IT Capital Investment Program

DPH Grant request for:

Modernization of the Sexually Transmitted Diseases Database

And

Meaningful Use

December 6, 2013

MEMORANDUM

TO: Mary Ann Harward

FROM: Steve McConaughy

SUBJECT: IT Capital Investment Program Application -
On Behalf of DPH- Modernization of the Sexually Transmitted Diseases Database

DATE: May 20, 2013

The document that follows is the DPH submission for funding through the Information Technology Capital Investment Program, to fund the additional Software upgrades and hardware enhancements required for Modernization of the Sexually Transmitted Diseases Database to allow Connecticut DPH to collect and store results from tests for Sexually Transmitted Diseases (STD) electronically. In addition, the needed improvement to infrastructure and resources to implement are also included to meet the goals and objectives of Meaningful Use as per ONC and CMS rulings for Public Health Reporting. The request for STD will be a replacement to the present federally funded DOS based system that will be retired. The requests for Meaningful Use will create an environment that will allow for the migration of existing applications used in Meaningful Use Public Health Reporting. These applications, CIRTS, CTEDSS, EPHT and CTSITE are currently in very old technology which is unstable and upgrades to newer versions of software, enabling the receipt, storage and case management related to Electronic Health Records (EHR) and Electronic Laboratory Reporting (ELR).

This application was prepared by Lynn Sosa, MD. primary epidemiologist for the STD programs and Deputy State Epidemiologist for the CT Department of Public Health as well as Steve McConaughy and Daniel Maloney, from DPH Information Technology who worked through the Meaningful Use additions.

Once internal approvals of this are received by the agency, the final submittal of this application will be done electronically, as an email attachment. The application will be "SUBMITTED" with the attached financial work sheets, as specified on the IT Capital Investment Program web page.

This IT Capital Investment Application is approved by DPH for submission:

- IT Capital Investment Program Application - STD FY2014 – FY2017 – Previoulsy Approved Total = $874,400
- IT Capital Investment Program Application - Meaningful Use FY2014 – FY2017 – New Request = $1,851,206

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Mary Ann Harward - DPH Chief Administrative Officer

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Jewel Mullen, M.D., M.P.H., M.P.A., DPH Commissioner

If you have any questions regarding this application packet or procedures please contact:

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Or

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I. Project Identification

Project Title: Modernization of the Sexually Transmitted Diseases Database to a web-enabled application and Meaningful Use

Agency Name	**Agency Business Unit**
Connecticut Department of Public Health	DPHM1

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II. Project Description

A. Project Dates

Proposed Start Date (MM/DD/YYYY)	**Expected Completion Date** (MM/DD/YYYY)	**Project Duration** (in months)
01/01/2014	12/31/2015	24

B. **Project Description –** This information will be used for listings and report to the Governor and General Assembly on capital funded projects.

There are two major goals of this project. The first is to transition sexually transmitted disease (STD) data from the current outdated desktop installed DOS-based stand-alone database into the modern web-enabled application (CTEDSS) Maven system that is being used to support other infectious disease data and case management by the Department of Public Health (DPH). This transition will allow us to modernize the STD database, add additional functionality needed to meet expanding program needs such as case follow-up and tracking, add the ability for external users such as field-based staff, local health departments and healthcare providers to access the data remotely, and add the federally mandated capability for electronic laboratory reporting.

The second goal is to upgrade and build a more modern environment for key applications enabling these applications to be capable to receive Electronic Health Records (EHR) and Electronic Laboratory Reports, including STD, complying with Meaningful Use goals and objectives as defined by the ONC and CMS final rulings for Stages 1 and 2 of Meaningful Use. As a secondary benefit the current aged systems will be replaced which will provide for a more stable and expandable application environment should that be required in the future.

