



Kevin A. Clougherty
Commissioner

State of New Hampshire Department of Revenue Administration

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Margaret L. Fulton
Assistant Commissioner

May 30, 2013

Her Excellency Margaret Wood Hassan, Governor
and The Honorable Council
State House
Concord, NH 03301

REQUESTED ACTION

Authorize the Department of Revenue Administration to enter into a SOLE SOURCE agreement with the University of New Hampshire Technology Transfer Center (T²) through the University of New Hampshire Office of Sponsored Research (vendor # 177867), Durham, NH for a fee not to exceed \$369,869, to update and improve the means by which the Department of Revenue Administration ("DRA") collects and processes data from the municipalities to develop municipal property tax rates. Effective upon Governor and Council approval through March 18, 2015. 100% Capital Funds. *General Fund,*

Funding is contingent for continued appropriation of funds and will be available in account:

FUNDING

01-84-84-840030-1788 Department of Revenue 10-145:1-XI-A Tax System

FY2014

034-500152 Design/Study

\$369,869

EXPLANATION

This agreement is SOLE SOURCE as T² possesses the unique knowledge, as the architects of the mosaic parcel map and the property tax equalization system, to rapidly create the e-file functionality for Municipal Services forms, and integrate the data into the property tax equalization system to automate the calculation of tax rates. T² has further demonstrated the unique ability to work with state and

TDD Access: Relay NH 1-800-735-2964

Individuals who need auxiliary aids for effective communication in programs and services of the Department of Revenue Administration are invited to make their needs and preferences known to the Department.

municipal officials to design sustainable processes which can be leveraged to increase efficiencies at the state and local levels.

The DRA is responsible for the accuracy, uniformity, and fairness of local appraisal functions to ensure that local property taxes and statewide property tax are equitably applied. Similarly, DRA is responsible for the apportionment of state, county and local tax rates resulting in fair and equitable property tax burdens statewide. In this regard DRA annually receives over twenty paper forms from each municipal entity (cities, towns, school districts, village districts, etc...) which are incompatible with an automated tax rate setting process. Creating e-file functionality for these forms and automating the tax rate setting process will increase department efficiency and provide valuable online resources for local communities.

There will not be any additional burden placed on the municipalities and it is quite possible that their burden will be lessened as a result of this initiative. The system as designed will provide to municipalities online access important tax rate information, dynamic online interaction with DRA staff, and improved and simplified form design.

T² specializes in establishing and leveraging relationships with NH municipalities, counties, and state agencies to rapidly and efficiently complete technical projects. They have already established professional relationships with DRA, DoIT, counties, and municipalities all of which are key players in the tax rate setting process.

Governor and Council approved a master statewide agreement on November 13, 2002 to perform this type of project for the purpose of expediting efforts of this nature.

Please be advised that the Department of Information Technology has approved this request. The approval letter is attached.

Sincerely,

A handwritten signature in black ink, appearing to read 'M. L. Fulton', with a long horizontal flourish extending to the right.

Margaret L. Fulton
Assistant Commissioner



STATE OF NEW HAMPSHIRE
DEPARTMENT OF INFORMATION TECHNOLOGY

27 Hazen Dr., Concord, NH 03301
Fax: 603-271-1516 TDD Access: 1-800-735-2964
www.doit.nh.gov

Peter C. Hastings
Acting Commissioner

May 21 2013

Interim Commissioner Margaret L. Fulton
Department of Revenue Administration
109 Pleasant Street
Concord, NH 03301

Dear Interim Commissioner Fulton,

This letter represents formal notification that the Department of Information Technology (DoIT) has approved your agency's request enter into a contract with the University of New Hampshire Technology Transfer Center (T2) of Durham, NH, as described below and referenced as DoIT No.2013-157.

This is a request to procure technical services to update and improve the means by which the Department of Revenue Administration (DRA) collects and processes data from the municipalities to develop municipal property tax rates. Contract funding is \$369,869 and the contract shall become effective upon Governor and Executive Council approval through March 18, 2015. This project is part of the "Granite to Green," DRA Modernization Initiative.

A copy of this letter should accompany the Department of Revenue Administration's submission to Governor and Executive Council for approval.

Sincerely,

A handwritten signature in cursive script that reads "Peter C. Hastings".

Peter C. Hastings

PCH/ltn
2013-157

COOPERATIVE PROJECT AGREEMENT

between the

STATE OF NEW HAMPSHIRE, **Department of Revenue Administration**

and the

University of New Hampshire of the UNIVERSITY SYSTEM OF NEW HAMPSHIRE

- A. This Cooperative Project Agreement (hereinafter "Project Agreement") is entered into by the State of New Hampshire, **Department of Revenue Administration**, (hereinafter "State"), and the University System of New Hampshire, acting through **University of New Hampshire**, (hereinafter "Campus"), for the purpose of undertaking a project of mutual interest. This Cooperative Project shall be carried out under the terms and conditions of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, except as may be modified herein.
- B. This Project Agreement and all obligations of the parties hereunder shall become effective on the date the Governor and Executive Council of the State of New Hampshire approve this Project Agreement ("Effective date") and shall end on **3/18/15**. If the provision of services by Campus precedes the Effective date, all services performed by Campus shall be performed at the sole risk of Campus and in the event that this Project Agreement does not become effective, State shall be under no obligation to pay Campus for costs incurred or services performed; however, if this Project Agreement becomes effective, all costs incurred prior to the Effective date that would otherwise be allowable shall be paid under the terms of this Project Agreement.
- C. The work to be performed under the terms of this Project Agreement is described in the proposal identified below and attached to this document as Exhibit A, the content of which is incorporated herein as a part of this Project Agreement.

Project Title: **Proposal for Municipal Services E-File and Systems Administration**

- D. The Following Individuals are designated as Project Administrators. These Project Administrators shall be responsible for the business aspects of this Project Agreement and all invoices, payments, project amendments and related correspondence shall be directed to the individuals so designated.

State Project Administrator

Name: Mary Tanguay
 Address: NH Dept of Revenue Administration
109 Pleasant St.
Concord, NH 03301
 Phone: 603-230-5007

Campus Project Administrator

Name: Dianne Hall
 Address: University of New Hampshire
Sponsored Programs Administration
51 College Rd. Rm 116
Durham, NH 03824
 Phone: 603-862-1942

- E. The Following Individuals are designated as Project Directors. These Project Directors shall be responsible for the technical leadership and conduct of the project. All progress reports, completion reports and related correspondence shall be directed to the individuals so designated.

State Project Director

Name: Stephan Hamilton
 Address: NH Dept of Revenue Administration
109 Pleasant St.
Concord, NH 03301
 Phone: 603 230 5960

Campus Project Director

Name: Charles Goodspeed III
 Address: UNH Civil Engineering Dept.
33 College Rd.
Durham, NH 03824
 Phone: 603 862-1443

F. Total State funds in the amount of \$369,869 have been allotted and are available for payment of allowable costs incurred under this Project Agreement. State will not reimburse Campus for costs exceeding the amount specified in this paragraph.

Check if applicable

Campus will cost-share _____ % of total costs during the term of this Project Agreement.

Federal funds paid to Campus under this Project Agreement are from Grant/Contract/Cooperative Agreement No. _____ from _____ under CFDA# _____. Federal regulations required to be passed through to Campus as part of this Project Agreement, and in accordance with the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, are attached to this document as Exhibit B, the content of which is incorporated herein as a part of this Project Agreement.

G. Check if applicable

Article(s) 18 of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002 is/are hereby amended to read:

The State shall hold all ownership, title, and rights in any Custom Software developed in connection with performance of obligation under the Contract, or modification to the Software, and their associated Documentation including any and all performance enhancing operational plans and Vendors' special utilities. The State shall have sole right to produce, publish, or otherwise such Software, modifications, and Documentation developed under the Contract and to authorize others to do so. The State shall not sell or otherwise commercialize the Software to third parties without permission of the University of New Hampshire.

In no event shall the University of New Hampshire be precluded from developing for itself, or for others, materials that are competitive with, or similar to Custom Software, modifications developed in connection with performance of obligations under the Contract. In addition, the University of New Hampshire shall be free to use its general knowledge, skills, experience, and any other ideas, concepts, know-how, and techniques that are acquired or used in the course of its performance under this agreement.

- H. State has chosen **not to take** possession of equipment purchased under this Project Agreement.
 State has chosen **to take** possession of equipment purchased under this Project Agreement and will issue instructions for the disposition of such equipment within 90 days of the Project Agreement's end-date. Any expenses incurred by Campus in carrying out State's requested disposition will be fully reimbursed by State.

This Project Agreement and the Master Agreement constitute the entire agreement between State and Campus regarding this Cooperative Project, and supersede and replace any previously existing arrangements, oral or written; all changes herein must be made by written amendment and executed for the parties by their authorized officials.

IN WITNESS WHEREOF, the University System of New Hampshire, acting through the **University of New Hampshire** and the State of New Hampshire, **Department of Revenue Administration** have executed this Project Agreement:

By An Authorized Official of:

University of New Hampshire

Name: Karen M. Jensen

Title: Manager, Sponsored Programs Administration

Signature and Date:

Karen M. Jensen 5/16/13

By An Authorized Official of: the New Hampshire Office of the Attorney General

Name: Michael K. Brown

Title: Sr. Asst. Atty General

Signature and Date:

M. K. Brown 5/30/13

By An Authorized Official of:

Department of Revenue Administration

Name: Margaret Fulton

Title: Assistant Commissioner

Signature and Date:

M. Fulton 5/20/13

By An Authorized Official of: the New Hampshire Governor & Executive Council

Name:

Title:

Signature and Date:

