



**COLORADO**

Office of State Planning  
& Budgeting

111 State Capitol  
Denver, Colorado 80203

October 1, 2015

Senator Tim Neville  
Chair, Joint Technology Committee  
State Capitol Building  
200 E. Colfax Ave.  
Denver, CO 80203

RE: OSPB Submission of FY 2016-17 Non-prioritized Information Technology Capital Requests

Dear Senator Neville:

As required by § 24-37-304 (1) (c.5) (I), C.R.S., please find attached the FY 2016-17 Executive Branch information technology requests for all state departments other than the Department of Higher Education. Please note that these requests have not yet been prioritized or recommended for funding. Prioritization and funding recommendations will be presented to the Joint Technology Committee (JTC) by November 2, 2015.

Given the significant challenges facing Colorado's General Fund budget in FY 2016-17, we will likely recommend only a very small number of projects in our November 2, 2015 prioritization, based on the following criteria:

- Projects that are funded by cash funds and/or federal funds;
- Requests for continuation projects appropriated in FY 2015-16; and
- Projects with clear and urgent life or safety implications.

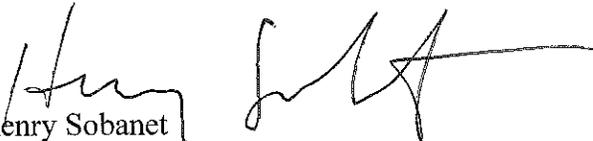
In addition, please note that today's submission does not include a request surrounding the premium and benefits system for Unemployment Insurance. You have already been informed that some significant challenges have arisen with the UI project, commonly known as WyCAN, entered into by a consortium of States including Arizona, North Dakota, Wyoming, and Colorado. The Department of Labor and Employment continues to investigate the impact of these challenges on the WyCAN project, and will present a plan to the JTC for addressing these challenges at a later date.

Please feel free to contact me by phone at (303) 866-3317, or direct questions and concerns via email to our Deputy Director, Erick Scheminske, at [erick.scheminske@state.co.us](mailto:erick.scheminske@state.co.us). At the Committee's request, I will also make myself available to present any necessary information at a future meeting.



Thank you for your consideration of these requests.

Sincerely,

  
Henry Sobanet  
Director

- cc: Representative Max Tyler, Vice-Chair, JTC
- Representative Jonathan Singer, JTC
- Representative Jack Tate, JTC
- Senator Linda Newell, JTC
- Senator Beth Martinez-Humenik, JTC
- Ms. Jessika Shipley, JTC Staff
- Mr. Matt Becker, JTC Staff
- Mr. John Ziegler, JBC Staff Director
- Mr. Alfredo Kemm, JBC Staff
- Mr. Kevin Neimond, JBC Staff
- Ms. Kori Donaldson, CDC Staff
- Ms. Diane Duffy, CDHE
- Mr. Andrew Rauch, CDHE
- Mr. Erick Scheminske, Deputy Director, OSPB
- Ms. Andrea Day, OSPB Staff
- Mr. Nathaniel Pearson, OSPB Staff



**CC-IT: CAPITAL CONSTRUCTION INFORMATION TECHNOLOGY REQUEST FOR FY 2016-17**

<b>Agency or Institution:</b>	Human Services	<b>Signature Department Chairperson Approval:</b>	<i>Melissa W. Bucht</i> 9-30-15
<b>Project Title:</b>	Child Care Automated Tracking System (CHATS) Modernization	<b>Signature COHE Approval:</b>	
<b>Project Year(s):</b>	FY 2015-16 to FY 2019-20	<b>Signature DIT Approval:</b>	
<b>Agency or Institution Priority Number:</b>	3	<b>Signature OSPB Approval:</b>	<i>Scott M. ...</i> 10/1/15
<b>Program Plan:</b>		<b>Name and e-mail address of preparer:</b>	

Revision?	Yes	No	Total Project Costs	Total Prior Year Appropriations	Current Request FY 2016-17	Year 2 Request	Year 3 Request	Year 4 Request	Year 5 Request
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(1)			\$ -	\$ 900,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000
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(4)			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(5)			\$ -	\$ 900,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000
<b>Total Project Costs</b>			<b>\$ 2,991,250</b>	<b>\$ 1,533,125</b>	<b>\$ 1,458,125</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
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<b>Total Budget Request [F+G(3)]</b>			<b>\$ 2,991,250</b>	<b>\$ 1,533,125</b>	<b>\$ 1,458,125</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
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# COLORADO