C. **Summary.**

Summary - Describe the high level summary of this project in plain English without technical jargon
There are two major goals of this project. The first is to transition sexually transmitted disease (STD) data from the current outdated desktop installed DOS-based stand-alone database into the modern web-enabled application (CTEDSS) Maven system that is being used to support other infectious disease data and case management by the Department of Public Health (DPH). This transition will allow us to modernize the STD database, add additional functionality needed to meet expanding program needs such as case follow-up and tracking, add the ability for external users such as field-based staff, local health departments and healthcare providers to access the data remotely, and add the federally mandated capability for electronic laboratory reporting. The second goal is to upgrade and build a more modern environment for key applications enabling these applications to be capable to receive Electronic Health Records (EHR) and Electronic Laboratory Reports, including STD, complying with Meaningful Use goals and objectives as defined by the ONC and CMS final rulings for Stages 1 and 2 of Meaningful Use. As a secondary benefit the current aged systems will be replaced which will provide for a more stable and expandable application environment should that be required in the future.
Purpose – Describe the purpose of the project
STD data is currently maintained in a database called STD-MIS which is a DOS-based application developed by the Centers for Disease Control and Prevention (CDC). The purpose of this project is to build a new STD module into CTEDSS, built on the Consilience Software Maven application, where almost all other infectious disease data is currently supported. Core applications that will be needed for receipt of electronic reporting are no able to be upgraded or modernized as they are running on aged hardware and operating system environments making them incapable to comply with Meaningful Use Objectives. The receipt of HER and ELR data through the use of HL7 2.5.1 messaging are key objectives for Meaningful Use objectives as defined by the ONC and CMs final rulings. STD requires an upgrade to the CTEDSS application but this application cannot be provided without the replacement of this infrastructure. In addition, CTSITE, EPHT and eventually CIRTS will require the same application upgrades. These upgrades will not be possible on the current hardware and operating system environment
Importance – Describe why this project is important
The DOS-based database currently used for STD data is outdated and will no longer be supported by CDC. This project will put STD data into the same application, CTEDSS, used by other infectious disease programs at DPH. CTEDSS is based on the Maven application that is web-enabled, allows for flexible development and configuration, and part of this project will be to enable the capability for electronic laboratory reporting directly into the application. This will allow staff and external partners to access STD data, enable the STD program to build in case follow-up and management capacity into the same system as the disease reports, and reduce the need for staff to do direct data entry of STD reports. Modernization the STD data system is critical to meet the ongoing needs of the residents of CT and fulfill our state and federal obligations. Not making this change could result in the loss of up to 1.85 million dollars currently awarded to DPH and amount of federal funds used to support staff and activities that collect data reported through this system. The current CTEDSS, CTSITE, EPHT and CIRTS environments are running on 15+ year old hardware and operating system. This server environment has reached end of life a parts are extremely difficult to

locate when hardware failures occur. These hardware failures are occurring more frequently. In addition, the environment is not able to grow with the needs of the DPH Programs causing performance problems and response time issues.

Outcomes – What are the expected outcomes of this project

The primary outcome is the complete transition of STD data from the old database into the CTEDSS-Maven application. Secondary outcomes include: successful design and configuration of the STD module into CTEDSS-Maven, creation of needed case follow-up data capture, migration of historical data into the new system, configuration of needed data extracts and reports, and implementation of electronic laboratory reporting.

For meaningful Use the primary outcomes are a more modern application environment that will allow for the following requirements to be met;

1.) Electronic messaging to and from other standards based systems and interfaces
2.) Allow for the application to meet Meaningful Use Objectives and Goals
3.) Stabilize an aged system that is end of life
4.) Create an environment that is more modular, expandable and resilient

Approach and Success Evaluation – Provide details of how the success of the project will be evaluated

The project will be evaluated using Maven architecture processes that have been tried and tested by Consilience Software for the existing 98 modules that have been configured for this application. Each step in the project will be defined in terms of tasks and deliverables, timelines, and assigned resources. The advantage of using the existing CTEDSS-Maven application means that required functionality already exists in the core Maven application. The project process will involve identifying business requirements so that modeling for the new STD module can be done, modeling of needed data elements, workflows and reports, system testing with STD staff to verify that all needed functionality is captured, and migration from the Development environment to the CTEDSS-Maven staging application which is currently hosted at BEST. In the staging application, user acceptance testing and modifications will be integrated, and then migration to the CTEDSS-Maven production application environment will be completed (also hosted at BEST).

Success for Meaningful use will be demonstrated by the successful transmission if EHR and ELR data to the new Virtualized server environments. Uptime and response times will be demonstrated over time, once applications are migrated to new environments. Goals and objectives for Public Health Reporting as per the ONC and CMS Meaningful Use final rulings will have been met once applications are successfully migrated to new environment that will allow for the needed upgrades to occur.

D. **Business Goals**. List up to 10 key business goals you have for this project, when (FY) the goal is expected to be achieved, and how you will measure achievement, Must have at least one. Please use action phrases beginning with a verb to state each goal. Example: "Reduce the Permitting process by 50%". In the Expected Result column, please explain what data you will use to demonstrate the goal is being achieved and any current metrics.