EXHIBIT A

- A. Project Title:** Proposal for Municipal Services E-File and Systems Administration
- B. Project Period:** 6/20/2013-3/18/2015
- C. Objectives:** The University of New Hampshire Technology Transfer Center (T2) proposes to prepare processes, software and workflows sufficient to provide the New Hampshire Department of Revenue Administration (DRA) with the capabilities to electronically capture and process data supplied by municipalities for the property tax rate setting process. DRA's Municipal Services (MS) division sets property tax rates for over 500 political subdivisions in New Hampshire, through an existing semi-manual process. There are over 30 forms that are included in the process. T2 proposes to convert 24 of the MS forms to E-file, smart PDF forms which will allow filers to submit for data directly to DRA for processing. Additionally, T2 proposes to develop a software module as an expansion of the existing Property Tax Equalization System (EQ System) to process data and calculate tax rates. This data collection and processing model will reduce DRA and municipal work loads, and increase data integrity.
- D. Scope of Work:** A detailed scope of work is provided in the proposal titled "Proposal for Municipal Services E-file and Systems Modernization" dated April 20, 2013 and is incorporated by reference. Specific tasks include:
1. Review and Learning of the Tax Rate Setting Process (TRSP)-The first step in the modernization of the TRSP will be an in depth assessment of the existing data and processes. The assessment will determine if elements of the existing workflow can be modified or removed to increase the efficiency of the TRSP.
 2. Form and Data Conversion-The creation of automated forms and data streams is necessary to improve data integrity and reduce labor time. Twenty four (24) of the existing MS forms will be converted from Microsoft Excel to smart PDF's. The PDF's will be E-file ready, and will be the new data transmission method.
 3. SQL Database Development-An enterprise level, relational, SQL database will be developed to receive and store form data. The new database will replace the existing Microsoft Access databases. The existing TRSP incorporates a single production database that is rebuilt annually. To increase data integrity in the TRSP, a staging database will be introduced to isolate incoming form information from the production environment. Database will reside on existing DRA servers already configured for same.
 4. System Development-A web based .net platform will be developed as a module of the existing Property Tax Equalization System (EQ System) to process data and calculate tax rates. This will leverage the existing EQ system architecture including: user levels/credentials, system databases, password rules, and login structure. Utilizing the EQ system as a backbone will help to reduce the overall cost and development time. The system will encompass 4 major components: Form Status Control Panel, Warrant Article Manager, Tax Rate Calculator and the Reporting Module. All elements of the tax rate calculation will be handled in the system, from draft data submission to tax rate generation.
- E. Deliverables Schedule:** Timing of deliverables is outlined in the schedule attached to the proposal titled "Proposal for Municipal Services E-file and Systems Modernization" dated April 20, 2013

Review and Learning:

- 1 Comprehensive report on the existing TRSP process, forms and data used
- 2 Recommendations for leaning the TRSP
- 3 Development of a focus group
- 4 Conduct regular meetings with the focus group

Forms and Data:

- 5 Conversion of forms from MS Excel to PDF (MS: 1, 4, 5, 6, 6C, 7, 9, 10, 11, 12, 22, 24, 25, 26, 26c, 27, 31, 32, 34, 35, 36, 37, 61)
- 6 Develop XML E-file paths (MS: 1, 4, 5, 6, 6C, 7, 9, 10, 11, 12, 22, 24, 25, 26, 26c, 27, 31, 32, 34, 35, 36, 37, 61)

Database Development:

- 7 Design and build SQL database (staging and production)
- 7a Database Tables (MS: 1, 4, 5, 6, 6C, 7, 9, 10, 11, 12, 22, 24, 25, 26, 26c, 27, 31, 32, 34, 35, 36, 37, 61, 42*, 45*, 46*, Warrant Articles*, DOE data*)
- 8 LiveCycle form porting path development
- 9 LiveCycle form review interface
- 10 LiveCycle form reject automated notification

TRSP Software Development:

- 11 Form Status Control Panel
- 11a All entities status screen
- 11b Single entity status screen
- 11c Ability to view form data
- 12 Warrant Article Management System
- 12a Warrant article generation
- 12b Preliminary review interface
- 12c Final review interface
- 13 Tax Rate Calculator
- 14 Reporting Tools
- 14a Warrant Article Report
- 14b Preliminary Rate report
- 14c Tax Commitment Certification report
- 14d Directors Check off Sheet
- 14f Final Tax Rate Report
- 14e Statewide Status Report
- 14g Anticipated Overlay Retention Report

Security & Testing:

- 15 Test Plan
- 16 User Acceptance Plan
- 17 Completed Unit Testing
- 18 Completed Installation Testing
- 19 Completed Security Review

F. Budget and Invoicing Instructions:

Budget items	Total
Salaries and Wages	\$130,003
Fringe Benefits	\$ 10,390
Travel	\$ 5,051
Supplies and Services	\$ 10,800
Subcontractors	\$160,001
F&A Costs	\$ 53,624
 Subtotal	 \$ 369,869

Campus will submit invoices to State on regular Campus invoice forms no more frequently than monthly and no less frequently than quarterly. Invoices will be based on actual project expenses incurred during the invoicing period, and shall show current and cumulative expenses by major cost categories. State will pay Campus within 30 days of receipt of each invoice. Campus will submit its final invoice not later than 60 days after the Project Period end date.

G. Other:

Funding Credit: All materials produced for public distribution shall be reviewed and approved by the State Project Director prior to distribution and shall include a citation that funding was provided by the New Hampshire Department of Revenue Administration (DRA) with the DRA logo.

Proposal for Municipal Services E-file and Systems Modernization

Technology Transfer Center at UNH
April 20, 2013

Dr. Charles H. Goodspeed
David Salzer
Patrick Santoso



New Hampshire
Technology Transfer Center

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1.0 Introduction / Purpose

The purpose of this document is to outline T²'s proposed approach to fully automating the tax rate setting process within the NH Department of Revenue Administration (DRA) Municipal Services Division (MS). This project includes form submission from each of the 235 municipalities utilizing Adobe PDF forms, and LiveCycle processes for database inserts (stage table, batched to prod). The actual calculation of the tax rate will take place within a to-be developed module of the existing equalization system. In addition to the details of the existing and future processes, this document also includes DoIT Considerations in conjunction with applicable language and restrictions per the established Master Services Agreement (MSA) between the State of NH and UNH. The standard DoIT security and testing addendum has been incorporated as Appendix A, with modifications appropriate for this project noted in the Special Provisions section. The MSA has been modified to reflect the state of NH ownership of the code, as has been typical in agreements between T² and DRA.

The MS division at DRA sets property tax rates for over 500 political subdivisions in New Hampshire. For the purposes of property tax rates, political subdivisions or entities consist of counties, municipalities, village districts, and school districts. Each entity provides DRA with extensive details of their total valuation, proposed and approved appropriations, as well as revenues via 25 forms. The end result of the process is the setting of a tax rate, represented as a dollar amount per one thousand dollars of assessed value. An example of a municipal tax rate breakdown is shown in table 1. Taxes collected per entity for an example property 'black acre', valued at \$ 250,000 are shown in table 2.

<i>Entity Rates</i>	<i>Amount / Thousand</i>
Municipal	\$ 8.56
Local Education	\$ 9.39
State Education	\$ 2.43
County	\$ 1.11
Total	\$ 21.49

Table 1, Example of a property tax rate breakdown

<i>Entity</i>	<i>Tax Collected</i>
Municipal Rate	\$ 2,140.00
Local Education Rate	\$ 2,347.50
State Education Rate	\$ 607.50
County Rate	\$ 277.50
Total	\$ 5,372.50

Table 2, Example of taxable amounts based on table 1 rates

2.0 Existing Process

2.1 Overview

Over a two-week period, T² met with MS personnel to better understand the existing Tax Rate Setting Process (TRSP). Through those meetings T² developed an understanding of the TRSP including the data, and workflows and scheduling. The proposal outlined herein represents T²'s current understanding of the TRSP.

Figure 1 illustrates the basic workflow of the TRSP. The figure is divided into two sections, *Form and Data Submission*, and *Processes*. Forms marked with an asterisk indicate that they are due on those dates for municipalities that follow a fiscal year calendar.

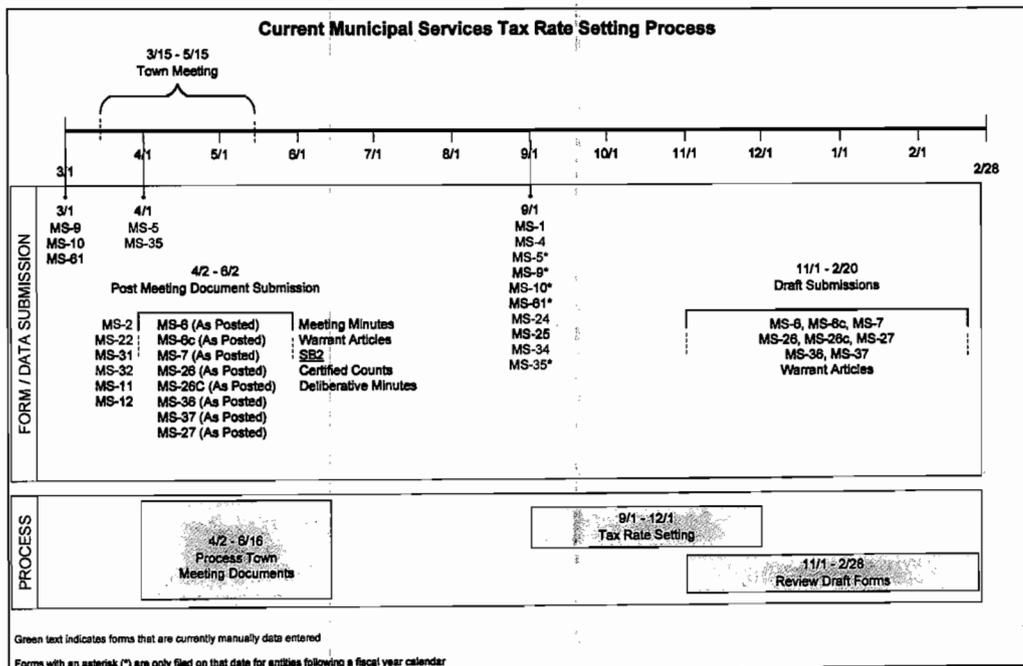


Figure 1, TRSP workflow

Municipalities, at their own discretion, may adopt SB2 status pursuant to RSA 40:13. This provision incorporates a process whereby all warrant articles are given their final vote by official ballot. In SB2 communities the annual town meeting consists of two sessions: the first deliberative session (held in late January or early February) to discuss and possibly amend the warrants, and the second (typically held the second Tuesday in March) which serves to elect town officials, take final action on deliberative sessions items, and conduct the actual vote on warrant items. SB2 municipalities follow a different schedule as noted in figure 1 above, due to the second town meeting and voting process.

2.2 Forms

Currently there are 31 forms that are part of the TRSP. The forms are broken into subsets; Local (table 3), School Districts (table 4), Village Districts (table 5) and Counties (table 6). Forms are numbered in series as to indicate which subset they are a part of. For example all county forms are in the 40 series, meaning that the form numbers range from 40-49. There are also commonalities in the form numbering. For example an MS-2 is a "Report of Appropriations as Voted" for a local entity and an MS-32 is a "Report of Appropriations as Voted" for a Village District. For all sets of forms a "2" indicates appropriations as voted. This common form nomenclature makes it easier to work with the large quantities of data in the process.