Department of Human Services

FY 2016-17 IT Capital Construction Request | October 1, 2015

John W. Hickenlooper  
Governor

Reggie Bicha  
Executive Director

*Melissa Warchit*  
Signature

9.30.15  
Date

**Department of Human Services IT Capital Construction Priority: IT-3  
Child Care Automated Tracking System (CHATS) Modernization Continuation**

Summary of IT Capital Construction Request	Total Funds	CCFE	Cash Funds	Federal Funds
FY 2016-17	\$1,458,125	\$0	\$0	\$1,458,125

### Request Summary:

The Department is requesting spending authority for \$1,458,125 in FY 2016-17 for federal Child Care Development Fund (CCDF) for continuation of the Child Care Automated Tracking System (CHATS) Hybrid Modernization project. This is the second year of capital funding for the completion of the two-year project.

### Project Description:

The Legislature appropriated funds to the Department in FY 2014-15 to perform a needs assessment on CHATS, which was completed by BerryDunn in October, 2014. The BerryDunn needs assessment required the vendor to consider a full range of options, from a "do nothing" approach to the full replacement of the system. After extensive analysis, including stakeholder meetings, interviews with county staff and providers, an evaluation of best practices, and identifying current and future interdependencies with other Office of Early Childhood (OEC) systems, BerryDunn recommended a hybrid phased approach to incrementally enhance and replace current CHATS modules. The benefits of this approach include the ability to reuse current CHATS coding, while leveraging infrastructure and shared resources with other data systems within the Department. The other options, including "do nothing", failed to achieve the Department's desired outcomes.

The hybrid option represents an innovative technical systems approach that retains and enhances selected CHATS functionality and allows for replacement of selected functionality with either new or current State-leveraged systems. The hybrid proves to be the best option, as it is more cost effective, time efficient, and less risky than a full system replacement. Unlike the enhance-only option, the hybrid option creates an opportunity to take advantage of the latest marketplace solutions and State strategic information technology initiatives.

- The hybrid option consists of a set of thirteen technical and non-technical initiatives to address the gaps and system requirements identified by CHATS users, providers, the Office of Information Technology (OIT), and the Office of Early Childhood (OEC).
- The four non-technical (NT) initiatives relate to (NT.1) a strategic technology plan to define technical priorities, (NT.2) increased staffing initiatives, (NT.3) additional user training, and (NT.4) planning for attendance tracking replacement, as opposed to fundamental system flaws or technology issues.
- The needs assessment identified nine technical initiatives that are needed to address gaps and system requirements. These initiatives can be further categorized as non-functional, functional, or business requirements.

**Background and Justification:**

The CHATS system was deployed in 2010 to update technology and address business needs related to tracking attendance, improving financial management, and improving access to data. However, the system lacks some major scope items which users were expecting, including robust reporting capabilities, a provider portal, and a fully-staffed operations and maintenance team. This led to manual workarounds and maintenance of paper-based and parallel monitoring and tracking systems, which are not advisable or sustainable business practices for long-term efficiency, since they introduce opportunities for data entry and other human errors, are not easily auditable, add to user workload, and cause user frustration. The following are the summarized highlights of the most frequently reported and highest impact challenges in the current business and technical environments:

- CHATS does not have functionality to support all state-wide policies, such as assessing the correct parent fee, managing unpaid parent fees, preventing manual claims, and recovering overpayments; and certain county policy options, such as “hold days,” drop-in days, and tiered reimbursement.
- Existing functionality does not effectively support complaints and investigations or fraud prevention.
- Many users dislike the Point-of-Sale (POS) system, citing technical problems, user issues with the POS cards, burden on parents and providers.
- Some providers have chosen to no longer be Colorado Child Care Assistance Program (CCCAP) providers, or have been reluctant to become providers, due to the challenges and administrative burdens of the current tracking and attendance system.
- Limited standard reports and lack of ad hoc reporting or querying capabilities severely hinder state and county staff at all levels. Counties and the State have very limited access to program data to conduct program planning, monitoring, and analysis, budgeting, needs assessments, or auditing.