Business Goal (Action Phase)	Target FY for Goal	Current Condition	Expected Result
Reduce time from receipt of lab test results to beginning of field investigation.	2017	3-5 days	1 day
Reduce time from completion of field investigation to data entry into database.	2017	7-14 days	3 days
Allow near real time access of information by local health departments.	2017	3-5 days	1 day
Reduce performance issues with all Maven requirements for reporting and queries	2014	1-2 hours	1-5 minutes
Allow for Meaningful Use Stage 1 and 2 goals to be met as per the ONC and CMS final rulings	2014	0 interfaces	6 interfaces
Upgrade to Maven 5.0 across all instances	2014	0 instances upgraded	4 instances upgraded

E. **Technology Goals**. From a technical perspective, following the above example, list up to 10 key technology goals you have for this project and in which Fiscal Year (FY) the goal is expected to be achieved. Please use action phrases beginning with a verb to state each goal. Example: "Improve transaction response time by 10%".

Technology Goal	Target FY for Goal
Improve timeliness of receipt of STD laboratory test reports into the database via electronic laboratory reporting from 7-10 days to 1-2 days or less.	2017
Retire the current DOS based application which is slow and unsupportable and replace it with a more robust architecture with a web deployment method. This will reduce support requirements and improve user access to the application.	2017
Retire the aged Solaris V440 which are slow, no longer expandable, end of life and unstable	2014
Build the new environments to allow for the Maven 5.0 upgrades to occur in a timely and systematic planning process.	2014

F. **Priority Alignment.** The criteria in this table, in concert with other factors, will be used to determine project priorities in the capital funding approval process. Briefly describe how the proposed projects will align with each criterion.

Priority Criterion	Y/N	Explanation
Is this project aligned with the Governor's Key Priorities?	Yes	This project will result in: databases that are more user-friendly and accessible for both DPH staff and local health departments; allow for more readily available data for use by both local health departments and the public; provide the ability for DPH to meet both state and federal mandates related to health information exchange.
Is this project aligned with business and IT goals of your agency?	Yes	STDs is one of the last groups of diseases monitored by DPH to be transitioned to the Maven application. The goal is to have all infectious disease data maintained in the CTEDSS-Maven application for easier support and management. In addition the upgrade of remaining Maven Applications to version 5.0 will allow for agency and IT goals to be met for Meaningful Use
Does this project reduce or prevent future increases to the agency's operating budget?	Yes	Issues or changes in the current database have incurred additional costs in staff time and IT hardware. Once the transitions to the new Maven environments are complete, updates can be made by existing IT or program staffed trained in CTEDSS-Maven. In addition, Oracle licensing will be lessened as the new database technology will be MS SQL.
Will this project result in shared capabilities?	Yes	This project will bring STD data into the same application where other infectious diseases are managed and allow for the shared capability of electronic reporting by laboratories,

		healthcare providers, and local health. Local health departments have already been trained to use several Maven-based applications used by DPH. In addition, the upgrades to the remaining Maven instances will allow for the receiving in of ELR and EHR data from external systems across the country which can then be shared with other applications within DPH
Is this project being Co-developed through participation of multiple agencies?	No	While the STD project is not being developed with other CT state agencies, DPH is likely to benefit from work other states and jurisdictions that are also using Maven to support their disease reporting systems have done. DPH will be able to take advantage of improvements made to the STD module which will be used to build a Connecticut-specific system. The Meaningful Use project is a collaborative effort between DPH, DSS and BEST. Critical data related to Public Health Reporting, the admiration of Medicaid and Medicare will be enabled through the collaborative efforts of all three agencies
Has the agency demonstrated readiness to manage project of this size and scope?	Yes	DPH licensed its first Maven application in January 2008. DPH currently has 4 separate instances of the Maven application supporting 98 various mandated and voluntary clinical or laboratory results meeting agency mandates and reporting needs, including CTEDSS that supports DPH infectious disease surveillance. The agency is experienced in the scope and work required for this project. DPH has created and demonstrated the ability to receive in and process ELR and EHR data through the current implantations to staging environments for CIRTS and ELR. Deployment to production is dependent on the upgrades needed for Maven.

Is the agency ready to deliver the business value proposed?	Yes	This project is in line with DPH's goal of providing timely and accurate data by transitioning to an application that can accept electronic lab reports and is more efficient for DPH staff, local health departments and healthcare providers to enter and access data and case management information.

G. **Organizational Preparedness**. Is your agency prepared to undertake this project? Is senior management committed, willing to participate, and willing to allocate the necessary time, energy and staffing resources? How will the project be managed and/or governed and who will make the key project decisions?

