessments within the IIS

EOE/ESE is also engaged in discussions with other external partners for potential relationships that could result in future integration requirements. These are: the Shared Item Bank (SIB) and the Partnership for Assessment of Readiness for College and Careers (PARCC)

- Massachusetts is a member of the PARCC consortium and this may have integration implications for the Massachusetts IIS which the Contractor must be prepared to meet
- The Shared Item Bank (SIB) initiative allowing multiple states to share assessment items and related information through their Instructional Improvement Systems.
- Additional content providers such as Thinkfinity and various publishers interested in partnering with the state

Details regarding these integrations are provided below.

D1.1 IIS and ESE Systems Integrations

IIS components must be delivered such that they seamlessly integrate with ESE Enterprise systems. The integration points that would touch various enterprise components are:

- Operation Data Store (OSD): Integration to receive transactional data generated by SIS and send data by ESE authoritative source systems.
- Enterprise Data Warehouse: integration for accessing reporting data
- Integration for accessing master data from authoritative sources in ESE.
- IDM: Integration for identity management services.

D1.2 The IIS, SLI platform, and PARCC Integrations

Massachusetts is participating in the pilot phase of SLI. ESE/EOE will require integration with the SLI environment to leverage dashboards and value-added applications that will be made available through SLI in the future. IIS integration features that can facilitate integration with SLI to leverage services available are required.

The Shared Learning Collaborative (SLC) has published dates when draft and version 1 of the data model and API will be made available. Per the framing documents, the data layer integration has several options including SIF, Ed-Fi, ETL, .csv format etc. The SLI portal supports the Web Services for Remote Portlets (WSRP) standard and provides Representational State Transfer (REST) API in the application layer. The SLI platform provides infrastructure for third-party application development. The IIS will be the authoritative source of assessment data required by SLI, which means that the IIS must integrate with the SLI data architecture. SLI, in turn will be the source for the Learning Registry, Learning Maps, which IIS must be able to draw from.

The PARCC technology and integration recommendations for delivering student assessments must be adopted as they emerge.

D1.3 The IIS and SIB

The Shared Item Bank (SIB) will collect report on and maintain various assessment items. IIS components must enable integration with SIB to draw assessment items and provide usage data in return. IIS should provide the interface to configure and operate in public-key/shared secret authorization mechanism to access SIB API for integration.

D2 Integration Layers

The IIS must be an integral part of ESE Enterprise Architecture. ESE is transitioning to a Service-Oriented Architecture (SOA) and core features of the IIS must be made available as web services and be able to participate in SOA web services orchestration.

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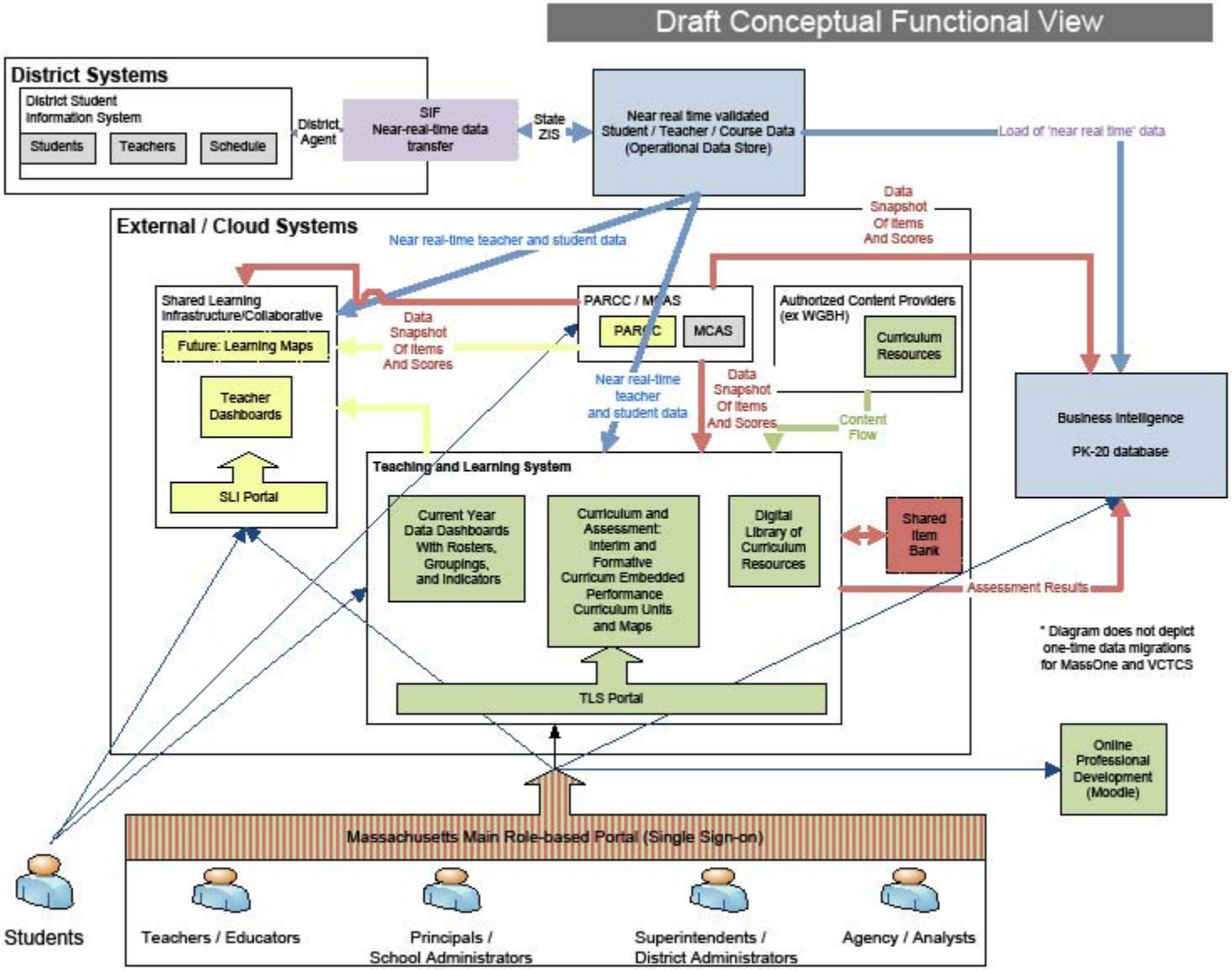
Draft Conceptual Functional View
District Systems
District Student Information System
Students
Teachers
Schedule
District Agent
SIF Near-real-time data transfer
State ZIS
Near real time validated Student / Teacher / Course Data (Operational Data Store)
Load of 'near real time' data
External / Cloud Systems
Near real-time teacher and student data
Data Snapshot Of Items And Scores
Shared Learning Infrastructure/Collaborative
Future: Learning Maps
Teacher Dashboards
SLI Portal
PARCC / MCAS
PARCC
MCAS
Authorized Content Providers (ex WGBH)
Curriculum Resources
Near real-time teacher and student data
Data Snapshot Of Items And Scores
Content Flow
Business Intelligence
PK-20 database
Teaching and Learning System
Current Year Data Dashboards With Rosters, Groupings, and Indicators
Curriculum and Assessment: Interim and Formative Curricum Embedded Performance Curriculum Units and Maps
Digital Library of Curriculum Resources
Shared Item Bank
Assessment Results
* Diagram does not depict one-time data migrations for MassOne and VCTCS
TLS Portal
Online Professional Development (Moodle)
Massachusetts Main Role-based Portal (Single Sign-on)
Students
Teachers / Educators
Principals / School Administrators
Superintendents / District Administrators
Agency / Analysts

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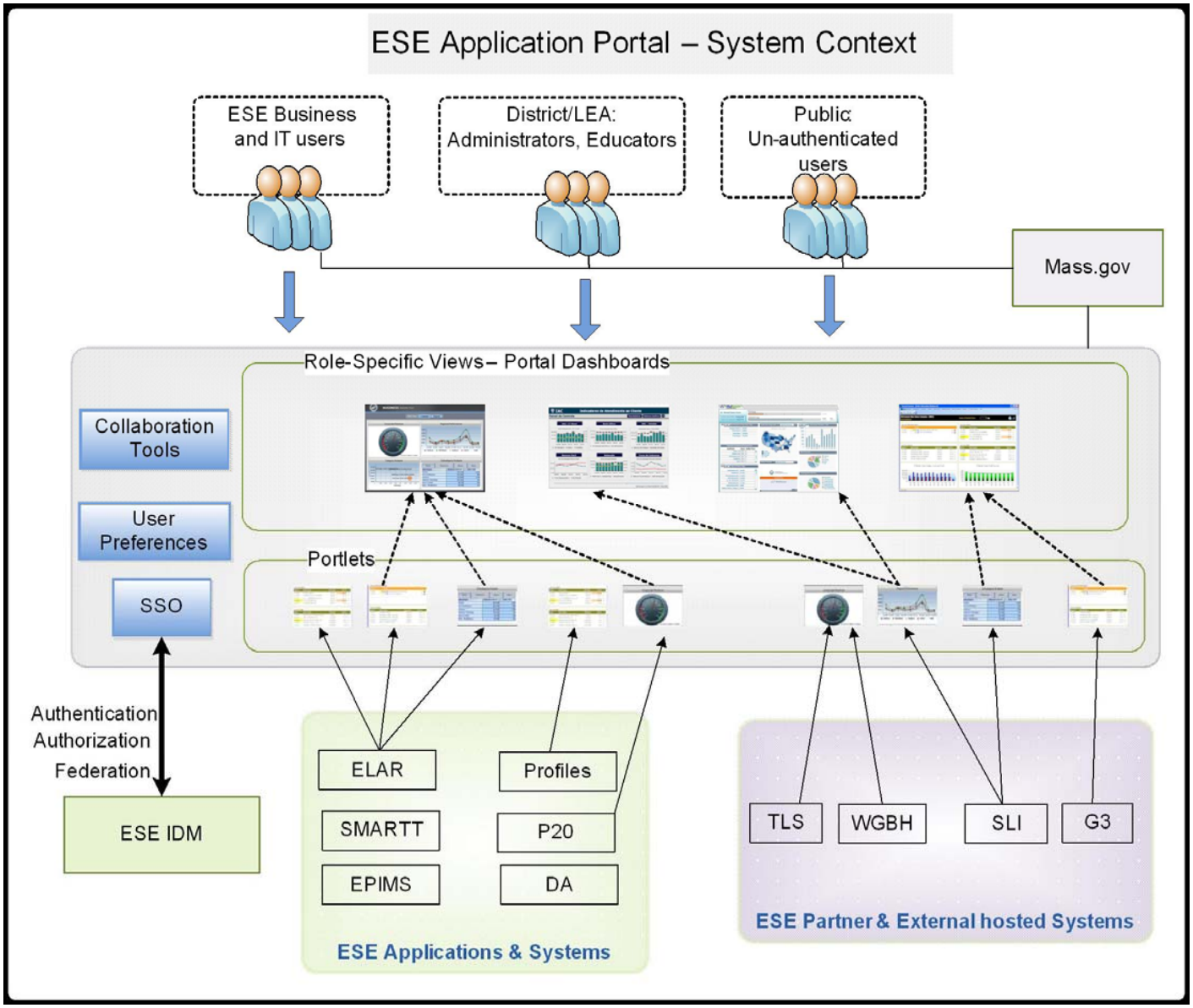
ESE Application Portal – System Context
ESE Business and IT users
District/LEA: Administrators, Educators
Public: Un-authenticated users
Mass.gov
Role-Specific Views– Portal Dashboards
Collaboration Tools
User Preferences
SSO
Portlets
Authentication
Authorization
Federation
ESE IDM
ELAR
SMARTT
EPIMS
Profiles
P20
DA
ESE Applications & Systems
TLS
WGBH
SLI
G3
ESE Partner & External hosted Systems

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D2.1 Presentation layer

The IIS is required to interoperate with ESE and SLI Portals to create a seamless user experience.

D2.1.1 Guiding Integration principles

- The IIS portal must be role-based and aware of authenticated user attributes from the EOE/ESE Identity Management System.
- The IIS UI interface must allow customization to have a seamless experience navigating between ISS and ESE portals.
- WSRP must be supported to expose the system functionality in the IIS Portal. If the portal is J2EE-based l, the Portlets available must be compliant with the JSR-286 specification.
- The IIS Portal UI interface must allow an administrator to pre-configure portal UI based on user role. The initial list of user roles is:
    - Student,
    - Educator (Teacher, Teacher Assistant etc.),
    - School-based Leaders (Principal, Department Chair, etc.)
    - District-Based Leaders (Superintendent, Curriculum Director)
    - Other LEA Administrators
    - SEA Users (ESE, EOE)
- The Portal UI interface must allow a user to further customize their view of the Portal UI.

D2.1.2 Integration Points

The following are integration points required between the IIS and ESE, SLI Portals:

- The IIS portal must have WSRP-based interface to expose ESE Portlets. ESE Portlets published must be available for display through WSRP.
- TLS Portlets must be available in ESE Portal through a WSRP-based interface.
- The IIS portal must be able to display dashboards and reports from the SLI portal through WSRP or iframe, as they are made available.

D2.2 Application Layer

API/Services of the IIS must enable application-level integration with ESE Systems and Partners like SLI. The interface must be standards based. Because the partner systems are evolving, the exact integration specifications are not know at this time, but the focus is on openness and availability of IIS functionality as API/services for SOA orchestration or building custom apps in SLI platform.

- Provide API / Web Services interfaces to enable integration with SLI, ESE applications
- System must be LTI (Learning Tools Interoperability) compatible including QTI/APIP.
- Federated Search – When searching for resources, the interface must be configuration-based to enable querying, consolidate search results from multiple sources (Massachusetts content partners such as WBGH and others).
- Ability to integrate with SIB through REST API for accessing assessment items and providing usage data. Integration with SIB REST API would involve configuration for Public key/Shared-secret authorization mechanism.

D 2.3 Data Layer

IIS components must be based on a common data architecture enabling best practices in data administration and management. The ESE data layer consists of both Oracle and MS SQL Server. In addition, Oracle ODI for ELT (Extract-Load-Transform) needs is the preferred tool in the Data Integration layer.

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D2.3.1 Integration points

Overall, the IIS must provide an interface that ensures ESE and LEAs the ownership of operational data and content (e.g. learning objects).

- Support for Data exchange in SIF or Ed-Fi formats
- Support for interoperability standards including SIF and mapping to the ESE Enterprise data model.
- IIS data layer integration should enable comprehensive integration with the P-20 data system both on-demand and batch mode.
- IIS Data layer based on Master Data Management principles.
- Data integration with Massachusetts ESE operational data store must allow for data movement in bi-directional mode with filtering capability (by time-period etc.).
- Data ingestion and validation tools that integrate with tools and processes in ESE data layer.
- Data integration with SLI data layer: core data store and any Massachusetts custom data store, as they are defined.

The IIS integration must provide the ability to move data seamlessly from LEAs into the IIS.

As described above, EOE/ESE will collect student, educator, and roster data from Massachusetts LEAs through SIF. This data will undergo validation at EOE, and then will move to the IIS through web services.

D2.4 Identity Management

Whether Student identity will be provisioned and managed at State level or LEA has not been determined. In either case, the following are the expectations from the IIS:

For users' logins and what they are authorized to do, the IIS solution must integrate with the federated identity management (IdM) solution that is being developed. The development is being facilitated by EOE as part of its RttT grant.