State and county staff spend a significant amount of time and effort tracking down data to complete core business processes. Much of the information they seek is in CHATS, but they lack access to it in a format and timeframe that meets their needs.

**Implementation Plan:**

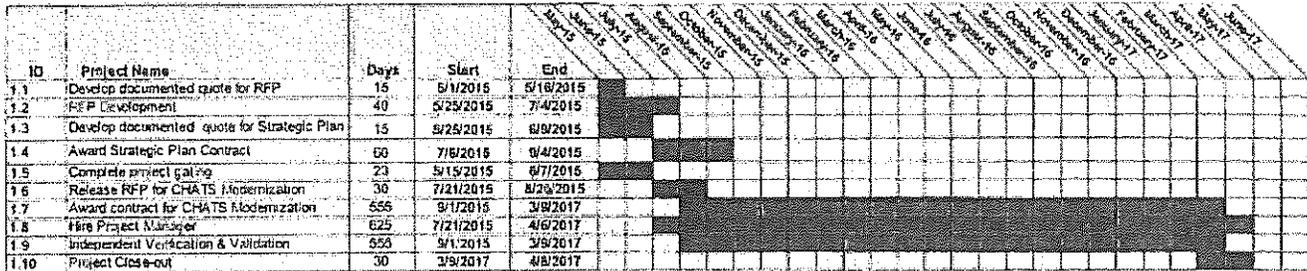
Based on the BerryDunn recommendation, the Department is utilizing a hybrid strategy to implement CHATS modernization. Rather than replace the system in its entirety, the project will incrementally replace and upgrade key modules in a prioritized fashion. The needs assessment identified the hybrid solution as “more cost effective, time efficient, and less risky than full system replacement”.

As noted in the attached timeline, the Department chose to have a third-party vendor develop the specifications and requirements for the RFP. The Department used a documented quote process to evaluate

proposals for the drafting of the RFP. Based on those proposals, the Department selected BerryDunn to draft the RFP. Given their prior history with the CHATS system, as well as the Department's programs, BerryDunn was uniquely qualified to provide both insight and added value to the project.

Also consistent with the initial recommendation, the Department contracted with BerryDunn to conduct a Strategic Technology Plan for the OEC (see Figure 1.1). This plan will provide a technology, business process, and business strategy roadmap for all programs within the OEC. The strategic plan is scheduled to be completed prior to the award of the modernization RFP, and will provide bidders with a detailed assessment of the Department's future vision for information technology systems.

Figure 1.1



**Alignment with OIT Best Practices:**

Due to its scope and complexity, the State OIT Executive Governance Committee (EGC) classified the project as a "large project". As such, the Department is required to follow a structured format with increased levels of oversight, validation, and reporting.

- **Gate 1: RFP Development** – The Department sought the expertise of the third-party vendor developed requirements and specifications for the RFP. The vendor conducted extensive stakeholder outreach and engagement in establishing business requirements. The OIT staff is also heavily consulted.
- **Gate 2: OIT Gating Process** - As a large project, the CHATS Modernization project must follow the established OIT gating process. This system requires that all projects undergo critical review and approval for each major step of the process. This review includes a critical assessment of the risks, resources, activities, deliverables and controls for each task. The project must successfully pass through each gate before being allowed to proceed to the next. The gates include intake, initiation, planning, execution, and closing. The project's overall progress is reviewed monthly by the EGC.
- **Gate 3: Project Management** – To ensure successful completion of the project, the Department has engaged the services of a Certified Project Manager for the duration of the project. This position is responsible for overseeing all activities related to the contract including vendor management, resource allocation, schedule and budget adherence, quality control, and performance management.
- **Gate 4: Independent Verification and Validation (IV&V)** - As another layer of quality control and oversight, the Department budgeted for an IV&V vendor for the duration of the project. This is an independent third-party consultant that assesses, verifies, and validates the work of the RFP vendor to ensure it is being completed in accordance with requirements and specifications.