Local (Municipal) Forms		
Form	Name	Due Date
MS-1	Summary of Valuation	9/1
MS-2	Report of Appropriations as Voted	Meeting Date +20
MS-4	Revised Estimate Reviews	9/1
MS-5	Financial Report	4/1 or 9/1 (FY)
MS-6	Budget of the Town	Meeting Date +20 days
MS-6c	Budget of the City	Meeting Date +20 days
MS-7	Budget of Town w/ MBC	Meeting Date +20 days
MS-9	Report of Trust Funds	3/1 or 9/1 (FY)
MS-10	Report of Common Trust Investments	3/1 or 9/1 (FY)
MS-11	Report of Town Officials	Meeting Date +20 days
MS-12	Report of City Officials	Meeting Date +20 days
MS-50	Treasurer's Report of Borrowing	RSA 33:7 & RSA 33:8
MS-60	Auditor's Report	Within 10 days of acceptance
MS-60A	Auditor Option and Schedule	close fiscal year+10 days
MS-60W	Audit Waiver Request, if applicable	close fiscal year+45 days
MS-61	Tax Collector's Report	3/1 or 9/1 (FY)

Table 3, Local TRSP forms

School District Forms		
Form	Name	Due Date
MS-22	Report of Appropriations Actually Voted	Meeting Date +20 days
MS-24	Revised Estimated Revenues	9/1
MS-25	DRA Cover for Financial Report	9/1
MS-26	School Budget	Meeting Date +20 days
MS-26c	Dependent School Budget	Meeting Date +20 days
MS-27	Budget Form for School Districts with MBC	Meeting Date +20 days

Table 4, School district TRSP forms

Village District Forms		
Form	Name	Due Date
MS-31	Report of Officers	Meeting Date +20 days
MS-32	Report of Appropriations Actually Voted	Meeting Date +20 days
MS-34	Revised Estimated Revenues	9/1
MS-35	Financial Report for Village Districts	3/1 or 9/1 (FY)
MS-36	Budget Form for Village Districts	Meeting Date +20 days
MS-37	Budget Form for Village Districts with MBC	Meeting Date +20 days

Table 5, Village district TRSP forms

County Forms		
Form	Name	Due Date
MS-42	County Appropriations as Voted	9/1
MS-45	Annual County Financial Report	4/1 or 9/1 (FY)
MS-46	Proposed Budget and Revenue Estimate	9/1

Table 6, County TRSP forms

2.3 Data

2.3.1 Warrant Articles

One of the most time intensive and critical processes of the TRSP is the review of warrant articles. Warrant articles are essentially town meeting agenda items for the entity. For the purposes of the tax rate setting process, a warrant articles is a proposed expenditure to be voted on by the entities constituents at town meeting. Warrant articles require specific language to ensure they follow state statutes and are legally acceptable. The majority of filers submit draft warrant articles to MS in the late fall for review. MS personnel provide feedback and potential language changes to the entity. The warrant articles (as posted at town meeting) coincide with the MS-6, 6-C, or 7 (MS-26, MS-26c, MS-27 for Schools, MS-36 for Villages) depending on the structure of the entity.

At town meeting, warrant articles are either approved or rejected by the voters, and an MS-2, MS-22, or MS-32 (Appropriations as Voted) is filed with DRA. In addition to the MS-2, town meeting minutes are transmitted. MS personnel check the language of the warrant articles against the meeting minutes to determine which appropriations were approved. At this point, MS personnel can disallow warrant articles if they were improperly drafted (incorrect language). Currently, no standardized format exists for drafting and submitting warrant articles; they are transmitted to DRA in a variety of formats, including hard copy.

2.3.2 Department of Education Apportionment

The Department of Education (DOE) is directly involved in the appropriations apportionment for cooperative school districts. DRA provides DOE with the total appropriation for the district. In return, DOE provides DRA with the apportionment among the towns in the cooperative school district.

2.3.3 Supplemental Data

Additional information is collected from the entities including: annual reports, certified counts (SB-2), and minutes from the deliberative session (SB-2). This information does not have a standard and is currently transmitted to DRA in a variety of formats

2.4 Form and Data Submission

2.4.1 Preliminary Review

The TRSP is started by most entities in the late fall, when draft forms and data are submitted to MS for a preliminary review. The forms and data submitted are listed in Table 7. The preliminary review allows MS personnel to provide filers with feedback on their warrant article language, which is critical to final approval. This step also enables MS personnel to provide feedback on the preliminary (to be posted) budgets, which will be presented to voters at town meeting.

Form	Description
MS-6	Budget of the Town
MS-6c	Budget of the City
MS-7	Budget of Town w/ MBC
MS-26	School Budget
MS-26c	Dependent School Budget
MS-27	Budget Form for School Districts with MBC
MS-36	Budget Form for Village Districts
MS-37	Budget Form for Village Districts with MBC
WA	Draft Warrant Articles

Table 7, Forms and Data submitted for preliminary review

2.4.2 Financial Reporting

On March, 1 (September 1, for fiscal year filers), completed MS-9 (Report of Trust Funds), MS-10 (Report of Common Trust Investments), and MS-61 (Tax Collectors Report) must be submitted to DRA. On April, 1 (September 1, for fiscal year filers), completed MS-5 (Financial Report), and MS-35 (Financial Reports for Village Districts) must be submitted to DRA. These forms are currently maintained in Excel format. Each form is manually data entered into an Access database.

2.4.3 Town Meeting Reporting

Between March and May, entities conduct town meetings. During town meeting warrant articles are voted on and official budgets are ratified by the entities constituents. No later than 20 days following

town meeting, the applicable documents in table 8 must be filed with DRA. Documents labeled “As Posted” refer to copies of the exact information that was presented to voters at Town Meeting.

Information Due 20 Days After Town Meeting		
MS-2	MS-6 (As Posted)	MS-11
MS-22	MS-6c (As Posted)	MS-12
MS-27	MS-7 (As Posted)	Meeting Minutes
MS-31	MS-26 (As Posted)	Warrant Articles
MS-32	MS-26c (As Posted)	Certified Counts (SB-2 ONLY)
MS-36	MS-36 (As Posted)	Deliberative Minutes (SB-2 ONLY)
MS-37	MS-37 (As Posted)	

Table 8, Town meeting forms and data

These forms are currently maintained in Excel format. Some forms are manually data entered into an Access database. Currently, the following forms are not being data entered; MS-6, MS-6c, MS-7, MS-26, MS-26c, MS-36, MS-37. Meeting minutes and warrant articles are not standardized, and therefore are submitted in a variety of formats and their contents are not logged in a database.

2.4.4 Valuation Reporting

On September 1, the applicable documents in table 9 must be submitted. Forms marked with an asterisk indicate that they are only filed on September, 1 by filers who operate on a fiscal year calendar. September 1, marks the point when all necessary form to set the tax rate have been submitted.

Forms Due September, 1	
MS-1	MS-5*
MS-4	MS-9*
MS-24	MS-10*
MS-25	MS-61*
MS-34	MS-35*

Table 9, Forms due September 1

2.5 Tax Rate Calculations

The calculation of the tax rate is the final step in the TRSP. This process requires pieces of information that have been submitted to MS throughout the year by entities and the DOE. Currently, MS personnel maintain an Excel workbook that performs calculations to determine the preliminary and final tax rates which are a combination of the; County Rate, Local Rate, School District Rate, State Education Rate, and Village Rate (if applicable). The tax rates are first estimated using preliminary figures, and subsequently calculated using final approved budget numbers and appropriations. This includes any applicable fund balance to use as revenue surplus and any established overlay (RSA 76:6).

The general municipal tax rate (per \$1,000.00) formula is:

$$Muni Tax Rate = \frac{gross\ appropriations - revenues + overlay + war\ service\ credit - shared\ revenue}{Locally\ Assessed\ Property\ Valuation\ (line\ 21\ of\ MS - 1) * 1000}$$

The general local education rate (per \$1,000.00) formula is:

$$\text{Local Education Rate} = \frac{\text{Net School Appropriations} - \text{Grants} - \text{State Tax}}{\text{Locally Assessed Property Valuation (line 21 of MS - 1)} * 1000}$$

The general statewide education rate (per \$1,000.00) formula is:

$$\text{State Education Rate} = \frac{(\text{State Education Rate} * (\text{Equalized Values Without Utilities}))}{\text{Locally Assessed Property Valuation Without Utilities (line 23 of MS - 1)} * 1000}$$

The general county rate (per \$1,000.00) formula is:

$$\text{County Rate} = \frac{(\text{County Net Appropriation}) * (\text{Municipal Equalized Value as \% of County Total})}{\text{Locally Assessed Property Valuation (line 21 of MS - 1)} * 1000}$$

The general village district rate (per \$1,000.00) formula is:

$$\text{Village District(s) Rate} = \frac{\text{Net Appropriations}}{\text{Locally Assessed Village District Valuation} * 1000}$$

3.0 Proposed Process

3.1 Overview

The existing MS process has worked successfully for years in its current, “manual” state. The process has two major deficiencies: (1) data integrity and (2) excessive labor dedicated to the entering and processing data. Modernizing the process will allow DRA to drastically reduce the hours required for data entry and processing. The introduction of automated form submission (E-File), and enterprise level databases will greatly improve data integrity at each step of the process. The modernization process is broken into 4 sections:

1. Review and Leaning of the TRSP
2. Form and Data Conversion
3. SQL Database Development
4. System Development (Tax Rate Setting)

3.2 Review and Leaning of TRSP

The first step in the modernization of the TRSP will be an in depth assessment of the existing data and processes. The assessment will determine if elements of the existing workflow can be modified or removed to increase the efficiency of the TRSP. It should be noted that the forms are statutorily required, and the result of the lean process will not result in less forms, but rather focus on optimizing form content, format and eliminating data redundancy. It may also potential workflow optimizations.

3.2.1 Lean Recommendations/Implementation

Over a period of 20 days, T² will investigate the current TRSP through a review of existing documentation and meetings with stakeholders. During that time T² will identify elements of the TRSP that could be modified to increase the efficiency of the process. Following the 20 day investigation period, T² will present DRA with a report outlining the recommendations for leaning the TRSP.

DRA will have 10 days to review the findings and determine which elements of the TRSP will be modified. DRA shall formally respond to the lean recommendation in writing within 10 days of T² submitting its findings and recommendations.