Specifically, the IIS solution must integrate by supporting role-based authentication and authorization using the SAML (Security Assertion Markup Language) protocol. Additionally, TLS must preferably support late binding or just-in-time provisioning that is based on data provided through SAML security tokens. The TLS in addition must support the following:

- SAML based Web-SSO user authentication
- User attributes for authorization though SAML
- ESE-assigned unique identifies such as the State Assigned Student Identifier (SASID) and the Massachusetts Education Personnel ID (MEPID) will be associated with user identities in the IIS for cross reference with ESE Systems.
- In addition to Role-based Access Control (RBAC) for access management, contextual attributes like organization role etc. need to be applied in authorization decisions.
- ESE IDM services will be the source for contextual attributes of user for authorization purposes.
- SAML based Identity Federation with ESE, ESE partners like SLI, WGBH, and PARCC.
- OAuth based authentication and authorization with SIB platform.
- TLS Identity System will do the necessary role/access mapping while interacting with SLI, SIB, and WGBH etc.

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D2.5 Content Integration

The potential systems and parties that may be involved in content integration are:

- One time harvesting/import of content from existing ESE legacy systems (VTCTS, MassOne/).
- Run-time/real-time content integration with various partner systems for digital content including, but not limited to: the Public Broadcasting Service (PBS) website, Boston PBS affiliate WGBH websites.
- Periodic Import of MCAS Data through Oracle ODI to receive data feeds for
  - Massachusetts Comprehensive Assessment System (MCAS) items
  - MCAS scores
- Integration with Shared Item Bank (SIB) for Items, Passages, Rubrics etc. through REST API in JavaScript Object Notation (JSON) format (QTI format for certain types).
- Integration for content tagging with metadata based on LRMI, Dublin Core etc.

IIS Integration with ESE partners must enable relevant IIS components to refer and utilize content seamlessly.

- The content players in the IIS must support various content types including Sharable Content Object Reference Model (SCORM) version 1.2 or above.
- Integration with Shared Item Bank (SIB) must provide REST APIs for accessing item repository.
- Integration with the SLI platform for Learning maps, LRMI and the Learning Registry, if available, through REST API.

D2.6 Metadata management

The IIS must be able to source metadata from external sources. The integration interface for metadata update must be both on-demand and in batch mode.

ESE provides Massachusetts State Curriculum standards and the IIS must be able to accept input file in XML format.
API/Interface to maintain metadata: Common core standards, LRMI, Dublin-Core etc.

Summary of Integration Requirements for IIS

Subscriptions must include at a minimum:

Presentation Layer

#	Deliverable	
P1	Role based portal in IIS for: • Educators (Teacher, Teaching Assistants etc.) • School-Based Leaders (Principal, Department Chair, etc.) • District-Based Leaders (Superintendent, Curriculum Director) • Other Administrators • ESE Agency Business Users	
P2	Integration with ESE Portal through WSRP 2.0 for the roles listed above in P1. • Portlets for Dashboard, Reports to be rendered in ESE Portal. • Portlets of interest for Educators, Administrators and State Agency users.	
P3	Integration with SLI Portal through WSRP 1.0 or 2.0 • Configuration of TLS as an application • UI customization for consistent look and feel in SLI portal • Educator dashboard	

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	• Display SLI Portlets for Learning Maps, Learning Registry. • List specific Portlets/information needed to display in SLI	
P4	IIS UI customized to match with ESE Portal UI giving a seamless experience. • Pre-configured portal UI and Portlets by user roles • Support for user specific customization of UI.	
P5	Authentication and Authorization of access based on user attributes and provided by ESE IDM.	
P6	Links to access various external systems • Special ED software to track IEP requirements • LEA specific HR systems to manage staff • LEA specific Professional Development System • LEA specific RTI process system used by Intervention Assistance Team	

Application Layer

A1	Configuration of Federated Search with ESE Content Partners • WGBH – Digital library • SIB for assessment items – possible future - value add	
A2	API/Web Services to provide usage data: • SLI items: Learning maps, Learning registry • SIB: Assessment items – possible future – value add	
A3	Integration with ESE Metadata source systems for • Massachusetts Curriculum standards	
A4	Integration with Shared Item Bank (SIB) for Items, Passages, Rubrics etc. through REST API in JSON format (QTI format for certain types) – value add. – possible future – value add	
A5	Interfaces with Purchasing system for requisition of resources and materials – possible future – value add	

E1.1 Data Layer

D1	Integration with SLI to provide TLS generated data • Interim Assessment results data • Feedback on usage of Learning maps	
D2	Integration with SLI to consume/utilize Learning maps and Learning Registry	
D3	Integration with ESE systems to receive the following data - possible future value add • Staff proficiencies • Staff competencies • Staff certifications	
D4	Integration with ESE systems to receive data related to Student, Staff, Course and Organization (data will be in SIF format but there is NO need for a SIF agent between IIS and ESE system) • Near real-time. • Batch mode - .csv file format – value added.	
D5	Integration using non-SIF loading process for SIS data - school district systems	

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D6	Import/export of assessment items in QTI format.	
D7	Integration with ESE Data Layer through Oracle ODI to receive data feeds for • MCAS items • MCAS scores	
D8	Integration with ESE systems to send IIS generated data • Interim Assessment results data • Learning outcomes	
D9	Integration with ESE and SIS District data systems to enable reporting of: • student discipline • attendance • medical alerts • and other attributes (7.1.2)	
D10	Integration with ESE data layer, providing a mapping between internal data elements and data elements defined by the Common Education Data Standards (CEDS) 2.0 initiative for data transfer.	

Identity Management

I1	SAML based Federated Web-SSO for user authentication with ESE IDM	
I2	User attributes for authorization (roles, contextual attributes like organization) through SAML	
I3	SAML based Identity Federation using ESE IDM identity with: • SLI • WGBH	
I4	OAuth based authentication and authorization with SIB platform (value add).	
I5	Cross reference using ESE assigned unique identifiers (SASID, MEPID) with TLS managed user identity system.	
I6	Access management will be based on RBAC model along with contextual attributes for authorization.	
I7	Extend access management with necessary role/access mapping to • SLI • WGBH • SIB (value add)	

Content Integration

C1	One time import of content from ESE legacy content systems: • VTCTS • MassOne	
C2	Integration with WGBH digital library for content browse and search	
C3	Metadata tagging and sharing of content based on LRMI standards and using the Learning Registry	
C4	Integration with SIB for accessing item repository – value added.	
C5	Integration with Library Information Systems for access to resources aligned to standards or curricular content	
C6	Integration with state Learning Management System (LMS): • Ability to link to online Training/Professional Development content residing on LMS	

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C7	Necessary integration for playing various content format types including SCORM 1.2 or above.	

E. System Security

Security Audit

The Contractor's IIS solution (including software and hardware architecture) must be subjected to an "Internet Connection Security Assessment" to be performed by a 3rd party to ensure data security requirements are met. An audit is required for the initial implementation and also for following any major software updates that affect the communication process. This requirement applies to changes in software and could also apply to other components of the solution such as involved firewalls, architecture, hardware etc. A security audit may also be conducted at the request of ESE/EOE.

This audit must consist of at least a two-tiered penetration test. The first tier is an "eyes-shut" approach and the second tier being an "eyes-open" approach. The "eyes-shut" phase will consist of the 3rd party receiving no extraneous data or information except for a list of target external IP addresses (used to confirm scope) given to them by the awarded vendor.

The "eyes-open" phase consists of the 3rd party taking the perspective of an authorized user attempting to circumvent controls through the firewall(s).

A report must be generated by the 3rd party and provided to both the IIS Contractor and the EOE. Any vulnerability discovered will be jointly assessed by the Contractor and the EOE to determine the appropriate remediation path.

The vendor must provide EOE with an annual, event driven control report that identifies the number of attempts, if any, and the number of breeches of security.

Upon completion of any remediation a final audit will be performed by the same 3rd party vendor to ensure the identified vulnerabilities are resolved. The audit is expected to take approximately 2 weeks. The audit(s) and any necessary remediation must be satisfactorily completed prior to any student data being uploaded.

The Contractor may engage a 3rd party to perform the audit. The expense for this audit will be covered by EOE.

Security Management

The Contractor must provide system and data security, as well as physical security at the operations site(s).

The Security Management function must include, at a minimum:

a. Confidentiality of Data and Information;
b. Site Security; and
c. System Security.

- All IIS components must comply with the conditions defined in Massachusetts Executive Order 504 http://www.mass.gov/governor/legislationeexecorder/executiveorder/executive-order-no-504.html

- The Contractor must provide security of student data to conform to HIPPA and FERPA requirements as interpreted by EOE and its agencies.

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- Web applications should require SSL certificates so all traffic between the user's web browser and the web server is encrypted for secured functions.
- There must be at least a logical separation of networks between the web servers, applications servers and database servers.
- A firewall, either hardware or software based, must be put in place between the logical (or physical if chosen) networks restricting traffic to only those ports necessary for application and database communications.
- Administration tools to support applications must be password protected and have multiple levels of granularity for security role assignment if there are multiple levels of resources to protect.

The Contactor must assume total financial liability if a breach occurs due to the neglect of a person or persons employed by the Contractor or its subcontractor(s) in any of the areas of responsibilities referenced in this section. The Contractor must also assume total fiscal liability if the system is breached by an outside party. The Contractor will save and hold the State harmless.

If a security breach occurs, the Contractor must immediately notify the State of the nature and content of the breach. The Contractor must comply with all State and federal regulations, to immediately rectify the breach. If the breach involves disclosure of personally identifiable information, the Contractor must provide, at no cost to the State, a free credit report and credit protection services for one year from the date of the breach to all persons involved.

Confidentiality of Data and Information

All financial, statistical, personal, technical data and information related to the Massachusetts IIS, including all student and educational records and teacher information, which are deemed confidential by the State and made available to the Contractor in order to carry out this Contract, must be protected from unauthorized use and disclosure by the Contractor.

Information and data should be treated as confidential if it includes any proprietary documentation, materials, flow charts, codes, software, computer instructions, techniques, models, information, diagrams, know-how, trade secrets, data, business records, or marketing information. The Contractor also must treat as confidential materials including but not limited to police and investigative records, files containing personally identifiable information or records expressly excluded by Massachusetts law MGL 93H from public records disclosure requirements described in this link: (http://www.malegislature.gov/Laws/GeneralLaws/PartI/TitleXV/Chapter93h)

The Contractor's obligation to maintain the confidentiality of the information will not apply where such: (1) information was already in the Contractor's possession before disclosure by the State, and such was received by the Contractor without obligation of confidence; (2) is independently developed by the Contractor not by the State; (3) is or becomes publicly available without breach of this Contract; (4) is rightfully received by the Contractor from a third party without an obligation of confidence; (5) is disclosed by the Contractor with the written consent of the State; or (6) is released in accordance with a valid order of a court or governmental agency, provided that the Contractor (a) notifies the State of such order immediately upon receipt of the order and (b) makes a reasonable effort to obtain a protective order from the issuing court or agency limiting disclosure and use of the Confidential Information solely for the purposes intended to be served by the original order of production.

Minimum Requirements: The Contractor must meet the following:

a. The Contractor agrees not to disclose any Confidential Information;
b. The Contractor will restrict circulation of Confidential Information within its organization to allow individuals that have a need to know the Confidential Information;
c. The Contractor will be liable for the disclosure of information whether the disclosure is intentional, negligent, or accidental, unless otherwise specified by the State;

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d. The Contractor will not incorporate any portion of any Confidential Information into any work or product, other than a Deliverable, and will have no proprietary interest in any of the Confidential Information;
e. The Contractor will have all of its employees, who have access to any Confidential Information, sign all confidentiality agreements required by the State;
f. The Contractor will return all originals of any Confidential Information and destroy any copies it has made on termination or expiration of this Contract; and
g. The Contractor may disclose Confidential Information to its subcontractors on a need-to-know basis, but the subcontractor will also be obligated to the requirements of this section.

Site Security

The Contractor must provide physical site security at the operational facility. A walk-through at the site may be conducted by State staff, to ensure that the Contractor has met this requirement.

The Contractor must make every effort to protect the operational facility from damage by accident, theft, malicious intent, fire, loss of utilities, environmental hazards such as flood and tornados, vandalism, and unauthorized access.

Minimum Requirements: The Contractor must meet the following:

a. The Contractor must provide a secure facility and access to work areas must be limited to persons with proper security levels via key card or other approved security access methods;
b. Upon termination of employees, the Contractor must inactivate key card or other security access devices;
c. The Contractor must maintain an access log of persons entering and exiting the operational facility, any backup facility, and any additional facility associated with the Contract;
d. All visitors to the facility must be required to register at a designated area;
e. The Contractor must make access logs available for inspection by the State; and
f. The Contractor must notify EOE staff of all phone calls, correspondence, and contact with people threatening physical harm to EOE, School District staff or the Contractor personnel or property within one (1) business hour of occurrence.

System Security

The Contractor must provide internal system and data security procedures designed to ensure confidentiality of data and to protect against computer viruses and other security threats, such as hackers.

Minimum Requirements: The Contractor or its proposed system must meet the following:

a. Transmitted data must be protected by State-approved encryption or other appropriate measures;
b. The system must contain a security level for restricting individuals' access only to information and processes related to job and duties;
c. The system must limit logins for information to three failed attempts;
d. The system must encrypt passwords to prevent system administrators from discovering them;
e. Reactivation of a password must utilize defined security controls;
f. The system must inactivate user profiles of terminated staff immediately;
g. The system must require reauthorization when a timeout takes place
h. The system must require password changes every 180 days;
i. The system must require that strong passwords for information systems be a minimum of eight alpha-numeric characters, which include special characters plus at least one capital letter

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j. The Contractor must provide a copy of the security reviews to the State, along with any findings and recommendations;
k. Based on the findings and recommendations and with approval from the State, the Contractor must take the appropriate steps to improve security processes and procedures including but not limited to, technological upgrades; and
l. The Contractor must notify EOE, through email or written transmission, of any suspicious or fraudulent activity associated with the IIS.

F. Subscription Services

Customer Support Services

The Contractor must provide customer support to all authorized users of the IIS, including authorized staff working with the SEA. Customer Support must be provided on all topics and functions relating to the IIS.

Customer inquiries must be handled in a professional manner with timely, accurate and comprehensive resolutions. All Customer support services must be provided within the Continental United States and will retain responsibility for all related inquiries.

The Contractor must employ state-of-the-art equipment to ensure that customer service functions are performed efficiently and effectively while adhering to established SLA performance standards.

Minimum Requirements: The Contractor must:

a. Provide customer support via telephone, email, and instant messaging (online chat);
b. Provide toll free numbers for direct customer service access;
c. Receive and respond to calls on all business days from 7:00 a.m. to 5:00 p.m. Eastern Time. Coverage may be extended as needed;
d. Provide contact information for escalating after-hours support issues in case of emergencies;
e. Ensure average hold time is 2 minutes or less;
f. Research, resolve and respond to inquiries and requests for assistance within one business day or in accordance with the SLA;
g. Notify the State immediately of a call center outage
h. Implement and maintain a system for tracking and reporting inquiries received via email, online chat/instant messaging and telephone, including, but not limited to:
    - Incoming calls, faxes or emails;
    - Outgoing calls, faxes or emails;
    - Incoming call hold time;
    - Inquiry category;
    - Inquiry resolution to include how inquiries were addressed and resolved;
    - Closure and follow-up on customer inquiries that cannot be satisfied immediately and require additional research; and
    - Track call patterns for individuals and counties.

i. Provide State staff with complete and direct access to the Contractor's helpdesk issue tracking system and data pertaining to services provided including issues, problem management, resolution, SLA component and reporting tools;
j. The Vendor will negotiate a 'no resolution' time frame for escalating an issue to the next level';
k. Strictly adhere to all confidentiality rules; and
l. Provide Call Tracking to include:
    - Call tracking software;

- State staff access to call tracking reports;
- The ability to monitor calls for quality assurance purposes; and
- The ability to capture inbound call statistics.

Website

Minimum Requirements: the Contractor's system must:

a. Provide secure access to the web servers
b. Provide access to training aids such as webinars, and e-documentation to Superintendents, Principals and Teachers
c. Ensure secure login access and password features through the product or single sign-on integration
d. Provide information, such as:
    - Relevant frequently asked questions, that are updated as needed to reflect the Massachusetts implementation;
    - How to update personal information;
    - How to request history of transactions; and
e. Display alerts on homepage, as appropriate (for routine IT maintenance announcements, planned outages, etc.).