**Security and Backup/Disaster Recovery:**

All phases of the project require OIT approval and sign-off on all security, backup, and disaster recovery processes. Formal security validation is obtained in Gate 4, Execution. Approval of the final security profile and backup requirements is required prior to a Go / No Go decision for the project.

The system will have redundant IT components and is designed to meet federal and State IT architecture, security and business continuity requirements. CHATS Modernization will follow the State Cybersecurity Policies set forth by the Office of Information Security. It will also follow the National Institute of Standards and Technology (NIST) 800-53 guidelines that focus on access management and identity management for implementing electronic authentication. NIST defines Identity Management or IDM as “a process of establishing confidence in user identities that are electronically presented to an information system.”

**Business Process Analysis:**

There are several benefits to implementing the hybrid enhancement including:

- The Electronic Document Management System will enable Colorado Child Care Assistance Program (CCCAP) case workers to view eligibility documentation obtained by CCCAP and other programs, and to upload CCCAP-specific documentation.
- Enhancements to the CHATS database infrastructure to utilize the Office of Information Technology’s Database as a Service (DAAS) initiative, removing the current environment barriers to real-time reporting.
- The Hybrid approach establishes user training as a core CCCAP business function through training planning, revision of training materials and user documentation, and on-going assessment of training needs and activities.
- The Hybrid approach will make changes to CHATS financial functionality to address system gaps related to management and tracking of billing, payments and recoveries.
- CHATS will be linked to Quality Rating Improvement System (QRIS) for quality and licensing system data.
- Improvements will be made to the CHATS user interface, screen flow, and data entry to enhance worker productivity.
- The enhancements will provide the ability to record and store information about complaints and investigations related to qualified (non-licensed) providers.
- Without the interface to the Quality Rating and Improvement System, time-consuming manual processes will be needed to implement requirements for tiered reimbursement.

**Systems Integration Opportunities:**

CHATS has tremendous potential for systems integration opportunities. As noted, it is integrated with Trails (the Department’s automated child welfare case management system), the Child Care Licensing System (CCLS), PEAK (the Department’s universal application system), the Quality Rating Improvement System (QRIS) and the electronic benefit tracking system. The modernization of CHATS is consistent with the Department’s strategic vision of an integrated technology framework. Within this framework, data reside within the databases of their own core systems, but can be easily and safely accessed in an integrated fashion, while the user interfaces reside on a separate platform that seamlessly and dynamically interacts with the customer.

**Program Plan:**

One of the main benefits of the hybrid approach is its ability to maximize the technology. The Department is currently in various stages of rebuilding or replacing several major IT systems. This allows the

opportunity for leveraging and sharing technology, infrastructure, operating platforms and software licenses. The use of common architecture provides efficiencies in ongoing operations and support.

**Life Cycle Cost (LCC) Analysis and Project Alternatives:**

The solution recommended by BerryDunn to enhance and modernize CHATS is the Hybrid option. This option is the most cost effective solution, maintains the integrity of the current infrastructure, meets all user objectives, and allows work to begin immediately through a phased in approach. There are also benefits in terms of quantitative cost savings:

**Figure 1.2 Comparison of GHATS Modernization Option Costs**

	Cost	Hybrid	Difference
Do Nothing	\$28,000,000	\$8,916,250	(\$19,083,750)
Enhancement (Non-Hybrid)	\$3,000,000	\$8,916,250	\$5,916,250
CHATS Replacement	\$20,000,000	\$8,916,250	(\$11,083,750)

There are clear cost savings by using the recommended Hybrid option over Do Nothing and CHATS Replacement. The Enhancement option is the least expensive, but also one of the least viable, feasible, and financially responsible. This option does not replace system components in need of upgrades and modifications, and only meets some user objectives investing further financial resources to stabilize the system without addressing the need for new technology. Furthermore, issues in the current CHATS system will persist such as, the continued accumulation of technical debt, the future (approximately five years) need for a lifecycle refresh and complete system replacement, continued technical problems, and the potential loss of CCCAP data.

**Consequences if Not Funded:**

Without the Hybrid enhancements, the current system will not allow the Department to adequately and efficiently meet the needs of the families served.