The IT Capital Investment Program is recognized as an important and critical opportunity to continue towards the DPH goal of incorporating all infectious disease data and case management into one common web based application. DPH is committed to this project and is working to identify key staff at the program and managerial level that will provide direction to this project.

H. **Project Ramp Up**. If capital funds are awarded for this project, how long will it take to ramp up? What are the key ramp-up requirements and have any off these already been started? For example, has a project manager been identified? Has an RFI been issued? Is a major procurement required such as an RFP?

DPH has discussed this transition with three other state/city jurisdictions that have undertaken similar projects to develop the proposed timelines and costs and understand potential issues and barriers. Preliminary discussions with Consilience Software, the company that develops and manages the core Maven application, have already begun regarding this project. Because DPH has already paid for Maven licensing, and the CTEDSS-Maven application is in production for other infectious diseases, a statement of work from Consilience will be solicited with work proposed to begin in January 2014. DPH will identify needed staff to work on the project by January 2014. In addition, DPH has been participating in regularly scheduled meetings with DSS, BEST, ONC, CMS and CDC where other states discuss similar projects, downfalls, successes, goals and objectives. As part of this ramp-up steps have been taken within DPH to create development environments that have demonstrated proof of concept and our ability to move this forward to the next level once environments are migrated and upgraded.

I. **Organizational Skills**. Do you have the experienced staff with the proper training to sustain this initiative once it's a production system? Do you anticipate having to hire additional staff to sustain this? What training efforts are expected to be needed to maintain this system?

Since DPH has been working with the Maven application since 2008, several DPH staff within the Infectious Diseases and Information Technology Sections has developed expertise in the ability to update the application. Additional technical training is underway. DPH will continue to pay Consilience Software for Tier 3 maintenance for Maven. It is not expected that additional staff will be needed to support the STD module once it is built into Maven, but STD staff and external users will be trained in the use of CTEDSS-Maven. In addition, the development environments created for the delivery of ELR and EHR data have allowed for cross training to occur within the DPH IT team.

J. **Financial Estimates.** From IT Capital Investment Fund Financial Spreadsheet

Estimated Total Development Cost	Estimated total Capital Funding Request	Estimated Annual Operating Cost	One Time Financial Benefit	Recurring Annual Financial Benefit
$2,726,206	$2,524,806	$44,000		$339,600*

Explanation of Estimates

The estimated total development cost is based on discussions with two other state health departments and one large city health department who have undergone the same transition of their STD database.

The recurring benefit is in time of staff currently responsible for processing and entry of lab reports. This will allow staff time to be assigned to other tasks based on the needs and priorities of the program. This total will be $120,000 per year

In addition, once migrations are complete, Oracle Licensing and Sun Support will be eliminated for all Maven Applications. This savings will be $219,600 per year beginning fiscal year 2015.

**** Estimated Yearly Costs - Oracle Licensing and Sun Support savings above will need to be verified by BEST***

III. Expanded Business Case

A. **Project Impact.** Beyond the top business goals identified in Section II, 1) What impacts will this project have, if any, in the targeted areas below 2) What would be the impact of not doing this project 3) How will the project demonstrate benefits are achieved.

(1) Impact Area (Vision)	Description of Project Impact
Will this project provide efficient and easily accessible services for all constituents?	The web-based system will be more efficient for data entry and data sharing with local health departments who are unable to access STD data for residents in their jurisdictions from the current system. Also, the ability to share data through a standards based interface technology will also allow for easy access, across dissimilar systems, external and internal to DPH
Will this project promote open and transparent government with the citizens of the state?	The new application allows for local health department access to data that was previously unavailable to them, including information obtained by DPH staff through case follow up. This will be important for better understanding of these diseases in their jurisdiction and developing prevention strategies. Integration of STD data into the new application will eventually allow for more easy extraction of summary data for sharing with the public as well. Adding to the STD points above, the interfacing efforts, goals and objectives will allow for a more thorough and robust data set allowing for more accurate information to be shared with citizens of the state.
Will this project establish efficient and modern business processes?	This project will move data from an outdated and unsupported system to a supported web-based system with additional capabilities (e.g. electronic lab reporting) that are unavailable in the current system. In addition, the ability to effectively, efficiently and with higher levels of validation of data electronically, from external and internal systems, perfectly aligns with a more modern business process.
Will this project increase accuracy and timeliness of data for policy making, service delivery and results evaluation?	Access by local health departments to their respective public health data in the newly upgraded application and database environments will facilitate analysis that could impact local policies and strategies for disease intervention. The ability of the systems to accept electronic disease reports will allow STD and other surveillance staff to start needed follow up more quickly and share data more easily.