3.2.2 Focus Group

During the leaning process T² will develop a workgroup of filers consisting of representatives from municipalities, school districts and village districts. Filers provide the majority of information that is used in the process, and having their feedback incorporated into the modernization process will help improve the adoption rate throughout the project. The focus group will continue to meet after the leaning process to evaluate different elements of the modernization of the TRSP.

3.3 Forms and Data

The creation of automated forms and data streams is necessary to improve data integrity and reduce labor time. The majority of the existing MS forms will be converted from Microsoft Excel to smart PDF's. The PDF's will be E-file ready, and will be the new data transmission method. Warrant Articles will be the only non-form data modified as part of the modernization. The proposed modifications to the Warrant Article data stream are outlined in the IT Considerations section.

3.3.1 Forms

Currently all statutorily required MS forms are Excel based, and not E-file ready. Converting the forms to E-File, smart PDF's will enable filers to directly submit their data to DRA, electronically. PDF forms also provide filers with dynamic feedback and validation, integrated user help and the ability to save work incrementally. DRA currently has the software and hardware architecture in place to receive E-file data from PDF smart forms. The forms in table 10 will be converted as part of the modernization process.

Forms to be Converted to E-File			
MS-1	Summary of Valuation	MS-24	Revised Estimated Revenues
MS-2	Report of Appropriations as Voted	MS-25	DRA Cover for Financial Report
MS-4	Revised Estimate Reviews	MS-26	School Budget
MS-5	Financial Report	MS-26c	Dependent School Budget
MS-6	Budget of the Town	MS-27	Budget Form for School Districts with a Muni Budget Committee
MS-6c	Budget of the City	MS-31	Report of Officers
MS-7	Budget of Town w/ Muni Budget Committee	MS-32	Report of Appropriations Actually Voted
MS-9	Report of Trust Funds	MS-34	Revised Estimated Revenues
MS-10	Report of Common Trust Investments	MS-35	Financial Report for Village Districts
MS-11	Report of Town Officials	MS-36	Budget Form for Village Districts
MS-12	Report of City Officials	MS-37	Budget Form for Village Districts with a Municipal Budget Committee

MS-22	Report of Appropriations Actually Voted	MS-61	Tax Collector's Report
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Table 10, Forms to be converted to E-File, PDF's

The forms are categorized in three groups (A, B, and C), based on their priority. Forms in the priority A group will be converted first as they are the most critical to the TRSP. Priority groups A, B and C are shown in tables, 11, 12, and 13 respectively.

Priority Group A Forms (High Priority)	
MS-1	Summary of Valuation
MS-2	Report of Appropriations as Voted
MS-22	Report of Appropriations Actually Voted
MS-32	Report of Appropriations Actually Voted
MS-4	Revised Estimate Reviews
MS-24	Revised Estimated Revenues
MS-34	Revised Estimated Revenues
MS-5	Financial Report
MS-25	DRA Cover for Financial Report
MS-35	Financial Report for Village Districts

Table 11, Priority group A forms

Priority Group B Forms (Medium Priority)	
MS-9	Report of Trust Funds
MS-10	Report of Common Trust Investments
MS-11	Report of Town Officials
MS-12	Report of City Officials
MS-31	Report of Officers

Table 12, Priority Group B Forms

Priority Group C Forms (Low Priority)	
MS-6	Budget of the Town
MS-26	School Budget
MS-36	Budget Form for Village Districts
MS-6c	Budget of the City
MS-26c	Dependent School Budget
MS-7	Budget of Town w/ Muni Budget Committee
MS-27	Budget Form for School Districts with a Muni Budget Committee
MS-37	Budget Form for Village Districts with a Muni Budget Committee
MS-61	Tax Collector's Report

Table 13, Priority Group C Forms

3.3.2 Data

Data incorporated into the TRSP includes; Warrant Articles, Department of Education data, and data derived from County forms (MS-42, MS-45, MS-46). As indicated earlier, Warrant Articles will be developed in a complete management system as an element of the proposed TRSP software.

The system will be capable of handling the other required information such as the department of education data required for rate setting. However, it is anticipated that automating these data streams would be cost prohibitive and provide little functional benefit. A data entry screen will be provided on the state interface to include these data elements into the database.

3.4 Database Development

An enterprise level, relational, SQL database will be developed to receive and store form. The new database will replace the existing Microsoft Access databases. The overall database architecture is shown in figure 2. The existing TRSP incorporates a single production database that is rebuilt annually. To increase data integrity in the TRSP, a staging database will be introduced to isolate incoming form information from the production environment.

Information submitted by filers (XML data) will be deposited into the staging database and placed in a queue for MS personnel to review. The review process will be through the use of the existing LiveCycle Workbench platform. MS personnel will login to their personalized Workbench and have the ability to review form data submitted by filers. Approved forms will be routed to the production database for use in the TRSP application. Rejected forms will be returned to the filer for review and resubmission via an automated email notification.

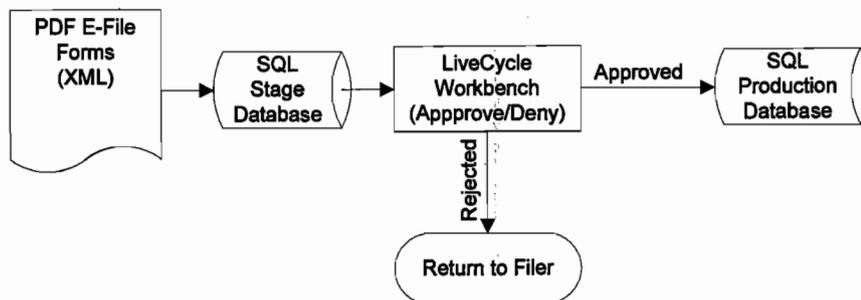


Figure 2, Proposed database workflow

The proposed database development will commence concurrent to the development of the E-file, PDF forms. The generation of an XML schema for the forms will be the foundation of database structure. Development of the staging database will incorporate the majority of the elements necessary for the construction of the productions database. Databases will reside on the existing Adobe cluster servers

and leverage existing architecture. Details of how these systems would be integrated with the existing architecture are provided in the DoIT considerations section.

3.5 Tax Rate System Development

A web based .net platform will be developed as a module of the existing Property Tax Equalization System (EQ System) to process data and calculate tax rates. This will leverage the existing EQ system architecture including: User levels/credentials, system databases, password rules, and login structure. Utilizing the EQ system as a backbone will help to reduce the overall cost and development time. The system will encompass 4 major components: Form Status Control Panel, Warrant Article Manager, Tax Rate Calculator and the Reporting Module. All elements of the tax rate calculation will be handled in the system, from draft data submission to tax rate generation. Each of the programs functions are outlined herein.

3.5.1 Form Status Control Panel

The Form Status Control Panel will be the home for MS personnel using the system. A mockup of the panel is shown in figure 3. From this location, the status of all entities can be viewed by data element in an easy to understand color coded system. Each piece of information in the process will have a status indicator as well as an overall status indicator for the entity.

Town	Subset	1	2	4	5	6c	7	9	10	11	12	22	24	25	26	26c	27	31	32	35	36	37	61	MN	Status	
Durham	Oyster River Coop																									
Farmington	Oyster River Coop																									
Lee	Oyster River Coop																									
Madbury	Oyster River Coop																									

Figure 3, Form status control panel

Entities can be grouped by association (i.e. when looking at Durham, Oyster River Cooperative School District would also be visible or when looking at Oyster River Cooperative School District the towns of Durham, Lee and Madbury would also be visible) to better understand the cross connectivity of entities.

From the Form Status Control Panel users can view a specific entity as shown in figure 4. This will provide the user with a mechanism to view forms and data for the specific entity. This will also be the location where MS personnel will indicate that the entity is ready to be put into the queue for the tax rate calculation process

Assessment Web Portal Town of Durham, New Hampshire

Home **Warrants** Set Rates

Town of Durham				
Form	Date Submitted	Date Approved	Date Rejected	Resubmitted
MS-1	8/25	8/26	NA	NA
MS-2	4/12	4/12	NA	NA
MS-4	8/25	8/26	NA	NA
MS-9	2/27	3/1	NA	NA
MS-10	2/27	3/1	NA	NA
MS-14	4/10	4/12	NA	NA
MS-12	4/10	4/12	NA	NA
Meeting Minutes	4/10	4/12	NA	NA
Warrant Articles	4/10	4/12	NA	NA

Figure 4, Form status control panel, specific entity view

3.5.2 Warrant Article Manager

As previously mentioned, the preliminary review and tracking of warrant articles has been identified as one of the most time consuming and critical steps of the TRSP. To increase standardization and data integrity, T² proposes to develop a Warrant Article Manager. The Warrant Article Manager will be the one-stop location municipalities and MS personnel to work with Warrant Article data. Municipalities will have the ability to generate warrant articles, and submit them to DRA for preliminary and final review. MS personnel will have the ability to track and review Warrant Articles in a single interface with companion form data.

Warrant Article Generator

Entities will be able to log onto the system and draft Warrant Articles through a wizardized process as shown in figure 5. The automated process will allow entities and DRA to track the number and types of Warrant Articles being drafted. Entities will be presented with the option of using pre-approved, standardized language for their Warrant Articles. This will help to create standardized Warrant Articles independent of entity. This will minimize variability, decrease the time needed for review and decrease the number of Warrant Articles that are "disallowed" by DRA after town meeting. After generating draft Warrant Articles, entities will have the ability to submit them to MS for preliminary review. Entities will have the ability to edit and save data in a cloud environment throughout the life cycle of the Warrant Articles.

Assessment Web Portal Town of Braham, New Hampshire

Home **Warrants** Set Rates

Warrant Article Number

Warrant Article Name

Warrant Article Amount

Short Description (Max: 50 Characters)

Full Description

Figure 5, Warrant Article Manager used to generate a new Warrant Article

Preliminary Warrant Article Review Tool

Following the generation of the warrant articles, MS personnel will be able to perform a preliminary review electronically. The current TRSP does not require a preliminary review, although most entities choose to go through the process. Figure 6 shows a mockup of the Preliminary Review screen. Entities go through the preliminary review process for a number of reasons. First, it allows DRA to comment relative to the language used in the Warrant Articles. Improper language can result in the Warrant Article being disallowed by DRA even after the voters have approved it. Second it allows DRA to crosscheck Warrant Articles against the proposed budget of the entity (an MS-6, MS-6c, MS-7, MS-26, MS-26c, MS-27, MS-36 or MS-37 form).