Accessibility

The IIS and all components must comply with the most recent federal accessibility standards.

Software cannot be implemented until it fully meets federal accessibility standards. In the event that federal accessibility standards are updated, the IIS must be updated immediately to reflect these changes and to ensure ongoing compliance with the revised accessibility standards.

Data Management Functions

The Contractor must establish policies and procedures, to process and manage all data files generated, transmitted and received by the Contractor.

Applications must support the following standards for data and data exchange, if the types of data and interfaces covered by these standards are used and stored by the application. The Contractor may expect to interface with the following EOE files and protocols:

- SIF
- CEDS 2.0
- PESC
- Massachusetts Curriculum Frameworks (CCS plus Massachusetts state standards)
- IMS-QTI

Minimum Requirements: The Contractor must:

a. Provide recoverability of all data files. Recoverability must be ensured in the event that files are deleted, corrupted, or a file is incorrectly transmitted or received, by performing backups (Time frames for recoverability to be determined by the State.)
b. Ensure security and data integrity of all data files during an electronic transfer. The Contractor must support SFTP or an equivalent approach to transfer files.
c. Provide data in required standards listed above. EOE expects applications to support the bulleted list of standards listed in the above paragraph and the Contractor is required to interface with EOE systems and files utilizing the standards and protocols listed in the same bulleted list above.
d. Ensure security of all data files, by keeping the files safe from corruption, providing controlled access to data files and using encryption whenever appropriate;

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e. Ensure timely processing, by providing updates to system interfaces with new and changed information within required timeframes to be determined by the State
f. Ensure timely processing, by implementing automated quality assurance standards, to validate the transfer data and discover inconsistencies and other anomalies of the data files;
g. Provide technical support, 5 days a week from 7 a.m. to 6 p.m. Eastern Time to answer calls and make immediate decisions regarding production issues;
h. Retain all data files according to the agreed upon standards and schedules;
    - Student state assessment results must be immediately available throughout the time that the student is enrolled in the LEA.
    - Student interim and formative assessment results must be immediately available for the current school year and one previous year.
    - Student work stored in the system must be immediately available for the current school year.
    - Active curriculum resources, including lesson plans, instructional resources, and assessments and assessment items, must be immediately available for three years from the last use.
    - Standards-related data must be immediately available while it is active, and for 1-3 years after it is no longer active.
    - Metadata associated with curriculum resources, including instructional resources, assessments, and assessment items, must be immediately available for as long as they are associated to an active standard.
i. Define an escalation plan to establish corrective actions and resolution of data transfer errors. The plan must include:
    1. Names and contact information for production control personnel,
    2. Notification of an EOE systems administrator when a predetermined threshold of errors has occurred during a batch or real time data transfer,
    3. Documentation defining the file transfer procedure and indicating actions to be taken when errors are found, and
    4. The file transfer schedule.
k. Provide a routine batch processing report to EOE, to ensure the complete and accurate transfer of data during batch processing. The batch processing report must include, at a minimum, the following:

    1. A Summary Report by file transmission that provides a confirmation for the processing of the batch file(s);
    2. Summary verification data, including the total number of records received in the batch;
    3. The number of records by record type such as number of added, changed, and deleted records;
    4. A summary of the transmission processing including number of records accepted and number of records rejected; and
    5. A detailed listing of records rejected by a unique identifier, (UUID) accompanied by a reason code and an explanation why the record was rejected.
l. Define data mapping from EOE interface files to where the data will reside in the corresponding solution, and provide complete documentation of the field definitions and field layouts to EOE;
m. Provide an electronic copy of the provider database of appropriate data to EOE monthly or upon request.

Business Continuity

The system must have back-up and recovery mechanisms in the event of system failure, file corruption, or any unexpected event that makes it necessary to reprocess data. The Contractor must develop and maintain a Business Continuity Plan in conformance with the Federal Emergency

Management Agency's Emergency Management Guide for Business and Industry. The contents can be found at http://www.fema.gov/pdf/business/guide/bizindst.pdf.

Develop Business Continuity Plan

The Contractor must finalize the Business Continuity Plan submitted with its proposal to create a consistent, coherent management plan of action to guide the Business Continuity activities of the project. The Business Continuity Plan is subject to final approval by the State. The plan should include detail sufficient to give the State an understanding of how the Offeror's knowledge and approach will:

a. Manage Business Continuity using Risk and Threat Level;
b. Guide Business Continuity decisions;
c. Document planning assumptions and decision tree for Plan implementation and execution;
d. Facilitate communication among stakeholders;
e. Define key management review as to Business Continuity, control and resolution;
f. Define critical business functions and supporting tasks/staff;
g. Define the process for reporting business disruption/failure;
h. Define transitions from failure to continuity;
i. Define alternative processing sites;
j. Provide a baseline for progress measurement and control;
k. Define how the Disaster Recovery Plan will be used to recover the production system; and
l. Identify the recovery site in which Production will continue.

Minimum Requirements: The Business Continuity Plan must describe at a minimum the following:

a. Personnel staffing;
b. Recovery of information (hard copy and electronic);
c. Contractor provided telecommunications services and equipment;
d. Information systems hardware and software;
e. Utilities;
f. Facilities;
g. Furnishings;
h. Equipment required to provide services;
i. Identification and prioritizing all business functions;
j. Documented policies and procedures for all business functions;
k. Contact list with the assignment of responsibilities for items in recovery plan;
l. Schedule and timeframes for restoring operations;
m. Processes to ensure liquidity and cash flow necessary to provide day to day operations;
n. Clause in all agreements and contracts with third parties to require a business continuity plan; and
o. Emergency procurement of services and equipment.

The activities that will trigger activation of the Business Continuity Plan include, but are not limited to, the following:

a. Problem that threatens continuity of services for operations;
b. The need to protect assets;
c. The need to restore critical business processes;
d. The need to reduce the length of interruption of business; and
e. The need to maintain customer service.

The Contractor must update the Business Continuity Plan, yearly or as requested.

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All updates to the Business Continuity Plan must be completed and submitted to the State for approval within 30 days of identifying a change to the Risk and Threat Assessments.

Test Business Continuity Plan

The Contractor must conduct annual testing of the Business Continuity Plan and its procedures unless additional testing is required. The annual test exercise must follow the logical business flow and include all processes normally conducted during daily and routine operations. The first annual test must be performed within 6 months of the "go live" implementation; the "go live" implementation date will be considered to be the date when the first LEA goes live with the IIS in production. The results for Business Continuity Plan test must be presented to EOE for approval. If the Contractor fails a test, the Contractor may be required to retest all or part of the procedures within a reasonable period of time.

Minimum Requirements: The Contractor must:

a. Notify the State to participate and monitor the testing;
b. Take action to correct all incidents discovered during the test;
c. Conduct a retest to ensure all incidents have been corrected;
d. Submit a written report to the State within 30 days after the annual test is compete that describes the following:
    - Procedures used to conduct the test;
    - Results of test;
    - Incidents identified; and
    - Corrective actions taken to resolve deficiencies.
e. Incorporate results (lessons learned) from the annual test exercises as updates to the Business Continuity Plan.

Disaster Recovery

The system must have back-up and recovery mechanisms in the event of system failure, file corruption, or any unexpected event that makes it necessary to reprocess data. It must also have and support a Disaster Recovery Plan.

The Disaster Recovery Function must focus on the following areas of responsibility:

a. Develop Disaster Recovery Plan
b. Test Disaster Recovery Plan

Develop Disaster Recovery Plan

The Contractor must finalize the Disaster Recovery Plan, within the timeframe established in the project plan. The Disaster Recovery Plan is subject to final approval by the State.

The Contractor must:

a. Manage Disaster Recovery;
b. Guide Disaster Recovery decisions;
c. Document the planning assumptions and decision tree for the Disaster Recovery Plan implementation and execution;
d. Facilitate communication among stakeholders;
e. Define key management review as to Disaster Recovery, control and resolution;
f. Define the process for reporting system disruption/failure;
g. Define transitions from failure to system re-start
h. Define alternative processing sites;
i. Provide a baseline for progress measurement and control;

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j. Define how the production system (to include application code, non-OS related production software, data, and network connectivity) will be recovered; and
k. Supply a backup plan identifying how the application code and data is to be backed up and, if needed, recovered for normal business operations.

Minimum Requirements: The plan must include

a. Names and instructions for reaching Contract personnel responsible for Disaster Recovery;
b. Length of time files will be maintained;
c. Offsite storage and recovery arrangements;
d. Identify necessary support equipment to recover information systems and business processes;
e. The Contractor must backup daily and archive data on a frequent basis without override of the previous day's data;
f. The Contractor must provide data resolution processes that ensure full system functionality within the shortest possible timeframes, in the event of system failure;
g. In the event of system failure, the Contractor must continue with normal operations and timeframes previously stated in the Disaster Recovery Plan section;
h. The Contractor must guarantee file retrieval; and
i. The Contractor must provide a timetable for regular performance of fire/tornado or other type disaster drills.

The activities that will trigger activation of the Plan include, but are not limited to, the following:

a. The need to save lives and reduce chances of further injuries/deaths;
b. The need to evacuate, provide shelter, or relocate;
c. The need to protect assets;
d. The need to restore critical business processes and systems; and
e. The need to reduce interruption of business.

The Contractor must update the Disaster Recovery Plan yearly or as requested.

All updates to the Disaster Recovery Plan must be completed and submitted to EOE for approval within 30 days of implementing a change to the core processes.

Test Disaster Recovery Plan

The Contractor must conduct annual testing of the Plan and its procedures unless additional testing is required. The annual test exercise must follow the logical business flow and include all processes normally conducted during daily operations. The first annual test must be performed at a mutually agreeable time.

The Contractor must conduct, at a minimum, with EOE approved frequency and participation, a test of the Disaster Recovery procedures. For Disaster Recovery, the Contractor must test the procedures for each level of severity. The results for Disaster Recovery test must be presented to EOE for approval. If the Contractor fails a test, the Contractor may be required to retest all or part of the procedures within a reasonable period of time.

Minimum Requirements: The Contractor must:

a. Notify the State to participate and monitor the testing;
b. Take action to correct all incidents discovered during the test within the testing period;
c. Conduct a re-test to ensure all incidents have been corrected within the testing period;
d. Submit a written report to the State within 30 days after the annual test is complete that describes the following:
    - Procedures used to conduct the test;

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- Results of test;
- Incidents identified; and
- Corrective actions taken to resolve deficiencies.

e. Incorporate results (lessons learned) from the annual test exercises as updates to the Disaster Recovery Plan; and
f. Participate in Disaster Recovery Testing activities at the request of the State.

Maintenance and Enhancements,

Throughout the term of the contract Contractor must maintain the IIS to ensure its ongoing level of function. This will include modifications necessary to the software to ensure compatibility with new releases of software that are utilized by the IIS. Contractor must also make modifications necessary to ensure compatibility of the IIS with the next generation(s) of electronic devices that utilize the IIS.

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Supplement 4

Ohio Specific Requirements

SUPPLEMENT FOUR
OHIO SPECIFIC REQUIREMENTS

A. Current State and General Information

- Ohio currently utilizes a regional support model for most statewide technology related initiatives. There are 23 authorized Information Technology Centers (ITCs) that make up the Ohio Education Computer Network (OECN). The ITCs provide state EMIS reporting and operate various Student Information Systems (SIS) for LEAs that they serve. There are two independent school districts, Akron and Columbus, who act as their own ITC and report directly to ODE. There are at total of 23 different SIS in use throughout Ohio. Each ITC supports one or more SIS. The majority of the students in Ohio, approximately 87% are covered by the Data Analysis for Student Learning (DASL), Pearson PowerSchool, Infinite Campus, and Sunguard eSchool Plus. Each LEA in Ohio reports their EMIS data through an ITC Zone Integration Server (ZIS) utilizing the Ohio SIF infrastructure. ODE anticipates leveraging this infrastructure whenever possible, as well as providing a non-SIF interface alternative.

- There are 55 authorized Educational Service Centers (ESCs) in the state. One of their purposes is to provide services to improve student learning and enhance the quality of instruction to the LEAs they serve. Ohio's State Support System includes 16 state support teams (SSTs) that use a connected set of tools to improve instructional practice and student performance. The exact role of the ESCs and SSTs in the IIS implementation will be finalized during the project pre-planning phase.

  User Community:

User Group	Approximate Count
Information Technology Centers (ITC)	23
Independent School Districts (ISD)	2
Public School Districts, Community Schools (acting as Districts), Joint Vocational School Districts, Educational Service Centers	1,100
Public Schools	3,759

- Most common relationships among education entities:

  - Schools report to Districts;
  - Community Schools act as their own District;
  - Districts, Community Schools, Joint Vocational Schools and Districts, and Educational Service Centers receive various technical services and assistance through an ITC or ISD; and
  - ISDs are large Districts that have enough resources to act as their own ITC.

- Currently, ITCs provide Tier 1 technical assistance on some systems and processes on an ongoing basis. Funding for this support is subsidized by ODE for certain state systems. Other support is funded by the LEAs who utilize the service.

Race to the Top Participation

Of the 613 traditional public districts, 353 community schools, and 1 STEM school in Ohio, 468 are RttT participating LEAs (297 traditional, 170 community schools, and 1 STEM school). As of the October 2011 headcount, these LEAs account for approximately 1,000,000 of the Ohio Average Daily Membership (ADM). 187 of the RttT LEAs indicated intent to purchase the State IIS in their Year 2 Scope of Work. These LEAs account for approximately 300,000 ADM. ODE anticipates that the number of LEAs participating in the State IIS will increase as LEAs complete the GAP Analysis, comparing their current system(s) to the minimum requirements of a qualifying LEA IIS. The actual initial number of participating RttT LEAs will be determined by December 2012 when all RttT LEAs are required to provide official participation intent.

There have been requests from non-RttT LEAs to participate in the State IIS as well. These LEAs will be added after implementation of all interested RttT LEAs.

Ohio Supportive Learning Profile System (OSLPS)

The OSLPS was developed to enhance the capacity for LEAs to review non-academic barriers to learning as a part of the Ohio Improvement Process (OIP). The OSLPS provides a sustainable and confidential student survey tool to support the data collection, analysis, application and reporting of non-academic barriers (i.e., school climate, health risk, parent/family engagement and protective factors) that impact student learning/achievement within the district and school building. The data collected will be used by districts and schools to comprehensively plan, implement and evaluate policies, programs and services that address the needs of the whole student and increase staff awareness. Ultimately, through the use of such data, academic and non-academic outcomes can be improved yielding overall school and student improvement.

The OSLPS was developed and is being hosted by a third party.

Eye of Integration

The Eye of Integration will be designed to be a web-based, interactive tool to help connect different disciplines with universal skills and the real world in a meaningful way. This application is currently in the planning stages. The goal is to connect topics, questions, projects, investigations, and authentic experiences to provide depth, relevancy and interest for both teachers and students.

Performance Based Assessments

ODE has contracted with Measured Progress in the development of performance based assessments for use in Ohio classrooms. Those assessments will be piloted through the use of their software tool, Task Stream. The resulting assessments must be available to the users of the IIS.

Shared Learning Infrastructure (SLI)

Ohio is not one of the currently identified states for either Phase 1 or Phase 2 of the Shared Learning Collaborative (SLC) SLI project; however, there is great interest in the state regarding this initiative. ODE is working closely with states who are participating as first adopters in order to follow the progress and ascertain the feasibility of Ohio joining the initiative in a future phase.