**Request for Proposal:**

For contracted services, the Office of Early Childhood will create strict RFP guidelines to ensure timely and high quality work. While individual contracts will be negotiated separately, all contracts and contracted services will ensure that vendors are held accountable. This will be done by setting firm timelines and milestones, and having each vendor agree to certified project management and independent validation and verification. Finally, damages and penalties will be imposed on vendors who fail to provide deliverables or fail to meet timelines. For example, the success of a project is often dependent upon promptly mobilizing and deploying the appropriate staff. Based on this, the Department will include strong requirements and related penalties to vendors who do not “ramp up” according to schedule. Conversely, the Department is also willing to consider incentives for contractors who provide “value engineering” by providing a solution that is more efficient or effective than the original specification. The development phase will be completed at the end of year two, and user testing will begin in year three.

**Operating Budget Impact:**

The key components of the operating budget are personnel costs and Common Off-the-Shelf Software (COTS). The COTS costs are estimated to be \$345,000 per year during development, and \$90,000 per year once the system is in the operating and maintenance stage. Personnel costs are estimated to be \$900,000 in

the first year for approximately 9.0 FTE; those costs increase to \$1.2 million and 12.0 FTE in FY 2016-17 and beyond. The Department prepared the following cost analysis table to summarize the 5-year operating budget impact.

Budget Item	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Total
Software COTS	\$ 345,000	\$ 345,000	\$ 90,000	\$ 90,000	\$ 90,000	\$ 960,000
Operating Cost	\$ 900,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 5,700,000
Estimated Total	\$ 1,245,000	\$ 1,545,000	\$ 1,290,000	\$ 1,290,000	\$ 1,290,000	\$ 6,660,000

**Assumptions for Calculations:**

Assumptions and calculations to incrementally enhance and replace the existing CHATS modules are based on the detailed cost analysis of the Hybrid option as prepared by BerryDunn. The needs assessment provided an estimated five-year cost range of \$5.1 million to \$8.8 million. The Department’s request is at the higher end of the range to account for contingencies and ensure successful completion of the project. The projected cost is \$8,961,250. The additional cost of \$161,250 is also requested for the Office of Information Technology (OIT) to employ a Certified Project Manager, perform Independent Verification and Validation and to temporarily lease space for development. These requirements were not factored into the BerryDunn assessment.

**Total Five-year Project Costs**

The needs assessment includes the projected five-year cost of the project, including one-time and ongoing costs. Figure 1.4 shows the five-year project cost by category according to the recommendations by Berry Dunn.

Budget Item	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Total
<b>FY 2015-16 BA-13: CHATS Operating and Maintenance</b>						
Operating and Maintenance	\$900,000	\$1,200,000	\$1,200,000	\$1,200,000	\$1,200,000	\$5,700,000
<b>FY 2015-16 Capital Construction Request BA-01: CHATS Hybrid Enhancement</b>						
Contract Personal Services	\$1,188,125	\$1,113,125	\$0	\$0	\$0	\$2,301,250
Software COTS	\$345,000	\$345,000	\$90,000	\$90,000	\$90,000	\$960,000
Estimated Total	\$2,433,125	\$2,658,125	\$1,290,000	\$1,290,000	\$1,290,000	\$8,961,250

**Operating Costs**

The BerryDunn assessment recommended immediately deploying 12.0 FTE resources to provide the appropriate level of ongoing support and maintenance. The FY 2015-16 request was for 9.0 FTE contracted resources to account for the time required to onboard those resources; the amount will annualize to 12.0 FTE contracted resources in FY 2016-17 and beyond (See Figure 1.5). It is important note that the BerryDunn analysis consistently refers to personnel resources rather than State FTE. The current OIT business model is designed to allow the maximum flexibility in determining the optimal staffing structure

for each project. The Department will work with OIT to identify the appropriate mix of State staff, contract staff, or hosted services.

**Figure 1.5 - Personal Services Operating Cost**

Budget Item	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Total
<b>Operating Costs</b>						
FTE Resources	9.0	12.0	12.0	12.0	12.0	n/a
Annual Cost	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
	\$ 900,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 1,200,000	\$ 5,700,000

\* Operating and maintenance costs and rates are based on the recommendations from the BerryDunn report for necessary system support of 12.0 FTE resources. The Department and OIT will identify the best appropriate mix of State staff, contract staff, or hosted services to support business needs. The Year-1 costs are calculated at 9.0 FTE to account ramp up of new resources.