2) What is the expected impact of NOT doing this project?
The database currently used to maintain STD data has been in use for nearly 20 years. It is DOS-based and is outdated. CDC developed this database but has informed health departments that they will no longer be supporting the application or providing updates. If this project is not done, the program will continue to use an unsupported database that does not provide all of the needed capabilities including remote access from multiple workstations outside of the physical DPH building, electronic receipt of laboratory and physician reports, and local health department access. Not doing this project could jeopardize fulfillment of federal grant requirements in the future and result in the loss of up to 1.85 million dollars currently awarded to DPH for staff and activities that collect data that is reported to CDC through the current database. The current suite of Maven applications for Infectious disease surveillance, blood Lead, new born screening, environmental public health reporting run on a 15+ year old hardware platform that is growing more and more unstable with parts harder to locate once hardware failures occur. The expected impact of not doing this project will result in these key applications no longer being able to perform or even be available for DPH to perform the needed case management.

(3) How will you demonstrate achievement of benefits?
The achievement of benefits will be demonstrated by the following: 1. Migration of CTEDSS to the newly created environment which will allow for the STD migration to occur 2. Migration of remaining Maven applications to the new environments 3. Reduction in Oracle Database licensing costs 4. Completion of Meaningful Use stage 1 and 2 objectives 5. Deployment of an STD module in CTEDSS-Maven for the entry of new data by all STD Program staff. 6. Ability to query and analyze all data in the new system, including accurate historical data. 7. Local health department access of STD data among their own residents. 8. Receipt of electronic laboratory reports accurately in the system. 9. Receipt of physician reports accurately in the system.

B. Statutory/Regulatory Mandates. 1) Cite and describe federal and state mandates that this project in intended to address. 2) What would be the impact of non-compliance?

(1) Statutory / Regulatory Mandates:
This project will allow DPH to meet both state and federal mandates. First, the American Recovery and Reinvestment Act of 2009 (ARRA) enacted the Health Information Technology for Economic and Clinical Health (HITECH) Act to accelerate the adoption of health information technology. The ARRA offers financial incentives to eligible providers and hospitals to adopt health information technology and use it in a "meaningful" way. One way providers and hospitals can show this in the first stage of implementation of this Act is through the submission of electronic laboratory reports to public health agencies. By transitioning to this new database, DPH will have a system that is capable of receiving electronic laboratory reports for STDs and once implemented, will not be a barrier to providers and hospitals receiving incentives for achieving this first stage of "meaningful use." Second, a state law was enacted on October 1, 2011 that mandated laboratories submit reportable diseases reports electronically (instead of on paper) when DPH is able to receive them. This transition to the new database will allow for the capacity for electronic laboratory reporting for STDs, which are the highest volume of reports DPH receives (approximately 40,000 reports annually), and the full realization of this law.

(2) Impact of non-compliance:
DPH is the lead state agency for the development, implementation, and sustainment of statewide capacity for a health information exchange system and meaningful use of electronic health records. By not transitioning existing Maven applications, including STD data to the new environments, DPH could be perceived as a barrier to healthcare providers demonstrating meaningful use and possibly receiving financial incentives for meeting meaningful use criteria detailed in the HITECH Act.

C. Primary Beneficiaries. Who will benefit from this project (citizens businesses, municipalities, other state agencies, staff in your agency, other stakeholders) and in what way?

STD Program staff will benefit from having a system that is web-based and more user-friendly than the current system. It will also allow for easier access to data for analysis and reporting purposes. Field-based DPH staff will be able to enter case management data from off-site offices which they are currently unable to do. Laboratories will have the ability to send data electronically to the new database which will cut down on mailings and faxes as well as ~2000 hours of manual data entry per year by DPH staff. The recurring benefit of additional staff time will allow for staff resources to be allocated to other priorities and needs of the STD Program. Local health departments will easily be able to access data on infections among residents in their jurisdiction. Eventually, this system will allow for direct entry of data by providers which will decrease reporting time and improve efficiency and accuracy of data in the system.

The remaining Maven applications and associated Program staff for Blood Lead, newborn screening and infectious disease surveillance will benefit from a more stable, flexible, interfaceable and powerful systems environment allowing work flows within DPH to improve efficiencies and create new ways and processes as newer technology enables more options to be explored.