Assessment Web Portal Town of Durham, New Hampshire

Home Warrants **Set Rates**

Warrant Article Number:

Warrant Article Name:

Warrant Article Amount:

MS-6 Article Amount:

Short Description (Max 80 Characters):

Full Description:

MS Reviewer:

Review Date:

Comments:

Figure 6, Warrant Article Manager-MS preliminary review

The preliminary review screen will provide an automated crosscheck of the Warrant Article against the specific budget line item that is filed by the entity in the preliminary budget. MS personnel will be allowed to comment relative to the Warrant Articles and indicate to the entity if their proposed budget and warrant articles are in sync.

Final Warrant Article Review Tool

Following town meeting, entities submit their MS-2 (MS-22 for schools, MS-32 for villages) and town meeting minutes to DRA for final review. MS personnel will be able to review the Warrant Article adjacent to the corresponding information from the preliminary budget line item (from MS-6, MS-6c, etc.) and the line item as voted (MS-2, MS-22, MS-32). An automated check will provide a prompt to the operator if the budget as approved and the Warrant Article types and amounts do not match. A mockup of this process is shown in figure 7. Concurrent to this process, MS personnel will cross check the warrant articles against the town meeting minutes. MS personnel will be able mark the warrant as; Allowed, Disallowed, or Partially Allowed.

Assessment Web Portal Town of Durham, New Hampshire

Home Warrants Set Rates

Warrant Article Number: 1

Warrant Article Name: 216 Main St. Purchase

Warrant Article Amount: \$ 1,340,000

MS-2 Article Amount: \$ 1,340,000

MS-6 Article Amount: \$ 1,340,000

Short Description (Max 50 Characters): Purchase property at 216 Main Street for new school

Full Description: Article 1. To see if the School District will vote to raise and appropriate the sum of One Million Three Hundred Thirty Four Thousand Dollars (\$1,340,000) to purchase property located at 216 Main Street for construction of a new Junior/Senior High School facility or renovation/addition to the existing Junior/Senior High School facility to be funded with Three Hundred Eighty Thousand One Hundred Seventy Three Dollars (\$380,173) from Open Space Bond Funds and authorize the withdrawal of One Hundred Fifty Nine Thousand Eight Hundred Twenty Seven Dollars (\$159,827) from the Expansion of School Facilities Capital Reserve Fund created for this purpose for the balance of the amount. (Recommended by the School Board (S-0) and by the Budget Committee (B-2))

MS Reviewer: Michelle Clark

Review Date: 1/18/2012

Comments: Minutes indicate that warrant was approved.

Complete Final Review

Figure 7, Warrant Article Manager-MS final review

Attachment of Annotated Minutes

An element of the process that will remain relatively unchanged is the manual review of town meeting minutes. Minutes are transmitted in a variety of formats and styles. As MS personnel are reviewing warrant articles and approved budget data, they are cross referencing the information with a hard copy of the Town meeting minutes. While they review the minutes, items are highlighted and information is marked. To ensure that this valuable data remains in the process, MS personnel will have the ability to upload and attach these marked up town meeting minutes to the municipalities data for that year.

3.5.3 Tax Rate Calculator

The tax rate calculator will work in a very similar fashion to the Excel workbooks already developed by MS. The existing functionality will be incorporated into the online platform. It will include the ability to produce draft and final tax rates for: municipal, education, state, county, and village districts. The tax rate calculator will pull data from the appropriate forms and pre-populate it into the tax rate calculator. Fields in the preliminary calculator will be editable, while the final will rely on submitted form data to tabulate final rates.

3.5.4 Reporting

A basic reporting tool (similar to the equalization system) will be incorporated to allow users to generate reports in MS Excel, Word and PDF. Some of the standard reports that will be included are listed below.

3.5.5 Warrant Article Reports

Reports detailing drafts, revisions, and DRA comments about each Warrant Article will be printable by state and municipal users. A formatted Warrant Article report will be provided to printing final warrant articles for submission at town meeting.

3.5.6 Preliminary Rate Report

A report including data relevant to generation of tax rates and including preliminary tax rate figures for review by state and town officials and for use in generation of the final tax rate.

3.5.7 Tax Commitment Verification Report (RSA 76:10, II)

If the total Warrant dollar amount varies by more than 0.5% from what was original reported the town tax rate might not be correct. This form will transmit acceptable high and low commitments (including Tax Increment Finance district adjustments) with signoff for municipal tax collector.

3.5.8 Director's Check off Sheet

Summarizes critical values and results of tax rate setting process for director level review including summaries of (1) appropriations and revenues, (2) Assessment and Commitments, (3) overlay, (4) fund balance & Maximum surplus retention.

3.5.9 Final Tax Rate Report

Analogous to preliminary rate report except with final values.

3.5.10 Statewide Status Report

For Director and Administration review of tax rate setting progress.

3.5.11 Anticipated Overlay Retention Report

Advises town of RSA 76:6 limits on Overlay retention and projects GFOA recommended overlay amounts based on 5%, 8%, 10%, 17% overlays using projected figures.

4.0 DoIT Considerations

The proposed project utilizes existing server architecture developed for the Mosaic Equalization program, and the Adobe infrastructure implemented by DoIT (IT). From an IT perspective the project can be broken into three main elements (1) Forms, E-file, & Review, (2) Tax Rate Module, and (3) Security and Testing.

4.1 Forms, E-file, & Review

All forms will be re-built into dynamic PDF forms with associated xml Schema using Adobe LiveCycle Designer. DRA already has licenses of LiveCycle Designer however it is recommended that DRA and/or DoIT procure a license of a graphical XML schema editor, (T² utilizes Liquid XML) for editing and generating XML schema for additional PDF form projects.

Completed forms will be E-filed using Adobe LiveCycle. This will leverage the in place Adobe software and network architecture. Adobe LiveCycle processes will be used to receive incoming data, write it to a stage database, queue it for review in Adobe Workbench (existing software at DRA), and finally write it to a production database. Form submission is contingent on the successful deployment of the production Adobe server cluster, completed Q2 2013. The servers involved are shown in figure 8 below.

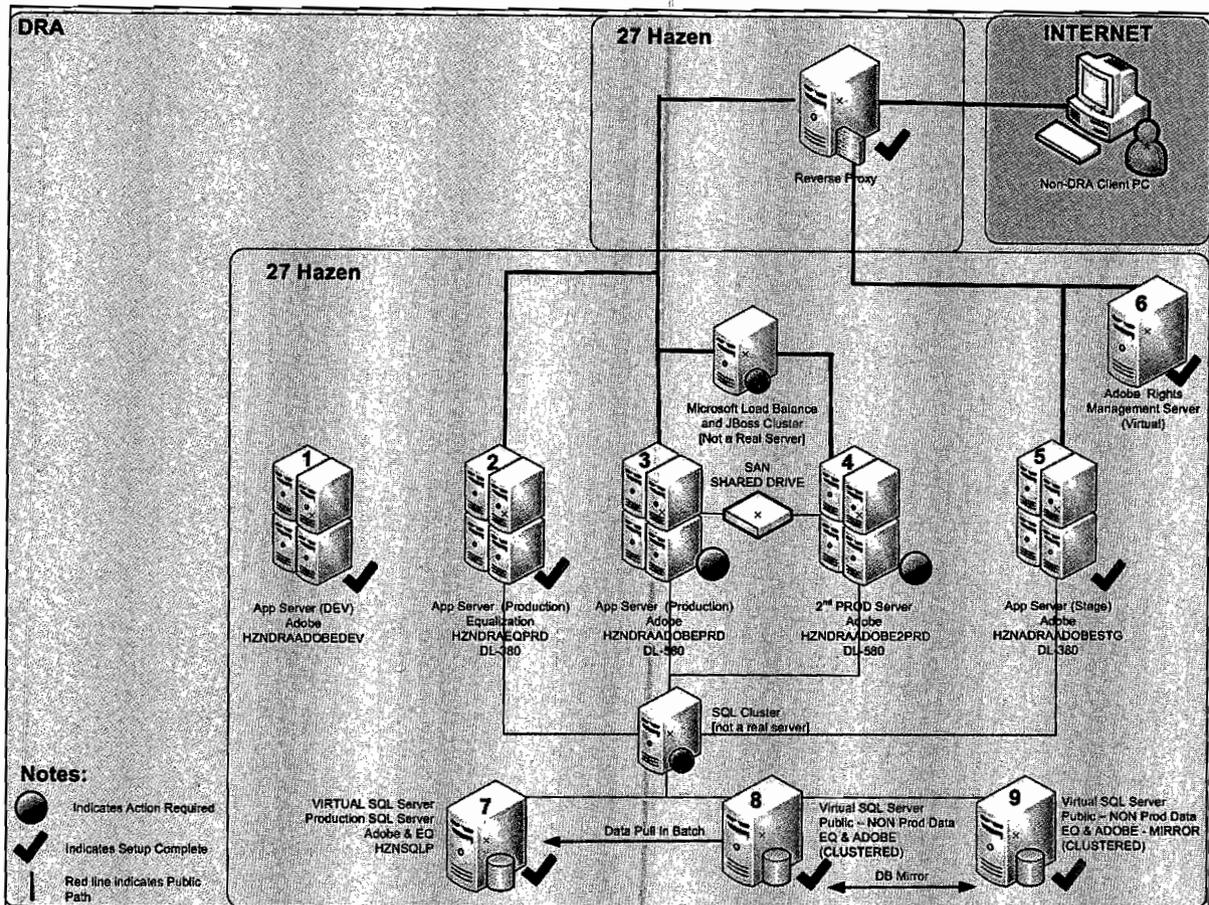


Figure 8, Existing server architecture

Workflows will be developed and tested on the Adobe DEV server (server 1). Testing with reverse proxy access will take place on the Adobe Stage server (server 5), and production workflows will be installed on the production cluster (servers 3 & 4). Data will be written to the SQL cluster (8 & 9) then pushed to the production SQL database in server 7.

4.1.2 Critical Path Items

For on time delivery it will be necessary for the Adobe LiveCycle Production, stage, and development environments are fully operational. Development, Stage, and Production environments have been setup and are operational, however it is anticipated that as this is among the first applications being deployed issues may be encountered which will need to be remedied with DoIT assistance.