**Contract Personal Service Cost**

The costs for contract personal services were derived from the BerryDunn assessment. In discussions with OIT as well as BerryDunn, the Department is requesting the high estimate based on the complexity of the project. The Department has also included costs for Independent Verification and Validation (IV&V) as well as a Certified Project Manager as required by OIT on projects of this scope (See Figure 1.6).

The lower cost estimate from the needs assessment for the Hybrid option was \$5,145,000. This estimate was arrived at by reducing resources in each key area: technology cost, one time development costs, and a lower level of ongoing and maintenance support. The high estimate was chosen to ensure capacity to make timely system changes. The Department has several other information technology projects underway that will interface with CHATS at some level. Because of the high level of interdependencies between the various projects, the Department believes a more robust effort is justified.

**Figure 1.6 - Contract Personal Services (2-Year Development)**

Budget Item	FY 2015-16 (Appropriated)	FY 2016-17 (Continuation)	Total
<b>Consultant Resources *</b>			
Hours	5,500	5000	10,500
Rate	\$150	\$150	n/a
	\$825,000	\$750,000	\$1,575,000
* Estimated hours are based on BerryDunn report; rates are from the United States General Services Administration (GSA) Information Technology Services Schedule			
<b>State Resources *</b>			
FTE Resources			
(OEC Business Analyst)	1.5	1.5	3.0
Annual Rate	\$100,000	\$100,000	n/a
	\$150,000	\$150,000	\$ 300,000
Sub Total	\$975,000	\$900,000	\$1,875,000
* Estimated hours and rates are based on BerryDunn report.			
<b>Certified Project Manager *</b>			
FTE Resources	1.0	1.0	2.0
Annual Rate	\$125,000	\$125,000	
Sub Total	\$125,000	\$125,000	\$250,000
* Estimated hours are based on BerryDunn report; rates are (GSA) Information Technology Services Schedule			
<b>Independent Verification and Validation (IV&amp;V)</b>			
Estimated Development Cost	\$1,237,500	\$1,237,500	
5% IV&V	\$61,875	\$61,875	
Sub Total	\$61,875	\$61,875	\$123,750
* Estimated Development Cost includes software acquisition (\$600,000) and personal services cost (\$1,875,000). IV&V costs are based on 5% of total development costs over the 24-month development period.			
<b>Leased Space (Temporary)</b>			
Number of Temporary Staff (State and Contract)	10.0	10.0	
Average Square Feet per Employee (including common areas)	125.0	125.0	
Gross Square Footage	1,250.0	1,250.0	
Cost per Square Foot	\$21.00	\$21.00	
Sub Total	\$26,250	\$26,250	\$52,500
* Leased space assumes an average of 125 s/f per employee; rates based on Downtown Denver Partnership 2014 Economic Update			
<b>Total Contract Professional Services</b>	<b>\$1,188,125</b>	<b>\$1,113,125</b>	<b>\$2,301,250</b>

**Commercial-Off-the-Shelf Software (COTS)**

The commercial-off-the-shelf-software costs were derived from the BerryDunn assessment. The software acquisition and development expenditures occur in the first two years of the project. Thereafter, the ongoing costs for COTS licensing or hosting is calculated at 15% of the total acquisition cost (See Figure 1.7).

Figure 1.7 - Software Acquisition						
Budget Item	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Total
<b>Software Commercial Off-the-Shelf Software (COTS) *</b>						
Annual Cost	\$300,000	\$300,000	\$90,000	\$90,000	\$90,000	\$870,000
	\$300,000	\$300,000	\$90,000	\$90,000	\$90,000	\$870,000
*The cost in Year-1 and Year-2 are for the estimated cost for acquisition or renewal of required software license (\$600,000). Ongoing maintenance cost is calculated at 15% of original licensing and development cost. These costs do not begin until the system is operational in Year-3 of the request (\$90,000/year).						
<b>Software Build</b>						
Annual Cost	\$45,000	\$45,000	\$ -	\$ -	\$ -	\$90,000
	\$45,000	\$45,000	\$ -	\$ -	\$ -	\$90,000
*The development cost in Year-1 and Year-2 are based on the BerryDunn assessment.						
<b>Total</b>						<b>\$960,000</b>

**Cost Savings and Improved Performance Outcomes:**

The BerryDunn "Best Practices Report" recommends a combination of initiatives that have the potential for future cost savings. First, the "RFI for Attendance Tracking" recommendations notes that the ability to record attendance digitally and in real time greatly improves the accuracy of billings and also reduce fraud. Louisiana, Wisconsin, Texas, Mississippi, New York, and Iowa are among the states that have implemented technology that supports fraud reduction.