B. Statewide Implementation Strategy and Timeline

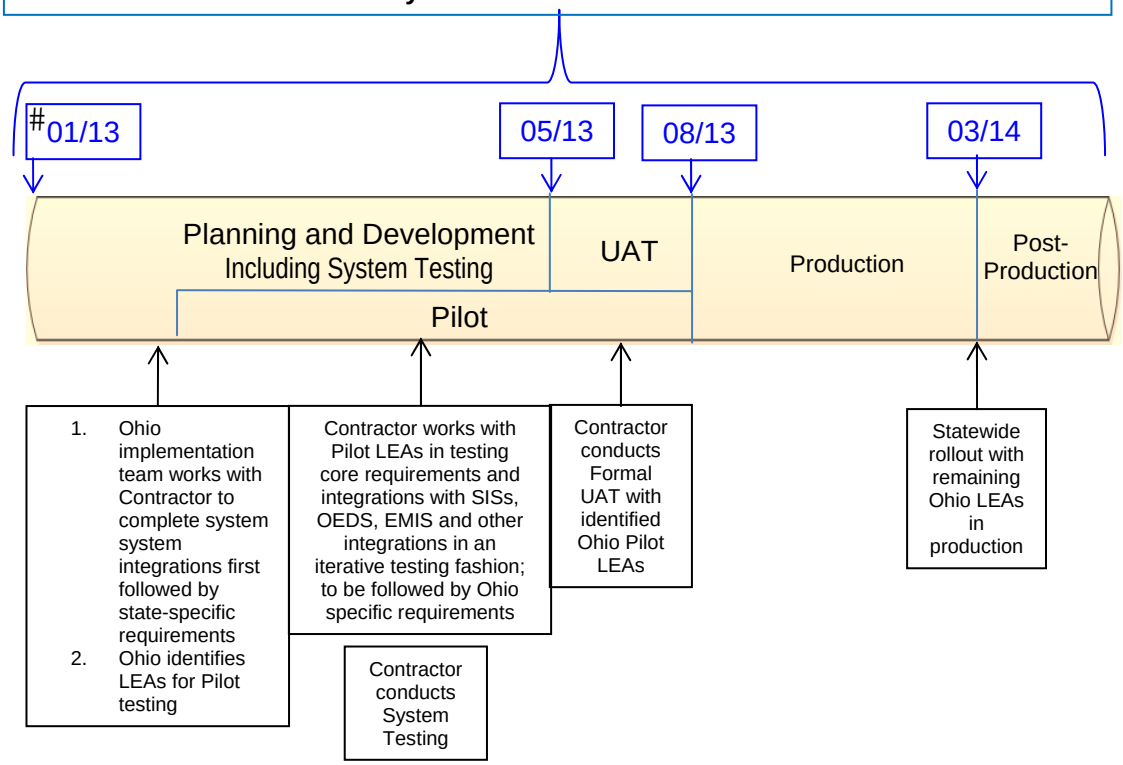
The Contractor is required to implement state specific requirements for data load, integration, final statewide deployment, training, hosting and support, and maintenance and enhancements.

Strategy

Details of the Ohio Specific implementation can be found in the diagram on the next page.

OHIO SPECIFIC IMPLEMENTATION

Ohio works with the Contractor for development and implementation of state-specific requirements and integrations. LEAs will participate in UAT testing. In the Post-Production phase, Ohio will institute subscription fees based the number of students that will use the IIS system in Ohio.



ODE would like to focus on rapidly integrating the vendor's software with LEA data, and piloting the core version of the software with selected Ohio LEAs. As such we anticipate that the development effort for the Ohio system will begin with integration with the four major SIS in addition to ODE systems (OEDS and EMIS) as appropriate to allow for early use by a minimum of 12 pilot LEAs.

The delivery of Ohio-specific functional requirements can be achieved in an iterative fashion to pilot LEAs. In addition, the integration method for the remaining SIS in use in Ohio will need to be developed during the pilot phase.

Ohio has made a large investment in its Schools Interoperability Framework (SIF) infrastructure which currently utilizes a vertical SIF implementation. ODE will leverage this infrastructure where possible; however, ODE is open to a non-SIF implementation if it is most beneficial to the LEAs.

Training and documentation will be required throughout the Pilot and statewide rollout.

Implementation timeline

Once the fully functional (including Ohio specific functionality), integrated software has passed UAT, we will conduct a phased-in implementation to the remaining interested RttT LEAs. Statewide rollout of RttT LEAs must be completed by March of 2014.

The final number of participating RttT LEAs will be determined by the Statement of Intent responses, anticipated to be received by November 2012.

Following RttT LEA rollout, interested non-RttT LEAs may purchase the Ohio IIS through direct contract with the Contractor at the same subscription price as the RttT LEA fee. Following implementation and for all future years

covered by this procurement, the subscription fee will be calculated using both RttT and non-RttT participating LEAs.

Accessibility

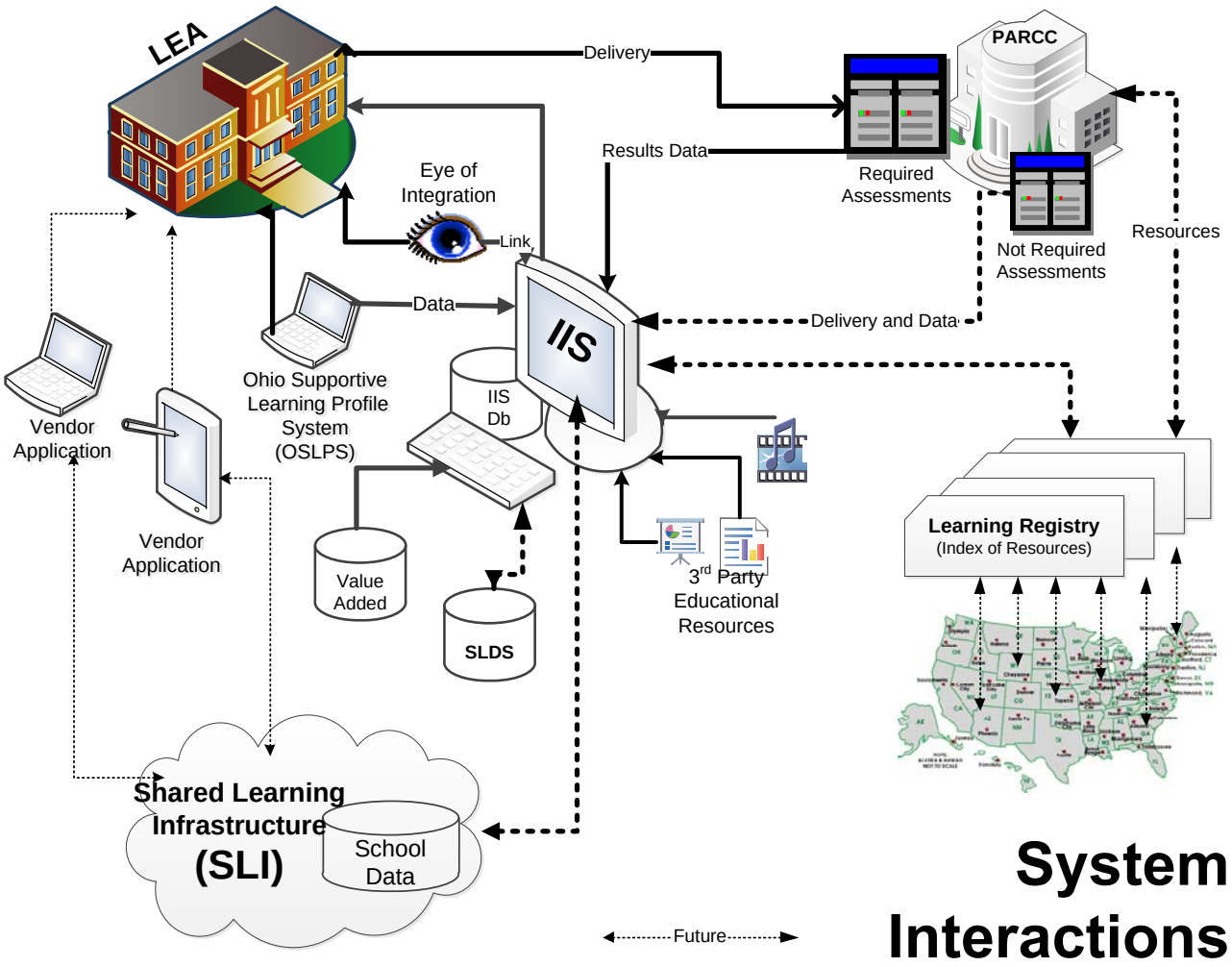
Web-based software and content must comply with the State of Ohio accessibility standards. Ohio accessibility standards can be found

http://das.ohio.gov/LinkClick.aspx?fileticket=99cw1kez4Hc%3d&tabid=107

Software cannot pass UAT or be implemented until it fully meets Ohio accessibility standards.

C. System Integration

The expectation is that the IIS has comprehensive integration features that enable interfacing with external systems based on industry standards, both technical and domain. The diagram below demonstrates Ohio's vision for current and future integrations with the State IIS.



Integration with Existing State Systems

IIS implementation options in Ohio will determine the priority and need of integration requirements. ODE anticipates that the Contractor will integrate with current systems to access current data elements, validation codes, and other reference information from existing systems, such as the Ohio Educational Directory System (OEDS), or Educational Management Information System (EMIS).

OEDS is the official location of all organizational data used by ODE. An Internal Retrieval Number (IRN) is assigned to each organization and is used as the primary identifier or key for each organization in the OEDS database. The organizations in OEDS consist of all organizations with which ODE does business, including community schools and traditional public schools and districts. It includes each LEA with their hierarchical links, as well as location address. In addition, key personnel information, including building principals, district superintendents and treasurers is maintained in OEDS. This data is updated by appropriate district personnel.

OEDS data will be made available to the IIS via a web service. EMIS reference data, which is updated annually, will be made available after such updates via an agreed-upon format.

EMIS is the official system for LEA reporting to ODE. This system contains all validation and reference codes that are currently used for submission to the state. ODE anticipates that the Contractor will utilize these same validation and reference codes in the IIS as appropriate. These codes are available in the EMIS Manual on the ODE website.

Appropriate LEA data collected via EMIS is stored in the P-20 Statewide Longitudinal Data System (SLDS). There are no immediate plans to integrate with the SLDS; however, the possibility exists that future integration would be beneficial to IIS participants.

ODE has contracted with Measured Progress in the development and pilot of performance based assessments for use in Ohio classrooms. Measured Progress will develop the learning and assessment tasks and has subcontracted with Task Stream to place the learning and assessment tasks online.

Ohio maintains the Academic Content Standards (ACS) database and web-based application. This Oracle database is housed in the ODE data system, and is the official source of record for Ohio's academic content standards and model curriculum. The Contractor must cache the data for local use in the IIS. For initial implementation, the existing data will be made available at the Contractor's request in an agreed-upon format. During integration, a method for synching the IIS cache on a scheduled basis will need to be developed. The cache refresh can be completed via a web service or other agreed upon method of data movement.

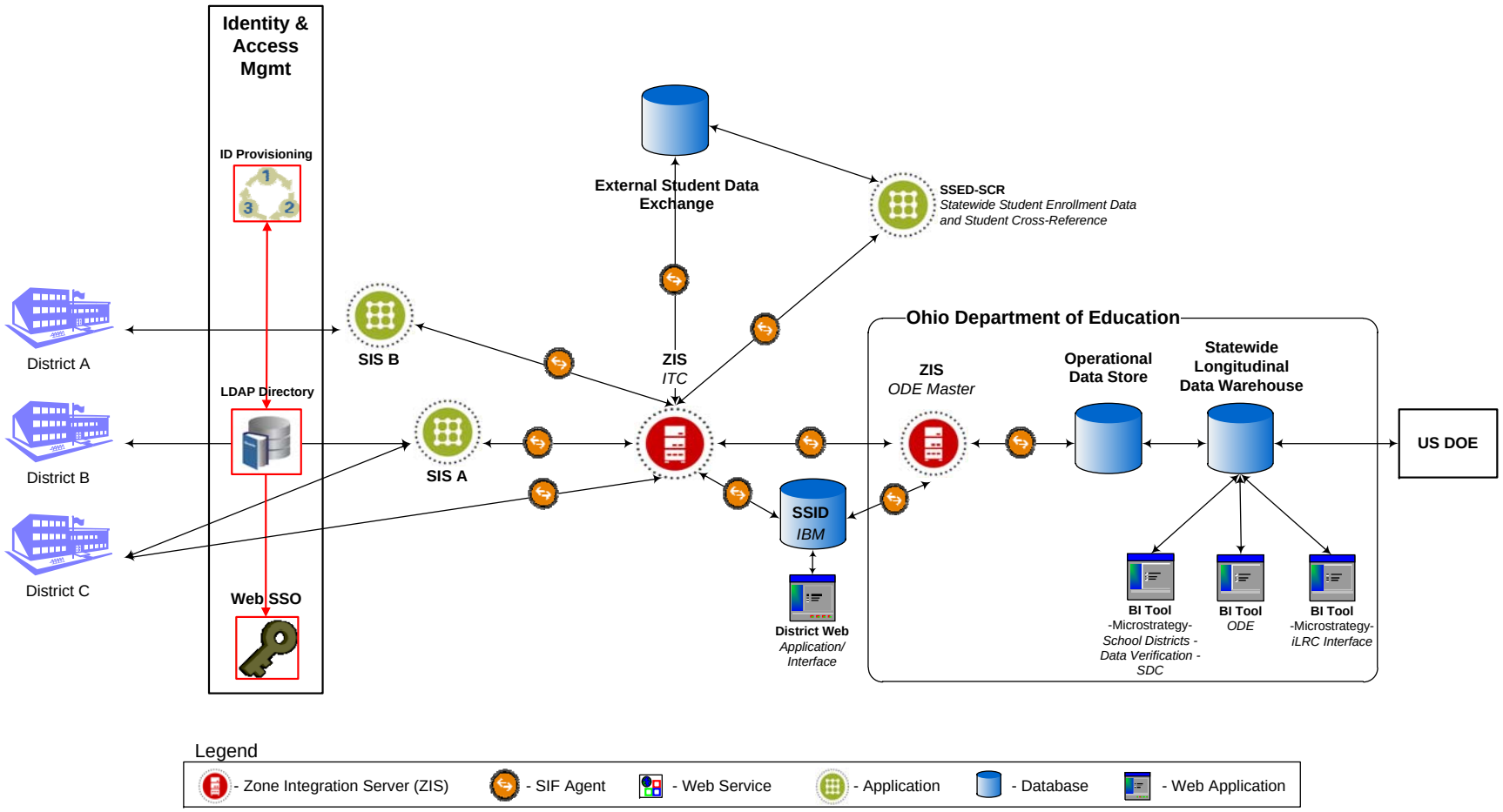
ODE has contracted with the American Institute of Research (AIR) for the development and hosting of the Ohio Supportive Learning Profile System (OSLPS). Aggregate survey response data at the building or district level will be made available to the IIS via a web service. The Contractor must cache the data for local use in the IIS. During integration, a method for synching the IIS cache on a scheduled basis will need to be developed. The cache refresh can be completed via a web service or other agreed upon method of data movement.

Integration with Ohio LEA systems

ODE anticipates leveraging its current SIF infrastructure whenever possible. If the Contractor utilizes the current SIF infrastructure, there will be a need for a non-SIF interface alternative due to the fact that there are Ohio LEAs who do not currently utilize SIF to move their data to the Data Collector. The EMIS Manual can be located on the ODE website (www.education.ohio.gov) by searching for *EMIS Manual*. Along with data validation and reference codes, this manual defines all data elements currently received at ODE via the vertical SIF infrastructure.

The diagram below depicts a general picture of Ohio's current SIF architecture.

Ohio's State Reporting (EMIS) and State External Application Infrastructure



During User Acceptance Testing of the core system, the Ohio Department of Education (ODE) and/or local LEAs will provide the Contractor with certain data sets that will loaded into the IIS. This may include information from existing ODE systems that will be loaded initially, and then maintained through the IIS. Specific plans for the data load will be determined during the project-planning phase.