4.2 Tax Rate Module

The tax rate calculation and warrant article review system will be developed as a module of the current property tax equalization web application. The software will be developed using all standards outlined in the equalization proposal and documentation including password rules, security protocols etc. This web application will reside on server 3, which is currently installed and configured. Because of the additional

computational demand of this module, it is recommended that a virtual machine be built for the R statistical software which is used to generate the ratio studies for equalization. This will ensure peak performance for state and municipal users, and mirrors a configuration already tested and in place at UNH. This virtual server will require ODBC access to the equalization database on the SQL cluster 8 & 9.

Critical Path Items

- Procurement of a virtual server (specifications to be provided to T², anticipated 4GB RAM, 2vCPU, 50GB system drive, 50gb application drive, 250GB file storage drive).
- ODBC from virtual server to the equalization SQL database on the SQL cluster, servers 8 & 9

4.3 Security & Testing

T² has outlined a specific security and testing protocol for this project which have been adapted from the Department of Information Technology (DoIT) security and testing addendum which is incorporated by reference. The addendum contains general guidelines and expectations for all projects, this proposal section shall be considered a scope of work and deliverables for the security and testing phase of this project.

E-File Forms: Form and workflow development including E-file will require unit, and regression testing. The results of these tests will be documented for each form and submission process. As the entirety of the form and E-file process will leverage existing Adobe software, it will not be necessary to perform stress testing beyond what is recommended by Adobe documentation. *Filers are Municipalities only, and will only represent 235 potential submissions for each individual form.* The security of the Adobe application has been addressed in other scopes of work and the installation has followed the Adobe recommended security-hardening protocols.

Tax Rate Setting Module: The tax rate setting module will be a part of the Mosaic Equalization Application. Security, performance, and stress testing of the existing software are already addressed for the existing application. The new module will utilize the same security protocols, access control, encryption, user management, role/privilege management, and input validation and should not represent a significant change to these elements to warrant full scale re-evaluation. Only the new elements will be evaluated and tested. A general security test will be performed to ensure the application is protected from buffer overflow, cross-site scripting, SQL injection and unauthorized access of files and directories on the server (verified via Acunetix).

4.3.1 General Provisions

The University of New Hampshire Technology Transfer Center (T²) shall bear responsibility for testing as outlined herein. T² will also provide training as necessary to state staff responsible for state testing activities. T² shall develop a test plan which will detail the testing outlined herein. T² will provide support during the states User Acceptance Testing.

All Testing and Acceptance (both business and technically oriented testing) shall apply to testing the System as a whole, (e.g., software modules or functions, and Implementation(s)). This shall

include planning, test scenario and script development, Data and System preparation for testing, and execution of Unit Tests, System Integration Tests, Installation tests, Regression tests, Performance Tuning and Stress tests, Security Review and tests, and support of the State during User Acceptance Test and Implementation.

T² shall provide an optional comprehensive software maintenance agreement to DoIT upon request.

4.3.2 Planning

Test Plan: T² will develop an overall test plan to guide all testing. The plan will at a minimum include the details of all testing outlined herein and include a traceability matrix that will serve as a tracking method for expected and actual results, a log of all errors and problems identified, and their resolutions.

State Acceptance Test Plan: T² will prepare a draft plan to be reviewed and accepted by the State. The UAT plan will contain the same methodology contained within the T² test plan. The state may add its own testing protocols to augment the draft plan at its discretion.

4.3.3 Unit Testing

In Unit Testing, T² shall test the application components on an individual basis to verify that the inputs, outputs, and processing logic of each application component functions without errors. Unit testing is performed in either the development environment or a testing environment.

The goal is to find errors in the smallest unit of software before logically linking it into larger units. If successful, subsequent testing should only reveal errors related to the integration between application modules.

The T² developer, who is responsible for a specific unit of work, will be responsible for conducting the unit testing of their modules.

4.3.4 Installation Testing

In Installation Testing the application components are installed in the System Test environment to test the installation routines and are refined for the eventual production environment. This activity serves as a dry run of the installation steps in preparation for the DoIT Operations' team configuration of the production system.

4.3.5 Regression Testing

As a result of the user testing activities, problems will be identified that require correction. The State will notify the Vendor of the nature of the testing failure in writing. The Vendor will be required to perform additional testing activities in response to State and/or user problems identified from the testing results. Regression testing means selective re-testing to detect faults introduced during the modification effort, both to verify that the modifications have not caused unintended adverse effects, and to verify that the modified and related (possibly affected) System components still meet their specified requirements:

a.) For each minor failure of an Acceptance Test, the Acceptance Period shall be extended by corresponding time defined in the Test Plan.

b.) When a programming change is made in response to a problem identified during user testing, a regression Test Plan should be developed by T² based on the understanding of the program and the change being made to the program. The Test Plan has two objectives:

1. Validate that the change/update has been properly Incorporated into the program; and
2. Validate that there has been no unintended change to the other portions of the program.

d.) T² will be expected to:

1. Create a set of test conditions, test cases, and test data that will validate that the change has been incorporated correctly;
2. Create a set of test conditions, test cases, and test data that will validate that the unchanged portions of the program still operate correctly;

e.) T² will be expected to execute the regression test, provide actual testing results, and certify its completion in writing to the State prior to passing the modified Software application to the users for retesting.

In designing and conducting such regression testing, T² will be required to assess the risks inherent to the modification being implemented and weigh those risks against the time and effort required for conducting the regression tests. In other words, T² will be expected to design and conduct regression tests that will identify any unintended consequences of the modification while taking into account Schedule and economic considerations.

4.3.4 Testing Responsibilities

1. T² will complete unit and installation tests and provide DoIT with written notification of same. T² will be updating the test plan with the results of the unit and installation tests.
2. T² will provide the state with a draft UAT Plan for review and approval
3. T² will provide the State with written notification of completion of unit and installation tests (Vendor Tests) which will initiate the UAT process.
4. The State will provide T² with written notification of acceptance and completion of the UAT process.

5.0 Key Personnel & Systems

5.1 Personnel

Successful project completion is contingent on regular and effective communication and planning between the DRA and UNH project team, and their availability to participate in these activities. The personnel outlined below are considered vital to the success of the project and will be regularly updated

on project status and directly involved in planning and decision making through the duration of the project. Compensation of key UNH Staff shall be in accordance with USNH policy and is anticipated under category Senior, Professional, Administrative & Technical Services, Sub Classification 02767 or 01994. It is anticipated that additional personnel may be identified and will be involved as required.

DRA: Key state personnel should be available to provide the necessary support to ensure successful project completion and delivery. Key state personnel include:

- Brian Pace, Director of Project Management and Network Architecture
- Stephan Hamilton, Director Municipal Services & Property Appraisal
- Christiana Goodwin, DoIT Manager
- David Cornell, Asst. Director Municipal Services & Property Appraisal
- Michelle Clark, Municipal Services Auditor

UNH: Key UNH Personnel critical to project completion will be available to ensure execution of all work items and timely project delivery and deployment.

- David Salzer, Project Manager
- Patrick Santoso, Project Manager
- Justin Lowe, Project Engineer

5.2 Systems

Mosaic: DRA acknowledges that the MS Tax Rate Setting Software will be developed as a module of the existing Mosaic Property Tax Equalization Software (“Mosaic”) system in place at DRA. DRA currently contracts with UNH for system maintenance, data collection, and technical support and has expressed the intention to continue with same. The development of the Tax Rate Setting software is contingent on continuation of the Mosaic Project. If the Mosaic project is discontinued for any reason the Tax Rate Setting Software development will be halted pending mutually agreeable terms to proceed. Mosaic will not affect the database and form development.

LiveCycle: Form processing and database inserts are reliant on Adobe LiveCycle software being operational and functioning.

6.0 Deliverables

Invoicing terms are governed by the MSA between the state of NH and UNH, and are billed on a time and materials basis. This proposal is presented as a fixed cost project. Invoices are not tied to deliverables, however performance is monitored by the sponsor agency (DRA) throughout the project to ensure on time, on budget completion. Total project cost reflects direct expenses plus a 26% facilities and administration (F&A) line item. This reflects federally negotiated overhead rates for Universities.

1	Comprehensive report on the existing TRSP process, forms and data used	7/31/13
2	Recommendations for leaning the TRSP	7/31/13
3	Development of a focus group	7/31/13
4	Conduct regular meetings with the focus group	Ongoing
Forms and Data		
5	Conversion of forms from MS Excel to PDF (MS: 1, 4, 5, 6, 6C, 7, 9, 10, 11, 12, 22, 24, 25, 26, 26c, 27, 31, 32, 34, 35, 36, 37, 61)	1/20/14
6	Develop XML E-file paths (MS: 1, 4, 5, 6, 6C, 7, 9, 10, 11, 12, 22, 24, 25, 26, 26c, 27, 31, 32, 34, 35, 36, 37, 61)	1/20/14
Database Development		
7	Design and build SQL database (staging and production)	1/1/14
7a	Database Tables (MS: 1, 4, 5, 6, 6C, 7, 9, 10, 11, 12, 22, 24, 25, 26, 26c, 27, 31, 32, 34, 35, 36, 37, 61, 42*, 45*, 46*, Warrant Articles*, DOE data*)	1/1/14
8	LiveCycle form porting path development	1/20/14
9	LiveCycle form review interface	6/5/14
10	LiveCycle form reject automated notification	6/5/14
TRSP Software Development		
11	Form Status Control Panel	12/18/14
11a	All entities status screen	12/18/14
11b	Single entity status screen	12/18/14
11c	Ability to view form data	12/18/14
12	Warrant Article Management System	12/18/14
12a	Warrant article generation	12/18/14
12b	Preliminary review interface	12/18/14
12c	Final review interface	12/18/14
13	Tax Rate Calculator	12/18/14
14	Reporting Tools	12/18/14
14a	Warrant Article Report	12/18/14
14b	Preliminary Rate report	12/18/14
14c	Tax Commitment Certification report	12/18/14
14d	Directors Check off Sheet	12/18/14
14f	Final Tax Rate Report	12/18/14
14e	Statewide Status Report	12/18/14
14g	Anticipated Overlay Retention Report	12/18/14
Testing & Security		
15	Comprehensive Testing Plan	1/30/14
16	UAT Plan	1/30/14
17	Completed & Documented Unit Testing	8/28/14
18	Completed & Documented Installation Testing	9/4/14
19	Completed & Documented Security Review	9/5/14

7.0 Cost

See deliverables section above for a regarding: invoicing terms and deliverables.

Project Budget			
<i>Description</i>	<i>Cost</i>	<i>F&A (26%)</i>	<i>Total</i>
Review and Leaning of Process	9,643	2,507	12,150
Form Development (24 Forms)	120,512	22,956	143,468
Database Development	40,696	10,581	51,277
Development of Final Tax Rate	124,900	19,850	144,750
Deployment and Integration	14,463	3,761	18,224
Total	310,214	59,655	369,869

8.0 Schedule

The project schedule is shown on the following page. The schedule uses an anticipated start date of June 20, 2013. If the project cannot be started on that date, the schedule will be shifted accordingly.

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1. TESTING AND ACCEPTANCE

The University of New Hampshire Technology Transfer Center (T2) shall bear all responsibilities for the full suite of test planning and preparation throughout the Project. T2 will also provide training as necessary to the State staff responsible for test activities. T2 shall be responsible for all aspects of testing contained in the Acceptance Test Plan including support, at no additional cost, during User Acceptance Test conducted by the State and the testing of the training materials.

The Test Plan methodology shall reflect the needs of the Project and be Included in the finalized Work Plan. A separate Test Plan and set of test materials will be prepared for each Software function or module.

All Testing and Acceptance (both business and technically oriented testing) shall apply to testing the System as a whole, (e.g., software modules or functions, and Implementation(s)). This shall include planning, test scenario and script development, Data and System preparation for testing, and execution of Unit Tests, System Integration Tests, Conversion Tests, Installation tests, Regression tests, Security Review and tests, and support of the State during User Acceptance Test and Implementation.

In addition, T2 shall provide a mechanism for reporting actual test results vs. expected results and for the resolution and tracking of all errors and problems identified during test execution. T2 shall also correct Deficiencies and support required re-testing.

1.1 Test Planning and Preparation

T2 shall provide the State with an overall Test Plan that will guide all testing. The T2 provided, State approved, Test Plan will Include, at a minimum, identification, preparation, and Documentation of planned testing, a requirements traceability matrix, test variants, test scenarios, test cases, test scripts, test Data, test phases, unit tests, expected results, and a tracking method for reporting actual versus expected results as well as all errors and problems identified during test execution.

As identified in the Acceptance Test Plan, and documented in accordance with the Work Plan and the Contract, State testing will commence upon T2 Project Manager's Certification, in writing, that T2 own staff has successfully executed all prerequisite T2 testing, along with reporting the actual testing results, prior to the start of any testing executed by State staff. The State will be presented with a State approved Acceptance Test Plan, test scenarios, test cases, test scripts, test data, and expected results.

The State will commence its testing within ten (10) business days of receiving Certification from T2 that the State's personnel have been trained and the System is installed, configured, complete, and ready for State testing. The testing will be conducted by the State in an environment independent from T2 development environment. T2 must assist the State with testing in accordance with the Test Plan and the Work Plan, utilizing test and live Data to validate reports, and conduct stress and performance testing, at no additional cost.

Testing begins upon completion of the Software configuration as required and user training according to the Work Plan. Testing ends upon issuance of a letter of UAT Acceptance by the State.

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Vendor must demonstrate that their testing methodology can be integrated with the State standard methodology.

1.2 Unit Testing

In Unit Testing, T2 shall test the application components on an individual basis to verify that the inputs, outputs, and processing logic of each application component functions without errors. Unit testing is performed in either the development environment or a testing environment.

The goal is to find errors in the smallest unit of software before logically linking it into larger units. If successful, subsequent testing should only reveal errors related to the integration between application modules.

The T2 developer, who is responsible for a specific unit of work, will be responsible for conducting the unit testing of their modules.

Activity Description	Develop the scripts needed to unit test individual application modules, interface(s) and conversion components.
T2 Team Responsibilities	For application modules, conversions and interfaces the T2 team will identify applicable test scripts and installation instructions, adapt them to the project specifics, test the process, and compare with the documented expected results.
Work Product Description	Unit-Tested Modules that have been tested to verify that the inputs, outputs, and processing logic of each application module functions without errors. Individual detailed test scripts and installation guides list all the required actions and data to conduct the test, the process for test execution, and the expected results.

1.3 System Integration Testing

The new system is tested in integration with other application systems (legacy and service providers) in a production-like environment. System Integration Testing validates the integration between the individual unit application modules and verifies that the new System meets defined requirements and supports execution of interfaces and business processes. The System Integration Test is performed in a test environment.

Thorough end-to-end testing shall be performed by the T2 team(s) to confirm that the Application integrates with any interfaces. The test emphasizes end-to-end business processes and the flow of information across applications. It Includes all key business processes and interfaces being implemented, confirms data transfers with external parties, and includes the transmission or printing of all electronic and paper documents.

Activity Description	Systems Integration Testing validates the integration between the target application modules and other systems, and verifies that the new System meets defined interface requirements and supports execution of business processes. This test emphasizes end-to-end business processes and the flow of information across the application. It Includes all key business processes and interfaces being implemented, confirms data transfers with external parties, and Includes the transmission or printing of all electronic and paper documents.
T2 Team Responsibilities	<ul style="list-style-type: none"> • Take the lead in developing the Systems Integration Test specifications. • Work jointly with the State to develop and load the data profiles to support the

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	<ul style="list-style-type: none"> test specifications. • Work jointly with the State to validate components of the test scripts.
State Responsibilities	<ul style="list-style-type: none"> • Work jointly with T2 to develop the Systems Integration Test specifications. • Work jointly with T2 to develop and load the data profiles to support the test specifications. • Work jointly with T2 to validate components of the test scripts, modifications, fixes and other System interactions with the T2 supplied Software Solution.
Work Product Description	<ul style="list-style-type: none"> • The Integration-Tested System indicates that all interfaces between the application and the legacy and third-party systems, interfaces, and applications are functioning properly.

1.4 Conversion Validation Testing

In Conversion Validation Testing, target application functions are validated.

Activity Description	The conversion validation test should replicate the entire flow of the converted data through the Software Solution. As the Software Solution is interfaced to legacy or third-party applications/interfaces, testing verifies that the resulting flow of the converted data through these interface points performs correctly.
T2 Team Responsibilities	For conversions and interfaces, the T2 team will execute the applicable validation tests and compare execution results with the documented expected results.
State Responsibilities	Extract and cleanse, if necessary, the legacy data to be converted in the data conversions.
Work Product Description	Validation-Tested Conversion Programs. These programs include conversion programs that have been tested to verify that the resulting converted legacy data performs correctly in the entire suite of the Application.

1.5 Installation Testing

In Installation Testing the application components are installed in the System Test environment to test the installation routines and are refined for the eventual production environment. This activity serves as a dry run of the installation steps in preparation for the DoIT Operations' team configuration of the production system.

1.6 User Acceptance Testing (UAT)

UAT begins upon completion of the Software configuration as required and user training according to the Work Plan. Testing ends upon issuance of a letter of UAT Acceptance by the State.

The Vendor's Project Manager must certify in writing, that the Vendor's own staff has successfully executed all prerequisite Vendor testing, along with reporting the actual testing results prior to the start of any testing executed by State staff.

The State shall be presented with all testing results, as well as written Certification that T2 has successfully completed the prerequisite tests, meeting the defined Acceptance Criteria, and performance standards. The State shall commence testing within five (5) business days of receiving Certification, in writing, from T2 that the system is installed, configured, complete and ready for State

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testing. The State shall conduct the UAT utilizing scripts developed as identified in the Acceptance Test Plan to validate the functionality of the System and the interfaces, and verify implementation readiness. UAT is performed in a copy of the production environment and can serve as a performance and stress test of the System. The User Acceptance Test may cover any aspect of the new System, including administrative procedures (such as backup and recovery).

The User Acceptance Test (UAT) is a verification process performed in a copy of the production environment. The User Acceptance Test verifies System functionality against predefined Acceptance criteria that support the successful execution of approved business processes.

UAT will also serve as a performance and stress test of the System. It may cover any aspect of the new System, including administrative procedures such as backup and recovery. The results of the UAT provide evidence that the new System meets the User Acceptance criteria as defined in the Work Plan.

The results of the User Acceptance Test provide evidence that the new System meets the User Acceptance criteria as defined in the Work Plan.

Upon successful conclusion of UAT and successful System deployment, the State will issue a letter of UAT Acceptance and the respective Warranty Period shall commence.

Activity Description	The System User Acceptance Tests verify System functionality against predefined acceptance criteria that support the successful execution of approved processes.
T2 Team Responsibilities	<ul style="list-style-type: none"> • Provide the State an acceptance test plan and selection of test scripts for the Acceptance test. • Monitor the execution of the test scripts and assist as needed during the User Acceptance Test activities. • Work jointly with the State in determining the required actions for problem resolution.
State Responsibilities	<ul style="list-style-type: none"> • Approve the development of the User Acceptance Test Plan and the set of data for use during the User Acceptance Test. • Validate the acceptance test environment. • Execute the test scripts and conduct User Acceptance Test activities. • Document and summarize Acceptance test results. • Work jointly with T2 in determining the required actions for problem resolution. • Provide Acceptance of the validated Systems.
Work Product Description	The Deliverable for User Acceptance Tests is the User Acceptance Test Results. These results provide evidence that the new System meets the User Acceptance criteria defined in the Work Plan.

1.8 Regression Testing

As a result, of the user testing activities, problems will be identified that require correction. The State will notify the Vendor of the nature of the testing failure in writing. The Vendor will be required to perform additional testing activities in response to State and/or user problems identified from the testing results. Regression testing means selective re-testing to detect faults introduced

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during the modification effort, both to verify that the modifications have not caused unintended adverse effects, and to verify that the modified and related (possibly affected) System components still meet their specified requirements:

- a.) For each minor failure of an Acceptance Test, the Acceptance Period shall be extended by corresponding time defined in the Test Plan.
- b.) T2 shall notify the State no later than <five (5) business days> from the T2 receipt of written notice of the test failure when T2 expects the corrections to be completed and ready for retesting by the State. T2 will have up to ten (10) business days to make corrections to the problem unless specifically extended in writing by the State.
- c.) When a programming change is made in response to a problem identified during user testing, a regression Test Plan should be developed by T2 based on the understanding of the program and the change being made to the program. The Test Plan has two objectives:
 1. Validate that the change/update has been properly Incorporated into the program; and
 2. Validate that there has been no unintended change to the other portions of the program.
- d.) T2 will be expected to:
 1. Create a set of test conditions, test cases, and test data that will validate that the change has been incorporated correctly;
 2. Create a set of test conditions, test cases, and test data that will validate that the unchanged portions of the program still operate correctly; and
 3. Manage the entire cyclic process.
- e.) T2 will be expected to execute the regression test, provide actual testing results, and certify its completion in writing to the State prior to passing the modified Software application to the users for retesting.