Possible Future Integration Points

Ohio is on the Governing Board of the Partnership for Assessment of Readiness for College and Careers (PARCC). There are no immediate plans to have the high stakes Performance Based and End of Year Assessments delivered via the IIS; however, the Diagnostic and Mid-Year Assessments should be delivered via the IIS. Details of this integration will have to be determined when the PARCC system is developed and appropriate information is made available.

Placeholder links to The Eye of Integration and ODE Data Tools Web Portal will be required until such time as these systems are available and in production. The resulting Eye of Integration system must be available to the public; therefore, it will be developed and hosted at ODE. It must be seamlessly available to users of the IIS. Additional integration decisions and associated costs will be determined as these systems near completion and are not included in the initial contract.

ODE is in the process of expanding our K-12 data warehouse to a P-20 system, and may request integration with the IIS at some future date. Integration decisions and associated costs will be determined as these systems near completion and are not included in the initial contract.

Another possibility ODE is considering in the future is the use of the Shared Learning Infrastructure (SLI) data store. Integration decisions and associated costs will be determined as these systems near completion and are not included in the initial contract.

D. System Security

Identity Management

For users' logins and what they are authorized to do, the IIS solution must integrate with the federated identity management (IdM) solution that is being developed. The development is being facilitated by ODE as part of its Race to the Top work.

Specifically, the IIS solution must integrate by supporting claims-aware, role-based authentication and authorization using the SAML (Security Assertion Markup Language) protocol. Additionally, IIS must support late-binding or just-in-time provisioning that is based on data provided through SAML security tokens, or at a minimum support the provisioning of identities through a web-service channel and a data format that matches either (1) the way that identity data is provided to the IdM solution's identity stores (format to be determined) or (2) SPML (Service Provisioning Markup Language). The provisioning process must include logic to match and combine identities so as to prevent duplication if an identity is received through more than one channel.

Security Management

The Contractor must provide system and data security, as well as, physical security at the operations site.

The Security Management function must include, at a minimum:

- Confidentiality of Data and Information;
- Site Security; and
- System Security.

The Contractor is required to perform regular intrusion detection testing.

The Contactor must assume total financial liability if a breach occurs by a person or persons employed by the Contractor or its subcontractor(s) in any of the areas of responsibilities referenced in this section. The Contractor will save and hold the State harmless.

If a security breach occurs, the Contractor must immediately notify the State of the nature and content of the breach. The Contractor must comply with all State and Federal regulations, to immediately rectify the breach. If the breach involves disclosure of personally identifiable information, the Contractor must provide, at no cost to the State, a free credit report and credit protection services for one year from the date of occurrence to all persons involved.

Confidentiality of Data and Information

All data and information related to the Instructional Improvement, which are deemed confidential by the State and made available to the Contractor in order to carry out this Contract, must be protected from unauthorized use and disclosure by the Contractor.

The Contractor's obligation to maintain the confidentiality of the information will not apply where such: (1) information was already in the Contractor's possession before disclosure by the State, and such was received by the Contractor without obligation of confidence; (2) is independently developed by the Contractor not by the State; (3) is or becomes publicly available without breach of this Contract; (4) is rightfully received by the Contractor from a third party without an obligation of confidence; (5) is disclosed by the Contractor with the written consent of the State; or (6) is released in accordance with a valid order of a court or governmental agency, provided that the Contractor (a) notifies the State of such order immediately upon receipt of the order and (b) makes a reasonable effort to obtain a protective order from the issuing court or agency limiting disclosure and use of the Confidential Information solely for the purposes intended to be served by the original order of production.

The Contractor must meet the following:

- The Contractor agrees not to disclose any Confidential Information;
- The Contractor will restrict circulation of Confidential Information within its organization to allow individuals that have a need to know the Confidential Information;
- The Contractor will be liable for the disclosure of information whether the disclosure is intentional, negligent, or accidental, unless otherwise specified by the State;
- The Contractor will not incorporate any portion of any Confidential Information into any work or product, other than a Deliverable, and will have no proprietary interest in any of the Confidential Information;
- The Contractor will have all of its employees, who have access to any Confidential Information, sign all confidentiality agreements required by the State;
- The Contractor will return all originals of any Confidential Information and destroy any copies it has made on termination or expiration of this Contract; and
- The Contractor may disclose Confidential Information to its subcontractors on a need-to-know basis, but they will be obligated to the requirements of this section.

Site Security

The Contractor must provide physical site security at the operational facility. A walk-through at the site may be conducted by State staff, to ensure that the Contractor has met this requirement.

The Contractor must make every effort to protect the operational facility from damage by accident, theft, malicious intent, fire, loss of utilities, environmental hazards such as flood and tornados, vandalism, and unauthorized access.

The Contractor must meet the following:

- The Contractor must provide a secure facility and access to work areas must be limited to persons with proper security levels via key card or other approved security access methods;
- Upon termination of employees, the Contractor must inactivate key card or other security access devices;
- The Contractor must maintain an access log of persons entering and exiting the operational facility, any backup facility, and any additional facility associated with the Contract;
- All visitors to the facility must be required to register at a designated area;
- The Contractor must make access logs available for inspection by the State upon request; and
- The Contractor must notify ODE staff of all phone calls, correspondence, and contact with people threatening physical harm to ODE, School District staff or the Contractor personnel or property within one (1) business hour of occurrence.

System Security

The Contractor must provide internal system and data security procedures designed to ensure confidentiality of data and to protect against computer viruses and other security threats, such as, hackers.

The Contractor's system must meet the following:

- Transmitted data as well as data at rest must be protected by State approved encryption or other appropriate measures;
- The system must contain a security level for restricting individuals' access only to information and processes related to job and duties;
- The system must limit logins for information to three failed attempts;
- The system must encrypt passwords to prevent system administrators from discovering them;
- Reactivation of a password must utilize defined security controls;
- The system must inactivate user profiles of terminated staff immediately;
- The system must require reauthorization when a timeout takes place;
- The system must require password changes every 90 days;
- The system must require that passwords for information systems be a minimum of eight alpha-numeric characters, including special characters;
- The Contractor must conduct annual audit (or as otherwise deemed necessary by the State) of its security procedures, to ensure that the most recent and up-to-date technology is being utilized;
- The Contractor must provide a copy of the security reviews to the State, along with any findings and recommendations;
- Based on the findings and recommendations and with approval from the State, the Contractor must take the appropriate steps to improve security processes and procedures including but not limited to, technological upgrades; and
- The Contractor must notify ODE, through email or written transmission, of any suspicious or fraudulent activity associated with the Instructional Improvement System.

State Education Authority (SEA) System Access

ODE will require the Contractor to provide a user role for a limited number of SEA staff to access the IIS. SEA access will allow users to use the IIS for a variety of purposes, including, but not limited to:

- Search, edit and report on curriculum standards and their coverage in curriculum and assessments
- Create, edit and upload standards
- Create, edit and upload model curriculum units
- Upload curriculum resources
- Review usage statistics for curriculum tools and resources
- Review usage statistics for assessment, items, and tools
- Generate existing reports
- Develop new/customized reports

- Export data as needed

Current Ohio legislation prevents SEA staff from accessing identifiable student-level data. Future legislative changes may result in a request to change the level of access for Ohio SEA staff.

E. Training, Documentation, and Outreach

Training

The IIS will be used by a large number of users across several project phases. The Contractor will provide training to address the training needs of these users in each phase of the project. ODE's goal is to phase in implementation as quickly as possible following the completion of UAT of the Core and development of required integration. This will require an ongoing training program.

The Contractor must develop a training plan, to be approved by ODE that describes the objectives and goals of each training module, the type of training to be offered, a proposed schedule, and the training materials to be provided in support of the training. Training must include, at a minimum, train-the-trainer sessions, web-based training, and reference materials.

Training must be adapted to meet the needs of users during each phase of the project, from initial UAT, through Ohio-Specific pilot and implementation of the full system.

The Contractor will train all UAT and pilot LEA participants in person by offering five (5) regional training sessions. During statewide implementation, the Contractor will make in-person training available to all participating LEAs using a train-the-trainer model. The Contractor must include three (3) trainers from each participating LEA. The Contractor may choose to contract with one or more entities within the existing regional support structure to assist with this training effort. Following implementation, web based training modules, as well as user documentation and training materials covering all aspects of the system must be available to system users.

Documentation Management

The Contractor must maintain all documentation, including workflows and business process flows that support the Instructional Improvement System operations.

Documentation Repository

Beyond the user and training documentation made available to the end users, the Contractor must maintain a documentation library, which is accessible to State staff. All documents in the library must be updated within 30 days of processes, procedures and system functionality changes. ODE retains ownership of all documents created as a result of this contract.

The documentation library must include, at a minimum, the following:

- Change Requests;
- Instructional Improvement System Procedures Manual;
- Training Materials (e.g., User Guide, Training Manual);
- Incident and Help desk Reports;
- Marketing Materials;
- Business Continuity Plan;
- Disaster Recovery Plan; and
- Security Plan.

Communication and Outreach

Communication to Ohio LEAs is critical throughout development, pilot, and state rollout. This includes both RttT and non-RttT LEAs. In order to gain the maximum level of usage in the state, Ohio will rely upon the Contractor's active participation in marketing and outreach efforts. The vendor may be required to present at up to three statewide conferences per year as well as participate with ODE representatives in associated exhibitor booths. ODE retains right of approval of any marketing material that is developed by the Contractor related to the State IIS.

Selection for the State IIS does not imply any state endorsement of any other product offered by the Contractor.

F. Subscription Services

The Contractor must provide the functionality defined in the core and Ohio specific requirements using a subscription model with pricing based on LEA participation. The subscription based pricing will begin with the pilot and continue through the statewide rollout and post RttT contract(s).

Customer Support Services

Customer inquiries must be handled in a professional manner with timely, accurate and comprehensive resolutions. The Contractor must provide customer support services within the Continental United States for system users must and will retain responsibility for all related inquiries.

The Contractor must employ state-of-the-art equipment to ensure that customer service functions are performed efficiently and effectively while adhering to established SLA performance standards.

The Contractor is required to provide level one support to system end users based on the agreed upon SLA by:

- Providing customer support via telephone, email, and instant messaging (online chat);
- Providing toll free numbers for direct customer service access;
- Receiving and responding to calls on all business days from 7:00 a.m. to 5:00 p.m. Eastern Time. Coverage may be extended as needed in downtime situations;
- Ensuring average hold time is 2 minutes or less;
- Researching, resolving and responding to inquiries and requests for assistance in accordance with the SLA;
- Notifying the State of a call center outage in accordance with the SLA;
- Implementing and maintaining a system for tracking and reporting inquiries received via email online chat/instant messaging and telephone, including, but not limited to:
    - Incoming calls, faxes or emails;
    - Outgoing calls, faxes or emails;
    - Incoming call hold time;
    - Inquiry category;
    - Inquiry resolution to include how inquiries were addressed and resolved;
    - Closure and follow-up on customer inquiries that cannot be satisfied immediately and require additional research; and
    - Track call patterns for individuals.
- Providing State staff with reports based on the Contractor's helpdesk issue tracking system and data pertaining to services provided including issues, problem management, and resolution in accordance with the SLA or as requested by the State; and
- Strictly adhering to all confidentiality rules.

Data Management Functions

The Contractor must establish policies and procedures, to process and manage all data files generated, transmitted and received by the Contractor.

The Contractor is required to:

- Provide recoverability of all data files, if they are deleted, corrupted, or a file is incorrectly transmitted or received, by performing backups; Time frames for recoverability are defined in the SLA.
- Ensure security of all data files, by keeping the files safe from corruption, providing controlled access to data files and using encryption whenever appropriate;
- Ensure timely processing, by providing updates to system interfaces with new and changed information within required timeframes to be determined by the State;
- Ensure timely processing, by implementing automated quality assurance standards, to validate the transfer data and discover inconsistencies and other anomalies of the data files;
- Define an escalation plan to establish corrective actions and resolution of data transfer errors.
- Define data mapping from ODE interface files to where the data will reside in the corresponding solution, and provide complete documentation of the field definitions and field layouts to ODE;
- Retain all data files according to the agreed upon standards and schedules:
    - Student state assessment results must be immediately available throughout the time that the student is enrolled in the LEA.
    - Student interim and formative assessment results must be immediately available for the current school year and one previous year.
    - Student work stored in the system must be immediately available for the current school year.
    - Active curriculum resources, including lesson plans, instructional resources, and assessments and assessment items, must be immediately available for three years from the last use.
    - Standards related data must be immediately available while it is active.
    - Metadata associated with curriculum resources, including instructional resources, assessments, and assessment items, must be immediately available for as long as they are associated to an active standard.
    -

Business Continuity

The system must have back-up and recovery mechanisms as defined in the Service Level Agreement. The Contractor must develop and maintain a Business Continuity Plan in conformance with the Federal Emergency Management Agency's Emergency Management Guide for Business and Industry. The contents can be found at http://www.fema.gov/pdf/business/guide/bizindst.pdf.

The Offeror's Business Continuity Plan should be included with the Offeror's proposal.

Develop Business Continuity Plan

The Contractor must finalize the Business Continuity Plan submitted with its proposal to create a consistent, coherent management plan of action to guide the Business Continuity activities of the project. The Business Continuity Plan is subject to final approval by the State. The plan should include detail sufficient to give the State an understanding of how the Offeror's knowledge and approach will:

- Manage Business Continuity using Risk and Threat Level;
- Document planning assumptions and decision tree for Plan implementation and execution;
- Facilitate communication among stakeholders;
- Define key management review as to Business Continuity, control and resolution;
- Define critical business functions and supporting tasks/staff;
- Define the process for reporting business disruption/failure;
- Define transitions from failure to continuity;

- Define alternative processing sites;
- Provide a baseline for progress measurement and control;
- Provide the Disaster Recovery Plan and define how it will be used to recover the production system; and
- Identify the recovery site in which Production will continue.

The Contractor must update the Business Continuity Plan, yearly or as requested.

All updates to the Business Continuity Plan must be completed and submitted to the State for approval within 30 days of identifying a change to the Risk and Threat Assessments.

Disaster Recovery

The system must have back-up and recovery mechanisms in the event of system failure, file corruption, or any unexpected event that makes it necessary to reprocess data. It must also have and support a Disaster Recovery Plan.

The Disaster Recovery Function must focus on the following areas of responsibility:
- Develop Disaster Recovery Plan
- Test Disaster Recovery Plan

Develop Disaster Recovery Plan

The Contractor must finalize the Disaster Recovery Plan, within the timeframe established in the project plan. The Disaster Recovery Plan is subject to final approval by the State.

The Contractor must:
- Manage Disaster Recovery;
- Guide Disaster Recovery decisions;
- Document planning assumptions and decision tree for the Disaster Recovery Plan implementation and execution;
- Facilitate communication among stakeholders;
- Define key management review as to Disaster Recovery, control and resolution;
- Define the process for reporting system disruption/failure;
- Define transitions from failure to system re-start;
- Define alternative processing sites;
- Provide a baseline for progress measurement and control;
- Define how the production system (to include application code, non-OS related production software, data, and network connectivity) will be recovered; and
- Supply a backup plan identifying how the application code and data is to be backed up and, if needed, recovered for normal business operations.

Test Disaster Recovery Plan

The Contractor must conduct annual testing of the Plan and its procedures unless additional testing is required. The annual test exercise must follow the logical business flow and include all processes normally conducted during daily operations. The first annual test must be performed at a mutually agreeable time and must occur prior to statewide implementation.

The Contractor must test the procedures for each level of severity. The results for Disaster Recovery test must be presented to ODE for approval. If the Contractor fails a test, the Contractor may be required to retest all or part of the procedures within a reasonable period of time.

Support, Maintenance and Enhancements

During the term of the contract and any subsequent renewals, the Contractor will provide support to all users of the IIS. Support must be provided as defined in the agreed upon Service Level Agreement and must be adequate to support the volume of Ohio IIS users. User support must be provided via telephone and email, and may also include Instant Message and Text Message support.

Support must include helping users to understand and complete IIS functions. If the user support process identifies an issue with the IIS or underlying data stores, the Contractor must document the issue, identify the severity of the issue, and assess the impact of the issue on the ability of user(s) to utilize the IIS. The Contractor's support program must provide a method for tracking and resolving all issues identified.

Throughout the term of the contract the Contractor must maintain the IIS to ensure its ongoing level of function. This will include modifications necessary to the software to ensure compatibility with new releases of software that are utilized by the IIS. Contractor must also make modifications necessary to ensure compatibility of the IIS with the next generation(s) of electronic devices that utilize the IIS.

G. Post RttT Contract Strategy

During the life of the RttT grant, ODE will hold a contract with and make payments to the Contractor based on the terms of this RFP and the resulting contract. This contract will end on August 23, 2014. After that date, Ohio LEAs will have the option to enter into agreements directly with the Contractor. The subscription price for those LEAs will be based on Ohio and Massachusetts LEA participation.

ODE retains the right to assign the contract to an ESC, ITC or other regional shared services entity for purposes of contract/procurement management at a statewide level. The selected entity will be responsible for monitoring LEA participation and the Contractor performance as it relates to the SLA. Individual LEAs will make payment directly to the Contractor.

Supplement 5

Massachusetts Service Level Requirements and Damages

Massachusetts Service Levels Agreement

1.1 Objectives

The purpose of this Supplement to the Contract is to define Service Level Requirements (SLRs) with specified Liquidated Damages for instances when the IIS service is impacted through failure to meet mission-critical Services or project milestones. The objective is a reduction in fees paid when Service Performance requirements are not met. SLRs and Liquidated Damages are detailed in the following sections. Contractor will provide written reports to the State regarding Contractor's compliance with the SLRs specified in this SOW Schedule.

1.2 Service Level Requirements (SLRs)

Massachusetts hereinafter referred to as "the State," in its sole discretion, may assess the following liquidated damages if the Contractor fails to perform at the stated service levels. The liquidated damages provision of the contract will last as long as any Massachusetts LEA has a subscription purchased under this contract. Specifically, the state's rights to recover under the liquidated damages provision will survive beyond the RtTT period, which ends on August 23, 2014. The Department, at its sole discretion will determine whether and how to distribute any liquidated damages collected under the contract after that date. At its option, the State may collect liquidated damages by deducting the liquidated damages from the contract payments to the Contractor or by a separate action for recovery of these and any other remedies available to the Department under applicable law. The liquidated damages will be cumulative.

Implementation Deadline. The Contractor must ensure that the Instructional Improvement System (IIS) is implemented by the agreed upon date. If the Contractor fails to meet the required date, the State may assess liquidated damages as follows:

a. $1,000.00 per business day, or any part thereof, for each of the first ten business days;

b. $2,000.00 per calendar day, or any part thereof, for each of the next 30 calendar days; and

c. $3,000.00 per calendar day, or any part thereof, for each additional day.

The following minimum service levels are required for the duration of the contract period. Contractor must consistently meet or exceed the following SLRs. **All times referenced are in Eastern Time**.

- Normal business hours are 8:00 am to 5:00 pm, Monday through Friday.
- SLA response times are for Monday through Saturday 6:00 AM to 7:00 PM.
- Normal production system availability hours are 7:00 am to 6:00 pm, Monday through Friday.
- Normal training and test system availability hours are 6:00 am to 7:00 pm, Monday through Friday.

1.2.1 Overall System Availability SLRs

DEFINITION	Overall System Availability is defined as the Applications, Server CPU, System memory, disks and peripherals and network that support the Instructional Improvement system. Availability means the ability of the system to accept all transactions and access to all functions by all users. This excludes scheduled maintenance.
PRE-SCHEDULED DOWNTIME REQUIREMENTS	All pre-scheduled system downtime will: a. Be based on agreed upon schedules between the State and the Contractor. b. Pre-scheduled maintenance will be performed outside of the normal system availability time frame. c. The State will have the right to access Liquidated Damages, as defined in this Contract, for the Contractor's failure to meet Minimum Service Level attainment.

GENERAL SYSTEM AVAILABILITY SLRs			
System	**Service Measure**	**Performance Target**	**Expected SLR Performance %**
Production Systems and Servers	Availability per System	24 x 7 x 365	99.5%
Training & Test Systems Supporting contract activities	Availability per System	24x7x365	98%
	Formula	Availability (%) = 100% – Unavailability (%) Where Unavailability is defined as: (Total Outage Duration x 100%) ÷ (Schedule Time – Planned Outage)	
	Measurement Interval	Measure Monthly with details for each day, Sunday through Saturday; Report Monthly Application availability metrics will be measured/reported Monthly beginning upon implementation	
	Measurement Tool	Defined by Contractor	
Liquidated Damages		**$1,000.00 per percentage point below the requirement, per month.**	

1.2.2 Resolution Priority

Definitions - Resolution priority definitions apply to system Incidents and help desk Incident.

Priority Level	Description
Urgent *Critical Business Impact*	The Incident has caused, or has the potential to cause, the entire system to go down or be unavailable. A complete and immediate work stoppage, affecting a Critical Function or Critical Infrastructure component such that a primary business process or a broad group of Users such as an entire department, floor, branch, line of business, or external customer is affected. No workaround available.
High *Major Business Impact*	The issue/problem directly affects the public, or a large number of stakeholders are prevented from using the system. High-priority problems include those that render a site unable to function, or key functions of the application are inoperable. Slow processing of data; severely impacts multiple stakeholders. Leads to federal penalties, misdirected payments or corrupt data.
Medium *Moderate Business Impact*	Medium priority problems include those errors that render minor or non-critical functions of the system to be inoperable or unstable. Incidents that prevent stakeholders or administrators from performing some of their tasks.
Low *Minimal Business Impact*	All Service requests and other problems that prevent a stakeholder from performing some tasks, but in situations a workaround is available.

PRIORITY RESOLUTION SLRs			
Priority	**Service Measure**	**Performance Target**	**Expected SLR Performance %**
Urgent	Time to Resolve	1 Business Day unless an extension is approved by the State	100%
High	Time to Resolve	2 Business Days unless an extension is approved by the State	100%
Medium/Low	Time to Resolve	30 business days unless an extension is approved by the State	100%
Liquidated Damages			
	Measurement Interval	Measure Monthly with details for each day, Sunday through Saturday; Report Monthly	
	Measurement Tool	Incident Reporting Tool	
	For Urgent Priority	**$5,000 per day for failure to rectify defects classified as urgent priority.**	
	For High Priority	**$1,000 per day for failure to rectify defects classified as high priority.**	
	For Medium/Low Priority	**$500 per day for failure to rectify defects that are classified as medium or low priority.**	

1.2.3 Application Platform Online Response Time SLRs

DEFINITION	Response time is measured as the elapsed time from when a request enters the system until the request has been satisfied. This timing includes both application and database processing time. The definition of a transaction is any system action screen to paint, refresh and/or system update to complete during normal operations. Transactions mutually agreed to will be excluded from measurement.

APPLICATION PLATFORM ONLINE RESPONSE TIME SLRs			
Application Platform	**Service Measure**	**Performance Target**	**SLR Performance %**
Production Environment	Online Response Time	95% of OLTP transactions complete ≤ 3 seconds 99% of OLTP transactions complete ≤ 5 seconds 95% of reporting transactions complete ≤ 2 minutes	See performance target
	Formula	Count the total number of transactions during the measurement period: TOTAL Count the total number of transactions less than or equal to the applicable threshold as NBRTXNS Calculate percentage of transactions that meet the threshold: TARGET% TARGET% = NBRTXNS / TOTAL	
	Measurement Interval	Normal business hours. Collected monthly beginning upon implementation, Weekly, Report Monthly	

APPLICATION PLATFORM ONLINE RESPONSE TIME SLRs			
Application Platform	**Service Measure**	**Performance Target**	**SLR Performance %**
	Measurement Tool	Contractor proposed.	
Liquidated Damages		**$500.00 per percentage point below the requirement, per month.**	

1.2.4 General Administrative Functions SLRs

DEFINITION	Routine functions that are required to meet the State's requirements.

GENERAL ADMINISTRATIVE FUNCTIONS SLRs			
General Administration Task	**Service Measure**	**Performance Target**	**SLR Performance %**
Notification of Urgent/High-Priority outage to project representative or designee and Contractor Help Desk	Response Time	10 minutes of discovery (i.e., immediate notification) via phone and/or pager	100%
Notification of Medium/Low-Priority outage to project representative or designee and Contractor Help Desk	Response Time	2 hours of discovery via e-mail	100%
	Formula	Number of requests or outages completed within Performance Target / Total of all requests (outages) occurring during Measurement Interval	
	Measurement Interval	Measure Weekly; Report Monthly	
	Measurement Tool	Contractor incident tracking System	
Liquidated Damages		**$500.00 per occurrence.**	

1.2.5 Backup and Restore Requirements

Contractor will implement and maintain backup and restoration capabilities for all data, applications and component configurations. Contractor will perform incremental backups, full backups and full archive backups according to the Backup Schedule presented below. Recovery procedures will be capable of restoring service delivery for failed data, applications and component configurations according to the Services Level Restoration (SLR) listed below.

Backup Schedule and SLRs					
Type of Backup	**Backup Frequency**	**Storage Site**	**Retention/Purge Period Standard**	**Target**	**SLR Performance %**
Incremental	Daily	On Site	7 days	Backup Frequency	99%
Full (Backup)	Weekly	Off Site	5 weeks	Backup Frequency	99%
Full (Archive)	Monthly	Off Site	3 months	Backup Frequency	99%
All				Quarterly Test of each type of Backup/Restore process	99%

Restoration Services Table			
Restoration Type	**Service Measure**	**Performance Target**	**SLR Performance %**
Production data that is 1 week old or less, as requested by the State.	Response Time	<6 hours from the State's request	100% of the time
	Formula	Number of requests completed within Performance Target Total of all requests occurring during Measurement Interval	
	Measurement Interval	Measure Weekly; Report Monthly	
	Measurement Tool	Contractor Proposed	
Liquidated Damages		**$5,000.00 per occurrence.**	

1.2.6 IT Continuity and Disaster Recovery (DR) Requirements

IT Continuity and DR SLRs

DEFINITION	Time to recover the Applications and associated infrastructure after Incident.

Disaster Recovery SLRs			
Application Rankings	**Service Measure**	**Performance Target**	**SLR Performance %**
Instructional Improvement System	Time to recover	**3 days / 72hrs or less**	100.0%
	Formula	Must complete the activity 100% within the expected Measurement interval	
	Measurement Interval	Per incident	
	Measurement Tool	Manual	
Liquidated Damages		**$10,000 per day over target for first 3 days $15,000 per day for next 2 days $25,000 for each additional day**	

1.2.7 Customer Support Services

DEFINITION	Customer support response time for system users and stakeholders.

Help Desk SLRs			
Help Desk	**Service Measure**	**Performance Target**	**SLR Performance %**
Customer Support Availability	Customer Support Services	95% availability	95%
	Formula	Total time available / total time unavailable and available. *During the measurement interval.	
	Measurement Interval	Monthly The Contractor must be able to provide verifiable proof of meeting this requirement.	
	Measurement Tool	Contractor incident tracking	
Liquidated Damages	**Customer Support Services must be available 95% of the performance target time.**	**$1000.00 per month.**	

Help Desk	Service Measure	Performance Target	SLR Performance %
Answer Time	Customer Support Services	Answer all calls within 30 seconds measured over a calendar month	92%
	Formula	Number of call answered within 30 seconds / Total of all calls. *During the measurement interval.	
	Measurement Interval	Monthly The Contractor must be able to provide verifiable proof of meeting this requirement.	
	Measurement Tool	Contractor incident tracking	
Liquidated Damages	Answer 92% of all calls within 30 seconds or within 30 seconds of being routed to an IVR holding queue.	**$200.00 per percentage point missed per month.**	

Supplement 6

Ohio Service Level Requirements and Damages

Ohio Service Level Agreement

1.1 Objectives

A key objective of this Supplement to the Contract is to attain Service Level Requirements (SLRs) with specified Liquidated Damages when business is impacted through failure to meet mission-critical Services or project milestones. The objective is a reduction in fees paid when Service Performance requirements are not met. SLRs and Liquidated Damages are detailed in the following sections. Contractor will provide written reports to the State regarding Contractor's compliance with the SLRs specified in this SOW Schedule.

1.2 Service Level Requirements (SLRs)

The State, in its sole discretion, may assess the following liquidated damages if the Contractor fails to perform at the stated service levels. Any liquidated damages assessed by the State will be subject to the offset section of this Contract.

SLA response times are for Monday through Saturday 6:00 AM to 7:00 PM.

Implementation Deadline. The Contractor must ensure that the Instructional Improvement system is implemented by the agreed upon date. If the Contractor fails to meet the required date, the State may assess liquidated damages as follows:

a. $1,000.00 per business day, or any part thereof, for each of the first ten business days;

b. $2,000.00 per calendar day, or any part thereof, for each of the next 30 calendar days; and

c. $3,000.00 per calendar day, or any part thereof, for each additional day.

The following minimum service levels are required for the duration of the contract period. Contractor must consistently meet or exceed the following SLRs. **All times referenced are in Eastern Time**.

• Normal business hours are 7:00 am to 5:00 pm, Monday through Friday.

• Normal production system availability hours are 6:00 am to 8:00 pm, Monday through Friday.

• Normal training and test system availability hours are 6:00 am to 8:00 pm, Monday through Friday.

1.2.1 Overall System Availability SLRs

DEFINITION	Overall System Availability is defined as the Applications, Server CPU, System memory, disks and peripherals and network that support the Instructional Improvement system. Availability means the ability of the system to accept all transactions and access to all functions by all users. This excludes scheduled maintenance.
PRE-SCHEDULED DOWNTIME REQUIREMENTS	All pre-scheduled system downtime will: a. Be based on agreed upon schedules between the State and the Contractor. b. Pre-scheduled maintenance will be performed outside of the normal system availability time frame. c. The State will have the right to assess Liquidated Damages, as defined in this Contract, for the Contractor's failure to meet Minimum Service Level attainment.

GENERAL SYSTEM AVAILABILITY SLRs			
System	**Service Measure**	**Performance Target**	**Expected SLR Performance %**
Production Systems and Servers	Availability per System	Normal production system availability hours noted above.	99.5%
Training & Test Systems Supporting contract activities	Availability per System	Normal training and test system availability hours noted above.	98%
	Formula	Availability (%) = 100% – Unavailability (%) Where Unavailability is defined as: (Total Outage Duration x 100%) ÷ (Schedule Time – Planned Outage)	
	Measurement Interval	Measure Monthly with details for each day, Sunday through Saturday; Report Monthly Application availability metrics will be measured/reported Monthly beginning upon implementation	
	Measurement Tool	Defined by Contractor	
Liquidated Damages		**$1,000.00 per percentage point below the requirement, per month.**	

1.2.2 Resolution Priority

Definitions - Resolution priority definitions apply to system Incidents and help desk Incident.

Priority Level	Description
Urgent *Critical Business Impact*	The Incident has caused, or has the potential to cause, the entire system to go down or be unavailable. A complete and immediate work stoppage, affecting a Critical Function or Critical Infrastructure component such that a primary business process or a broad group of Users such as an entire department, floor, branch, line of business, or external customer is affected. No workaround available.
High *Major Business Impact*	The issue/problem directly affects the public, or a large number of stakeholders are prevented from using the system. High-priority problems include those that render a site unable to function, or key functions of the application are inoperable. Slow processing of data; severely impacts multiple stakeholders. Leads to federal penalties, misdirected payments or corrupt data.
Medium *Moderate Business Impact*	Medium priority problems include those errors that render minor or non-critical functions of the system to be inoperable or unstable. Incidents that prevent stakeholders or administrators from performing some of their tasks.
Low *Minimal Business Impact*	All Service requests and other problems that prevent a stakeholder from performing some tasks, but in situations a workaround is available.