In designing and conducting such regression testing, T2 will be required to assess the risks inherent to the modification being implemented and weigh those risks against the time and effort required for conducting the regression tests. In other words, T2 will be expected to design and conduct regression tests that will identify any unintended consequences of the modification while taking into account Schedule and economic considerations.

1.9 Security Review and Testing

IT Security involves all functions pertaining to the securing of State Data and Systems through the creation and definition of security policies, procedures and controls covering such areas as identification, authentication and non-repudiation.

All components of the Software shall be reviewed and tested to ensure they protect the State's hardware and software and its related Data assets.

Tests shall focus on the technical, administrative and physical security controls that have been designed into the System architecture in order to provide the necessary confidentiality,

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integrity and availability. Tests shall, at a minimum, cover each of the service components. Test procedures may include Penetration Tests (pen test) or code analysis and review.

Service Component	Defines the set of capabilities that:
Identification and Authentication	Supports obtaining information about those parties attempting to log onto a system or application for security purposes and the validation of users
Access Control	Supports the management of permissions for logging onto a computer or network
Encryption	Supports the encoding of data for security purposes
Intrusion Detection	Supports the detection of illegal entrance into a computer system
Verification	Supports the confirmation of authority to enter a computer system, application or network
Digital Signature	Guarantees the unaltered state of a file
User Management	Supports the administration of computer, application and network accounts within an organization.
Role/Privilege Management	Supports the granting of abilities to users or groups of users of a computer, application or network
Audit Trail Capture and Analysis	Supports the identification and monitoring of activities within an application or system
Input Validation	Ensures the application is protected from buffer overflow, cross-site scripting, SQL injection, and unauthorized access of files and/or directories on the server.

Prior to the System being moved into production T2 shall provide results of all security testing to the Department of Information Technology for review and acceptance. All Software and hardware shall be free of malicious code (malware).

1.10 Successful UAT Completion

1.11 Upon successful completion of UAT, the State will issue a Letter of UAT Acceptance. Upon issuance of the Letter of UAT Acceptance by the State, the respective Implementation Warranty period shall commence. System Acceptance

Upon completion of the Warranty Period, the State shall issue a Letter of Final System Acceptance.

2. General, Technical, and Security Requirements

T2 has identified whether the requirements listed below are included in the Solution without modification (Y), with modification (M), or not at all (N) and has added additional information in the Comments column. If modifications are needed to meet requirements, those modifications have been included in the cost.

REQ #	Requirement/Deliverable	M/O	Y/M/N (see above)	Comments
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REQ #	Requirement/Deliverable	M/O	Y/M/N (see above)	Comments
	General Requirements			
G-1	The Vendor Must attend in person and facilitate initial kick-off meeting to initiate the Project.	M	Y	
G-2	The Vendor Shall provide Project Staff as specified in the T2 Proposal	M	Y	
G-3	Vendor Shall submit a preliminary Work Plan within five (5) days after Contract award and approval by Governor and Council. The Work Plan Shall Include, without limitation, a detailed description of the Schedule, tasks, Deliverables, critical events, task dependencies, and payment Schedule. The plan Shall be updated no less than every two weeks. The Vendor Will accommodate NH DRA Peak Periods whereby resources Will be constrained and work effort may be impacted.	M	Y	

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G-4	The Vendor Will provide detailed monthly status reports on the progress of the Project, which Will Include expenses Incurred year to date. The monthly status reports are to Include adjusted timelines if the project has slipped or is ahead of schedule.	M	M	Bi-weekly status reports will be provided.
G-5	All user, technical, and System Documentation as well as Project Schedules, plans, status reports, and correspondence Must be maintained by the vendor. The response shall describe the formats that will be used to produce the project documentation.	M	M	T2 cannot commit to documenting all correspondence e.g. phone calls. All e-mail and written communication are archived.
G-6	All documentation must be provided in MS Office format 2007 and/or in a format that is web accessible.	M	Y	
G-9	All documentation must be well organized with an accurate table of contents.	M	Y	
G-10	The completed Solution Must physically reside at a DoIT designated facility.	M	Y	
G-11	One key vendor staff preferred to work on site during the following project phases: <ul style="list-style-type: none"> • Requirements gathering and review • Integration testing • User acceptance testing • System implementation • Production support / deployment • Mentoring activities 		Y	
G-12	Weekly status meetings.	M	M	As required or requested by state
G-13	The System Must conform to the Specification of the T2 Proposal.	M	Y	

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G-14	The vendor must create a Business Requirement Document which includes the following: <ul style="list-style-type: none"> • Identify problematic requirements; • Identify where more detail or clarification is needed; and • Identify whether examples are needed. 	M	Y	
	Technical Requirements			
T-1	Web-based compatible and in conformance with the following W3C standards: <ul style="list-style-type: none"> • XHTML 1.0 • CSS 2.1 • XML 1.0 (fourth edition) • IIS 5.0 	M	Y	
T-2	DB2 or MS SQL Server Database	M	M	System developed in SQL Express. Database may be ported to MS SQL Server at the states discretion at no additional cost.
T-3	GUI Interface Technologies	M	Y	
T-4	Windows XP or Windows 2008	M	Y	Web application
T-5	Windows XP or Windows 7 for Desktop Windows 2008 for servers	M	Y	
T-6	The Solution Must also Include: backup and recovery strategies that Can be executed within these same environments and that do not require nightly backup of all images.	M	M	Based on discussions with DOIT and DRA acceptable down time of 24-48 hours existing back up procedures will be sufficient. Project team shall agree upon backup protocols and document same.
T-7	Allow for efficient implementation of system upgrades and new releases. Provide ability to apply upgrades/new releases on a modular basis whenever possible. Define which components require State support staff for the upgrades and which upgrades are system generated.	M	Y	

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T-8	Provide comprehensive system documentation Including at a minimum: <ul style="list-style-type: none"> • System flowcharts • System narratives • Program flowcharts • Program narrative • Functional flowchart • Screen layouts • Report layouts • Entity relationship diagrams • Data dictionary • Database layout • Database set-up procedures • System implementation and update procedures • System administration procedures 	M	Y	
T-9	Ensure that the source code for the system, if not provided, is placed in escrow	M	Y	
T-10	Comply with the Americans with Disabilities Act access requirements	M	M	Efforts will be made to comply, however compliance will not be validated by T2
T-11	Provide a web-enabled, modular, three-tier architecture with business rules separated from the database design and graphical user interface (GUI) presentation logic, thereby allowing more efficient modifications.	M	Y	
T-12	Provide the ability to extend the functionality of the System through user defined tables, data entry, and inquiry screens, menus, and data processing and control logs.	M	N	Out of Scope
T-13	Provide user access through a browser based, zero or minimal footprint client with automatic distribution of modifications to any required client software.	M	M	Software will require Adobe reader and a web browser (IE 7+ anticipated)
	Security Requirements			
S-1	Verify the identity or authenticate all of its client applications before allowing	M	Y	

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	them to use its capabilities to prevent access to inappropriate or confidential Data or Services.			
S-2	Verify the identity or authenticate all of its human users before allowing them to use its capabilities to prevent access to inappropriate or confidential Data or Services.	M	Y	
S-3	Enforce unique user names.	M	Y	
S-4	Enforce complex passwords for Administrator Accounts of ten characters or more in accordance with DoIT's statewide User Account and Password Policy.	M	Y	
S-5	Enforce complex passwords of ten characters or more. in accordance with DoIT's Statewide <i>User Account and Password Policy</i>	M	Y	
S-6	Encrypt passwords in transmission and at rest within the Database.	M	Y	
S-7	Expire passwords after 90 days.	M	M	Not practical as users may only access the system every several months. Propose password expiry be a system setting initially at 6 months.
S-8	Authorize users and client applications to prevent access to inappropriate or confidential data or services	M	Y	
S-9	Ability to limit the number of people that can grant or change authorizations	M	Y	
S-10	Ability to enforce session timeouts during periods of inactivity.	M	Y	
S-11	Ensure application has been tested and hardened to prevent critical application security flaws. At a minimum, the application shall be tested against all flaws outlined in the Open Web Application Security Project (OWASP) Top Ten		Y	

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	(http://www.owasp.org/index.php/OWASP_Top_Ten_Project) by the Vendor and approved and accepted by the State.			
S-12	The application Shall not store authentication credentials or sensitive data in its code.	M	Y	
S-13	Detect and record all attempted accesses that fail identification, authentication and authorization requirements.	M	Y	
S-14	The application must log all activities for audit purposes.	M	M	Selected activities are logged per business requirements. Actions which are completed/submitted are logged, incomplete actions, i.e. form partial completion is not logged.
S-15	The application must allow a user to explicitly terminate a session. No remnants of the prior session should then remain in cache.	M	Y	
S-16	The application shall NOT display explicit error and exception handling when not executing as designed in the production environment.	M	Y	
S-17	Use only the Software and System Services designed for use.	M	Y	
S-18	Application Data shall be protected from unauthorized use when at rest.	M	Y	
S-19	Keep any sensitive Data or communications private from unauthorized individuals and programs.	M	Y	
S-20	Subsequent application enhancements or upgrades shall not remove or degrade security requirements	M	Y	
S-21	Application Should be protected from unauthorized use when at rest.	M	Y	
S-22	Create change management documentation and procedures	M	N	State responsibility. T2 will conform to state procedures.
S-23	Provide security at the network, application, and database levels as well as at the client level.	M	Y	

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S-24	Provide ability to restrict access to the application database (s) from outside the application program	M	Y	
S-25	Provide an audit trail of unauthorized attempts to access the system. Distinguish in the audit trail web browser activity from client workstation activity	M	Y	
S-26	Establish a time-out limit within system security. Terminate a user's session if the user's workstation is left unattended for the established time frame. Require the user to re-enter the password before continuing.	M	Y	
S-27	Provide ability to suspend all user access when a user ID is terminated.	M	Y	
S-28	Mask password entry so that the password cannot be viewed upon demand	M	Y	
S-29	Provide ability to disable log-on capabilities after five (5) unsuccessful password entry attempts. Provide the ability for automatic notification of security administrator upon disabling log-on capabilities	M	Y	
S-30	Allow security coordinators to reset passwords without knowing the existing password.	M	Y	
S-31	Provide an application security assessment and validation of secured access to data elements and stored images.	M	M	As outlined in special provisions section