PRIORITY RESOLUTION SLRs			
Priority	**Service Measure**	**Performance Target**	**Expected SLR Performance %**
Urgent	Time to Resolve	1 Business Day unless an extension is approved by the State	100%
High	Time to Resolve	2 Business Days unless an extension is approved by the State	100%
Medium/Low	Time to Resolve	30 business days unless an extension is approved by the State	100%
Liquidated Damages			
	Measurement Interval	Measure Monthly with details for each day, Sunday through Saturday; Report Monthly	
	Measurement Tool	Incident Reporting Tool	
	For Urgent Priority	**$5,000 per day for failure to rectify defects classified as urgent.**	
	For High Priority	**$1,000 per day for failure to rectify defects classified as high.**	
	For Medium/Low Priority	**$500 per day for failure to rectify defects that are classified as medium or low.**	

1.2.3 Application Platform Online Response Time SLRs

DEFINITION	Response time is measured as the elapsed time from when a request enters the system until the request has been satisfied. This timing includes both application and database processing time. The definition of a transaction is any system action screen to paint, refresh and/or system update to complete during normal operations. Transactions mutually agreed to will be excluded from measurement.

APPLICATION PLATFORM ONLINE RESPONSE TIME SLRs			
Application Platform	**Service Measure**	**Performance Target**	**SLR Performance %**
Production Environment	Online Response Time	95% of transactions complete ≤2.0 seconds 99% of transactions complete ≤5.0 seconds	See performance target
	Formula	Count the total number of transactions during the measurement period: TOTAL Count the total number of transactions less than or equal to the applicable threshold as NBRTXNS Calculate percentage of transactions that meet the threshold: TARGET% TARGET% = NBRTXNS / TOTAL	
	Measurement Interval	Normal business hours. Collected monthly beginning upon implementation, Report Monthly	
	Measurement Tool	Contractor proposed.	
Liquidated Damages		**$500.00 per percentage point below the requirement, per month.**	

1.2.4 General Administrative Functions SLRs

DEFINITION	Routine functions that are required to meet the State's requirements.

GENERAL ADMINISTRATIVE FUNCTIONS SLRs			
General Administration Task	**Service Measure**	**Performance Target**	**SLR Performance %**
Notification of Urgent/High-Priority outage to project representative or designee and Contractor Help Desk	Response Time	10 minutes of discovery (i.e., immediate notification) via phone and/or pager	100%
Notification of Medium/Low-Priority outage to project representative or designee and Contractor Help Desk	Response Time	2 hours of discovery via e-mail	100%
Liquidated Damages	Formula	Number of requests or outages completed within Performance Target / Total of all requests (outages) occurring during Measurement Interval	
	Measurement Interval	Measure Weekly; Report Monthly	
	Measurement Tool	Contractor incident tracking System	
		$500.00 per occurrence.	

1.2.5 Backup and Restore Requirements

Contractor will implement and maintain backup and restoration capabilities for all data, applications and component configurations. Contractor will perform incremental backups, full backups and full archive backups according to the Backup Schedule presented below. Recovery procedures will be capable of restoring service delivery for failed data, applications and component configurations according to the Services Level Restoration (SLR) listed below.

Backup Schedule and SLRs					
Type of Backup	**Backup Frequency**	**Storage Site**	**Retention/Purge Period Standard**	**Target**	**SLR Performance %**
Incremental	Daily	On Site	7 days	Backup Frequency	99%
Full (Backup)	Weekly	Off Site	5 weeks	Backup Frequency	99%
Full (Archive)	Monthly	Off Site	3 months	Backup Frequency	99%
All				Quarterly Test of each type of Backup/Restore process	99%

Restoration Services Table			
Restoration Type	**Service Measure**	**Performance Target**	**SLR Performance %**
Production data that is 1 week old or less, as requested by the State.	Response Time	<6 hours from the State's request	100% of the time
	Formula	Number of requests completed within Performance Target Total of all requests occurring during Measurement Interval	
	Measurement Interval	Measure Weekly; Report Monthly	
	Measurement Tool	Contractor Proposed	
Liquidated Damages		**$5,000.00 per occurrence.**	

1.2.6 IT Continuity and Disaster Recovery (DR) Requirements

IT Continuity and DR SLRs

DEFINITION	Time to recover the Applications and associated infrastructure after Incident.

Disaster Recovery SLRs			
Application Rankings	**Service Measure**	**Performance Target**	**SLR Performance %**
Instructional Improvement System	Time to recover	**3 days or less**	100.0%
	Formula	Must complete the activity 100% within the expected Measurement interval	
	Measurement Interval	Per incident	
	Measurement Tool	Manual	
Liquidated Damages		**$10,000 per day over target for first 3 days; $15,000 per day for next 2 days; $25,000 for each additional day**	

1.2.7 Customer Support Services

DEFINITION	Customer support response time for system users and stakeholders.

Help Desk Services SLRs			
Help Desk	**Service Measure**	**Performance Target**	**SLR Performance %**
Customer Support Availability	Customer Support Services	95% availability Normal Business Hours	95%
	Formula	Total time available / total time unavailable and available. *During the measurement interval.	
	Measurement Interval	Monthly The Contractor must be able to provide verifiable proof of meeting this requirement.	
	Measurement Tool	Contractor incident tracking	
Liquidated Damages	**Customer Support Services must be available 95% of the performance target time.**	**$1000.00 per month.**	

Help Desk	Service Measure	Performance Target	SLR Performance %
Answer Time	Customer Support Services	Answer all calls within 30 seconds measured over a calendar month Normal Business Hours	92%
	Formula	Number of call answered within 30 seconds / Total of all calls. *During the measurement interval.	
	Measurement Interval	Monthly The Contractor must be able to provide verifiable proof of meeting this requirement.	
	Measurement Tool	Contractor incident tracking	
Liquidated Damages	Answer 92% of all calls within 30 seconds or within 30 seconds of being routed to an IVR holding	**$200.00 per percentage point missed per month.**	

Help Desk	Service Measure	Performance Target	SLR Performance %
	queue.		

Supplement 7

Massachusetts Subscription Services with Terms and Conditions

Massachusetts Subscription Process

1. Massachusetts will enter into a PARTICIPATING ADDENDUM with the selected IIS Contractor. The IIS contract reference number in Comm-Pass is 12EDUMS1.
    a. This Department Contract is issued as "Multiple Department User" (as listed in the RFR) or "Open for Use Under Separate Contract Execution" (as listed on Comm-PASS) represents a significant policy expansion which will increase access for Cities and Towns as referenced in Memorandum "OSD Policy Guidance 09-13 - Use of Commonwealth Contracts by Commonwealth Cities, Towns, Districts, Counties, and Authorities"
    b. Massachusetts will enter into a Participating Addendum with the Contractor to govern services provided after the core-development work is completed. The Massachusetts Participating Addendum will incorporate all requirements and Terms of the RFP. Additionally, the Contractor must sign the Massachusetts standard terms and conditions. In the event of a conflict between the RFP and Massachusetts Terms and Conditions, the Massachusetts Terms and Conditions will apply.
    c. The Contractor must sign the Massachusetts terms and condition form and complete the W9 form.

2. Purchase of Subscriptions

    a. Massachusetts Executive Office of Education will purchase subscriptions based on addendum through a Procurement Requisition Purchase Order Form.

    b. Cities and Towns are eligible to use certain contracts procured by Commonwealth Departments that issue procurements subject to 801 CMR 21.00. Any Cities and Towns exercising this right must execute their own contract and any additional legal terms with the awarded Contractor and are responsible for any contract management, performance or payment issues relative to their contract. The legal authority for this policy guidance is MGL c. 30B, Section 1 (c) and MGL c. 7, Section 22A, which allow Cities and Towns to use the Operational Services Division's (OSD) statewide contracts and certain department-issued contracts.

All information about this contract will be posted in Comm-PASS.

MEMORANDUM

To: Commonwealth Secretariats, Department Heads, Chief Financial Officers, General Counsels and Commonwealth Cities, Towns, Districts, Counties, and Authorities

From: Ellen Bickelman, State Purchasing Agent, Operational Services Division

Date: October 10, 2008

Re: OSD Policy Guidance 09-13 - Use of Commonwealth Contracts by Commonwealth Cities, Towns, Districts, Counties, and Authorities

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After consultation with the Office of the Inspector General, the Operational Services Division (OSD) has established these standards for use of Commonwealth contracts by Commonwealth Cities, Towns, Districts, Counties, and Authorities (referred to in this document as "Cities and Towns").

Cities and Towns are eligible to use certain contracts procured by Commonwealth Departments that issue procurements subject to 801 CMR 21.00. Any Cities and Towns exercising this right must execute their own contract and any additional legal terms with the awarded vendor and are responsible for any contract management, performance or payment issues relative to their contract.

The legal authority for this policy guidance is MGL c. 30B, Section 1 (c) and MGL c. 7, Section 22A, which allow Cities and Towns to use the Operational Services Division's (OSD) statewide contracts and certain department-issued contracts.

This inclusion of Department Contracts issued as "Multiple Department User" (as listed in the RFR) or "Open for Use Under Separate Contract Execution" (as listed on Comm-PASS) represents a significant policy expansion which will increase access for Cities and Towns.

Below, you will find detailed guidance to Commonwealth Departments for posting department solicitations on Comm-PASS and guidance to Cities and Towns regarding what types of Commonwealth contracts can be used and how to identify those contracts on Comm-PASS.

For additional information on eligibility to use Commonwealth contracts, see OSD's public entity Eligibility Guidelines.

If Commonwealth departments have any questions regarding this policy, please contact Bill McAvoy, General Counsel in the Operational Services Division, at William.McAvoy@state.ma.us or at (617) 720-3327. If Cities and Towns have any questions regarding this policy, please contact Barbara Hansberry, General Counsel in the Office of the Inspector General, at Hansberryba@maoig.net or at (617) 727-9140.

Issuing Departmental Contracts to Enable Use by Commonwealth Cities, Towns, Districts, Counties, and Authorities

Guidance to Commonwealth Departments:
Take these steps to provide Commonwealth Cities, Towns, Districts, Counties, and Authorities (Cities and Towns) with the opportunity to execute their own contracts based on Commonwealth department procurements:

1. RFR must specify "Multiple Department User" – Issue procurements as "Multiple Department User" to allow Cities and Towns the opportunity to utilize department's procurement(s) and purchase from the resulting contract(s).

2. Comm-PASS Solicitation and Contract must specify "Open for use Under Separate Contract Execution" – Select this Procurement Type value during Step 1 of both the Create a Solicitation and Create a Contract processes. By selecting this option, the Issuer(s) tab of the posted record will automatically indicate: "Other entities may use this procurement, but must execute a separate contract that meets their own legal and business requirements."

3. Comm-PASS Contract must be complete – As is currently required by Comm-PASS policy and to provide sufficient information to Cities and Towns, the department must post a Comm-PASS Contract record which includes contract terms, vendor and price information and other relevant information to assist all public purchasers in using department issued contracts.

Locating Departmental Contracts Open for Use by Commonwealth Cities, Towns, Districts, Counties, and Authorities

Guidance to Commonwealth Cities, Towns, Districts, Counties, and Authorities (Cities and Towns):
Go to www.comm-pass.com and take these steps to identify qualified Departmental Contracts:

1. Select the "Contracts" tab from the main navigation bar.
2. Select the "Search for a Contract" option:
    a. Select the "ACTIVE" value from the "Document Status" drop-down menu.
    b. Select the "Open for Use Under Separate Contract Execution" value from the "Contract Type" drop-down menu.
    c. Select the Search option.
3. Select the results link returned at the top of the page.
4. Select the Contract "View" option to access all information about a specific contract.
5. Select the "Issuer(s)" tab and review the "Eligible Entities" section to ascertain whether there are any usage restrictions.
6. Execute a separate contract with any additional legal terms that your jurisdiction may require if your search on Comm-PASS identifies a qualified Department Contract.
7. Reminder: The terms and conditions of the original contract must remain the same.

To identify and use Statewide Contracts, access this guide.
For assistance with site navigation, contact the Comm-PASS Helpdesk during normal business hours at 1-888-MA-STATE or by email at comm-pass@state.ma.us

COMMONWEALTH TERMS AND CONDITIONS

This Commonwealth Terms and Conditions form is jointly issued by the Executive Office for Administration and Finance (ANF), the Office of the Comptroller (CTR) and the Operational Services Division (OSD) for use by all Commonwealth of Massachusetts ("State") Departments and Contractors. ***Any changes or electronic alterations by either the Department or the Contractor to the official version of this form, as jointly published by ANF, CTR and OSD, shall be void.*** Upon execution of these Commonwealth Terms and Conditions by the Contractor and filing as prescribed by the Office of the Comptroller, these Commonwealth Terms and Conditions will be incorporated by reference into any Contract for Commodities and Services executed by the Contractor and any State Department, in the absence of a superseding law or regulation requiring a different Contract form. Performance shall include services rendered, obligations due, costs incurred, commodities and deliverables provided and accepted by the Department, programs provided or other commitments authorized under a Contract. A deliverable shall include any tangible product to be delivered as an element of performance under a Contract**.** The Commonwealth is entitled to ownership and possession of all deliverables purchased or developed with State funds. Contract shall mean the Standard Contract Form issued jointly by ANF, CTR and OSD.

1. *Contract Effective Start Date.* Notwithstanding verbal or other representations by the parties, or an earlier start date indicated in a Contract, the effective start date of performance under a Contract shall be the date a Contract has been executed by an authorized signatory of the Contractor, the Department, a later date specified in the Contract or the date of any approvals required by law or regulation, whichever is later.

2. *Payments And Compensation.* The Contractor shall only be compensated for performance delivered and accepted by the Department in accordance with the specific terms and conditions of a Contract. All Contract payments are subject to appropriation pursuant to M.G.L. C. 29, §26, or the availability of sufficient non-appropriated funds for the purposes of a Contract, and shall be subject to intercept pursuant to M.G.L. C. 7A, §3 and 815 CMR 9.00. Overpayments shall be reimbursed by the Contractor or may be offset by the Department from future payments in accordance with state finance law. Acceptance by the Contractor of any payment or partial payment, without any written objection by the Contractor, shall in each instance operate as a release and discharge of the State from all claims, liabilities or other obligations relating to the performance of a Contract.

3. *Contractor Payment Mechanism*. All Contractors will be paid using the Payment Voucher System unless a different payment mechanism is required. The Contractor shall timely submit invoices (Payment Vouchers - Form PV) and supporting documentation as prescribed in a Contract. The Department shall review and return rejected invoices within fifteen (15) days of receipt with a written explanation for rejection. Payments shall be made in accordance with the bill paying policy issued by the Office of the Comptroller and 815 CMR 4.00, provided that payment periods listed in a Contract of less than forty-five (45) days from the date of receipt of an invoice shall be effective only to enable a Department to take advantage of early payment incentives and shall not subject any payment made within the forty-five (45) day period to a penalty. The Contractor Payroll System, shall be used only for "Individual Contractors" who have been determined to be "Contract Employees" as a result of the Department's completion of an Internal Revenue Service SS-8 form in accordance with the Omnibus Budget Reconciliation Act (OBRA) 1990, and shall automatically process all state and federal mandated payroll, tax and retirement deductions.

4. *Contract Termination Or Suspension*. A Contract shall terminate on the date specified in a Contract, unless this date is properly amended in accordance with all applicable laws and regulations prior to this date, or unless terminated or suspended under this Section upon prior written notice to the Contractor. The Department may terminate a Contract without cause and without penalty, or may terminate or suspend a Contract if the Contractor breaches any material term or condition or fails to perform or fulfill any material obligation required by a Contract, or in the event of an elimination of an appropriation or availability of sufficient funds for the purposes of a Contract, or in the event of an unforeseen public emergency mandating immediate Department action. Upon immediate notification to the other party, neither the Department nor the Contractor shall be deemed to be in breach for failure or delay in performance due to Acts of God or other causes factually beyond their control and without their fault or negligence. Subcontractor failure to perform or price increases due to market fluctuations or product availability will not be deemed factually beyond the Contractor's control.

5. *Written Notice*. Any notice shall be deemed delivered and received when submitted in writing in person or when delivered by any other appropriate method evidencing actual receipt by the Department or the Contractor. Any written notice of termination or suspension delivered to the Contractor shall state the effective date and period of the notice, the reasons for the termination or suspension, if applicable, any alleged breach or failure to perform, a reasonable period to cure any alleged breach or failure to perform, if applicable, and any instructions or restrictions concerning allowable activities, costs or expenditures by the Contractor during the notice period.

6. *Confidentiality*. The Contractor shall comply with M.G.L. C. 66A if the Contractor becomes a "holder" of "personal data". The Contractor shall also protect the physical security and restrict any access to personal or other Department data in the Contractor's possession, or used by the Contractor in the performance of a Contract, which shall include, but is not limited to the Department's public records, documents, files, software, equipment or systems.

7. *Record-keeping And Retention, Inspection Of Records.* The Contractor shall maintain records, books, files and other data as specified in a Contract and in such detail as shall properly substantiate claims for payment under a Contract, for a minimum retention period of seven (7) years beginning on the first day after the final payment under a Contract, or such longer period as is necessary for the resolution of any litigation, claim, negotiation, audit or other inquiry involving a Contract. The Department shall have access, as well as any parties identified under Executive Order 195, during the Contractor's regular business hours and upon reasonable prior notice, to such records, including on-site reviews and reproduction of such records at a reasonable expense.

8. *Assignment*. The Contractor may not assign or delegate, in whole or in part, or otherwise transfer any liability, responsibility, obligation, duty or interest under a Contract, with the exception that the Contractor shall be authorized to assign present and prospective claims for money due to the Contractor pursuant to a Contract in accordance with M.G.L. C. 106, §9-318. The Contractor must provide sufficient notice of assignment and supporting documentation to enable the Department to verify and implement the assignment. Payments to third party assignees will be processed as if such payments were being made directly to the Contractor and these payments will be subject to intercept, offset, counter claims or any other Department rights which are available to the Department or the State against the Contractor.

9. *Subcontracting By Contractor.* Any subcontract entered into by the Contractor for the purposes of fulfilling the obligations under a Contract must be in writing, authorized in advance by the Department and shall be consistent with and subject to the provisions of these Commonwealth Terms and Conditions and a Contract. Subcontracts will not relieve or discharge the Contractor from any duty, obligation, responsibility or liability arising under a Contract. The Department is entitled to copies of all subcontracts and shall not be bound by any provisions contained in a subcontract to which it is not a party.

10. *Affirmative Action, Non-Discrimination In Hiring And Employment.* The Contractor shall comply with all federal and state laws, rules and regulations promoting fair employment practices or prohibiting employment discrimination and unfair labor practices and shall not discriminate in the hiring of any applicant for employment nor shall any qualified employee be demoted, discharged or otherwise subject to discrimination in the tenure, position, promotional opportunities, wages, benefits or terms and conditions of their employment because of race, color, national origin, ancestry, age, sex, religion, disability, handicap, sexual orientation or for exercising any rights afforded by law. The Contractor commits to purchasing supplies and services from certified minority or women-owned businesses, small businesses or businesses owned by socially or economically disadvantaged persons or persons with disabilities.

11. *Indemnification.* Unless otherwise exempted by law, the Contractor shall indemnify and hold harmless the State, including the Department, its agents, officers and employees against any and all claims, liabilities and costs for any personal injury or property damages, patent or copyright infringement or other damages that the State may sustain which arise out of or in connection with the Contractor's performance of a Contract, including but not limited to the negligence, reckless or intentional conduct of the Contractor, its agents, officers, employees or subcontractors. The Contractor shall at no time be considered an agent or representative of the Department or the State. After prompt notification of a claim by the State, the Contractor shall have an

COMMONWEALTH TERMS AND CONDITIONS

opportunity to participate in the defense of such claim and any negotiated settlement agreement or judgment. The State shall not be liable for any costs incurred by the Contractor arising under this paragraph. Any indemnification of the Contractor shall be subject to appropriation and applicable law.

12. *Waivers.* Forbearance or indulgence in any form or manner by a party shall not be construed as a waiver, nor in any way limit the legal or equitable remedies available to that party. No waiver by either party of any default or breach shall constitute a waiver of any subsequent default or breach.

13. *Risk Of Loss.* The Contractor shall bear the risk of loss for any Contractor materials used for a Contract and for all deliverables, Department personal or other data which is in the possession of the Contractor or used by the Contractor in the performance of a Contract until possession, ownership and full legal title to the deliverables are transferred to and accepted by the Department.

14. *Forum, Choice of Law And Mediation.* Any actions arising out of a Contract shall be governed by the laws of Massachusetts, and shall be brought and maintained in a State or federal court in Massachusetts which shall have exclusive jurisdiction thereof. The Department, with the approval of the Attorney General's Office, and the Contractor may agree to voluntary mediation through the Massachusetts Office of Dispute Resolution (MODR) of any Contract dispute and will share the costs of such mediation. No legal or equitable rights of the parties shall be limited by this Section.

15. *Contract Boilerplate Interpretation, Severability, Conflicts With Law, Integration.* Any amendment or attachment to any Contract which contains conflicting language or has the affect of a deleting, replacing or modifying any printed language of these Commonwealth Terms and Conditions, as officially published by ANF, CTR and OSD, shall be interpreted as superseded by the official printed language. If any provision of a Contract is found to be superseded by state or federal law or regulation, in whole or in part, then both parties shall be relieved of all obligations under that provision only to the extent necessary to comply with the superseding law, provided however, that the remaining provisions of the Contract, or portions thereof, shall be enforced to the fullest extent permitted by law. All amendments must be executed by the parties in accordance with Section 1. of these Commonwealth Terms and Conditions and filed with the original record copy of a Contract as prescribed by CTR. The printed language of the Standard Contract Form, as officially published by ANF, CTR and OSD, which incorporates by reference these Commonwealth Terms and Conditions, shall supersede any conflicting verbal or written agreements relating to the performance of a Contract, or attached thereto, including contract forms, purchase orders or invoices of the Contractor. The order of priority of documents to interpret a Contract shall be as follows: the printed language of the Commonwealth Terms and Conditions, the Standard Contract Form, the Department's Request for Response (RFR) solicitation document and the Contractor's Response to the RFR solicitation, excluding any language stricken by a Department as unacceptable and including any negotiated terms and conditions allowable pursuant to law or regulation.

IN WITNESS WHEREOF, The Contractor certify under the pains and penalties of perjury that it shall comply with these Commonwealth Terms and Conditions for any applicable Contract executed with the Commonwealth as certified by their authorized signatory below:

CONTRACTOR AUTHORIZED SIGNATORY:_____
(signature)

Print Name: _____

Title: _____

Date: _____

(Check One): _____ Organization _____ Individual

Full Legal Organization or Individual Name: _____

Doing Business As: Name (If Different): _____

Tax Identification Number: ____ ____ ____ ____ ____ ____ ____ ____ ____

Address: _____

Telephone: _____ FAX: _____

INSTRUCTIONS FOR FILING THE COMMONWEALTH TERMS AND CONDITIONS

A "Request for Verification of Taxation Reporting Information" form (Massachusetts Substitute W-9 Format), that contains the Contractor's correct TIN, name and legal address information, must be on file with the Office of the Comptroller. If the Contractor has not previously filed this form with the Comptroller, or if the information contained on a previously filed form has changed, please fill out a W-9 form and return it attached to the executed COMMONWEALTH TERMS AND CONDITIONS.

If the Contractor is responding to a Request for Response (RFR), the COMMONWEALTH TERMS AND CONDITIONS must be submitted with the Response to RFR or as specified in the RFR. Otherwise, Departments or Contractors must timely submit the completed and properly executed COMMONWEALTH TERMS AND CONDITIONS (and the W-9 form if applicable) to the***: Payee and Payments Unit, Office of the Comptroller, 9th Floor, One Ashburton Place, Boston, MA 02108*** in order to record the filing of this form on the MMARS Vendor File. Contractors are required to execute and file this form only once.

Sensitivity level – high (when filled in) low (when blank)

Form **W-9**
(Massachusetts Substitute W-9 Form)
Rev. April 2009

Request for Taxpayer Identification Number and Certification

Completed form should be given to the requesting department or the department you are currently doing business with.

Please print or type

Name (List legal name, if joint names, list first & circle the name of the person whose TIN you enter in Part I-**See Specific Instruction** on page 2)

Business name, if different from above. (**See Specific Instruction** on page 2)

Check the appropriate box: ☐ Individual/Sole proprietor ☐ Corporation ☐ Partnership ☐ Other ▶----------

Legal Address: number, street, and apt. or suite no.	**Remittance Address**: if different from legal address number, street, and apt. or suite no.
City, state and ZIP code	**City, state and ZIP code**

Phone # ( ) Fax # ( ) Email address:

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. For individuals, this is your social security number (SSN). **However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instruction on page 2**. For other entities, it is your employer identification number (EIN). If you do not have a number, see **How to get a TIN** on page 2.

Note: *If the account is in more than one name, see the chart on page 2 for guidelines on whose number to enter.*

Vendors:
Dunn and Bradstreet Universal Numbering System (DUNS)

Social security number
☐☐☐-☐☐-☐☐☐☐

OR

Employer identification number
☐☐-☐☐☐☐☐☐☐

DUNS
☐☐☐☐☐☐☐☐☐

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), **and**
2. I am not subject to backup withholding because: **(a)** I am exempt from backup withholding, or **(b)** I have not been notified by the Internal Revenue Services (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or **(c**) the IRS has notified me that I am no longer subject to backup withholding, **and**
3. I am an U.S. person (including an U.S. resident alien).
4. I am currently a Commonwealth of Massachusetts's state employee: (check one): No____ Yes _____ If yes**, in compliance with** the State Ethics Commission **requirements.**

Certification instructions: You must cross out item **2** above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item **2** does not apply.

Sign Here	**Authorized Signature ▶**	**Date ▶**

Purpose of Form

A person who is required to file an information return with the IRS must get your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to give your correct TIN to the person requesting it (the requester) and , when applicable, to:

1. Certify the TIN you are giving is correct (or you are waiting for a number to be issued).
2. Certify you are not subject to backup withholding

If you are a foreign person, use the appropriate Form W-8. See **Pub 515**, Withholding of Tax on Nonresident Aliens and Foreign Corporations.

What is backup withholding? Persons making certain payments to you must withhold a designated percentage, currently 28% and pay to the IRS of such payments under certain conditions. This is called "backup withholding." Payments that may be subject to backup withholding include interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

If you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return, payments you receive will not be subject to backup withholding. **Payments you receive will be subject to backup withholding if:**

1. You do not furnish your TIN to the requester, or
2. You do not certify your TIN when required (see the Part II instructions on page 2 for details), or
3. The IRS tells the requester that you furnished an incorrect TIN, or
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends only), or
5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See the Part II instructions on page 2.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of $50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a $500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of Federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Name. If you are an individual, you must generally enter the name shown on your social security card. However, if you have changed your last name, for instance, due to marriage without informing the Social Security Administration of the name change, enter your first name, the last name shown on your social security card, and your new last name.

If the account is in joint names, list first and then circle the name of the person or entity whose number you enter in Part I of the form.

Sole proprietor. Enter your **individual** name as shown on your social security card on the "Name" line. You may enter your business, trade, or "doing business as (DBA)" name on the "Business name" line.

Limited liability company (LLC). If you are a single-member LLC (including a foreign LLC with a domestic owner) that is disregarded as an entity separate from its owner under Treasury regulations section 301.7701-3, **enter the owner's name on the "Name" line**. Enter the LLC's name on the "Business name" line.

Caution: *A disregarded domestic entity that has a foreign owner must use the appropriate Form W-8.*

Other entities. Enter your business name as shown on required Federal tax documents on the "Name" line. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on the "Business name" line.

Part I - Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box.

If you are a **resident alien** and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see **How to get a TIN** below.

If you are a **sole proprietor** and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are an **LLC** that is **disregarded as an entity** separate from its owner (see ***Limited liability company (LLC)*** above), and are owned by an individual, enter your SSN (or "pre-LLC" EIN, if desired). If the owner of a disregarded LLC is a corporation, partnership, etc., enter the owner's EIN.

Note: *See the chart on this page for further clarification of name and TIN combinations.*

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get **Form SS-5**, Application for a Social Security Card, from your local Social Security Administration office. Get **Form W-7**, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN or **Form SS-4**, Application for Employer Identification Number, to apply for an EIN. You can get Forms W-7 and SS-4 from the IRS by calling 1-800-TAX-FORM (1-800-829-3676) or from the IRS's Internet Web Site **www.irs.gov**.

If you do not have a TIN, write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments.

The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note: *Writing "Applied For" means that you have already applied for a TIN* ***or*** *that you intend to apply for one soon.*

Part II - Certification

To establish to the paying agent that your TIN is correct or you are a U.S. person, or resident alien, sign Form W-9.

For a joint account, only the person whole TIN is shown in Part I should sign (when required).

Real estate transactions**.** You must sign the certification. You may cross out item 2 of the certification.

Dunn and Bradstreet Universal Numbering System (DUNS) number requirement –
The United States Office of Management and Budget (OMB) requires all vendors that receive federal grant funds have their DUNS number recorded with and subsequently reported to the granting agency. If a contractor has multiple DUNS numbers the contractor should provide the primary number listed with the Federal government's Central Contractor Registration (CCR) at /www.ccr.gov . Any entity that does not have a DUNS number can apply for one on-line at http://www.dnb.com under the DNB D-U-N Number Tab.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to give your correct TIN to persons who must file information returns with the IRS to report interest, dividends, and certain other income paid to you, mortgage interest you paid, the acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA or MSA. The IRS uses the numbers for identification purposes and to help verify the accuracy of your tax return. The IRS may also provide this information to the Department of Justice for civil and criminal litigation, and to cities, states, and the District of Columbia to carry out their tax laws

You must provide your TIN whether or not you are required to file a tax return. Payers must generally withhold a designated percentage, currently 28% of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to a payer. Certain penalties may also apply.

What Name and Number to Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account [1]
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor [2]
4. a. The usual revocable savings trust (grantor is also trustee)	The grantor-trustee [1]
b. So-called trust account that is not a legal or valid trust under state law	The actual owner [1]
5. Sole proprietorship	The owner [3]
For this type of account:	**Give name and EIN of:**
6. Sole proprietorship	The owner [3]
7. A valid trust, estate, or pension trust	Legal entity [4]
8. Corporate	The corporation
9. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
10. Partnership	The partnership
11. A broker or registered nominee	The broker or nominee
12. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity

[1] List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

[2] Circle the minor's name and furnish the minor's SSN.

[3] You must show your individual name, but you may also enter your business or "DBA" name. You may use either your SSN or EIN (if you have one).

[4]. List first and circle the name of the legal trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.)

Note: If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

If you have questions on completing this form, please contact the Office of the State Comptroller. (617) 973-2468.

Upon completion of this form, please send it to the Commonwealth of Massachusetts Department you are doing business with.

SUPPLEMENTAL INFORMATION TRAILER

This page is the last page of supplemental information for this competitive document. If you received this trailer page, all supplemental information has been received.

Note: portions of the supplemental information provided may or may not contain page numbers. The total number of pages indicated on the cover page does not include the pages contained in this supplement.