Additionally, the "Fraud, Recovery and Administrative Controls" analysis states that, "Robust reporting capabilities, Red Flag Fraud Alert Reports, automatic flags triggered by unusual activity, and open access to data, including data from other agencies that can be cross-referenced, are important for proactive fraud detection." The Department believes this added functionality within the reporting module will enhance fraud detection and improve fraud deterrence.

The Department conservatively estimates these two recommendations have the potential to reduce fraud by \$477,854 in the first full year of operation (See table below).

CHATS Anticipated Cost Savings		
FY2013-14 CCCAP Expenditures		\$63,713,812
POS Real-time Tracking Estimated Savings	0.25%	(\$159,285)
Robust Reporting and Red Flag Monitors Savings	0.50%	(\$318,569)
<b>Total Estimated Annual Savings</b>		<b>(\$477,854)</b>

ADDITIONAL REQUEST INFORMATION	
Date of project's most recent program plan:	6/30/2015
Request 6-month encumbrance waiver?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
New construction or modification?	<input type="checkbox"/> New <input type="checkbox"/> Renovation <input type="checkbox"/> Expansion <input type="checkbox"/> Capital Renewal
Total Estimated Square Footage	ASF GSF
Is this a continuation of a project appropriated in a prior year?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
If this is a continuation project, what is the State Controller Project Number?	2016-039115

CONTINUATION HISTORY (DELETE IF NOT APPLICABLE)		
	FY 2015-16 Appropriated	Total Appropriations
Total Funds	\$1,533,125	\$1,533,125
General Fund		
Cash Funds*		
Reappropriated / CFE		
Federal Funds	\$1,533,125	\$1,533,125

ESTIMATED PROJECT TIME TABLE		
Steps to be completed	Start Date	Completion Date
Phase 1 Construction	July 1, 2015	June 30, 2016
Phase 2 Construction	July 1, 2016	June 30, 2017







systems and environment. The Interoperability plan, timeline, costs, and resulting budget request were all derived as a result of that 15-month planning effort.

The Office of Management and Budget (OMB) Circular A-87 cost allocation waiver for integrated health and human service system development, originally set to expire December 31, 2015, has been extended to December 31, 2018.

Utilizing Interoperability to enable individual and family centric views of data across IT systems will allow for greater transparency and improved accountability within the Department, resulting in better service delivery for clients.

The Department currently has no standard policy, procedure or practice addressing interoperability. A study of just 18 of the Department's IT systems revealed that it has over 500 interfaces to move data to a total of 95 federal, state, and county IT systems using 28 different methodologies. The Department has no ability to view or analyze data as a comprehensive whole, in anything close to near real time or without enormous manual effort.

The new connected model approach utilized in the Department's interoperability strategy provides a roadmap for improved business process and program performance throughout the entire organization resulting from:

- The selection and deployment of new foundation technologies is based on service oriented architecture (SOA) that enables cross-agency collaboration, information access, and process coordination.
- Creation of a connected 'hub' or Enterprise Service Bus (ESB) that provides a user with individual and family centric views of data and enables performance management capabilities across the offices of the Department and across partnering agencies through a 'single pane view' using single sign-on methodology.
- Enhancing and extending existing applications by developing shared services that can be leveraged by multiple agencies and business processes.
- Assessment of current business processes that will be affected by the new enterprise architecture and identifying areas that will benefit from improved processes and procedures prior to the implementation of the new technologies.

This strategy is built upon existing technology infrastructures, thus facilitating incremental technology investment, such as implementation of new standards, common applications, and organization and process changes, consistent with emerging best practices in the industry.

Some of the factors that have increased the demand for a connected model of interoperable systems include:

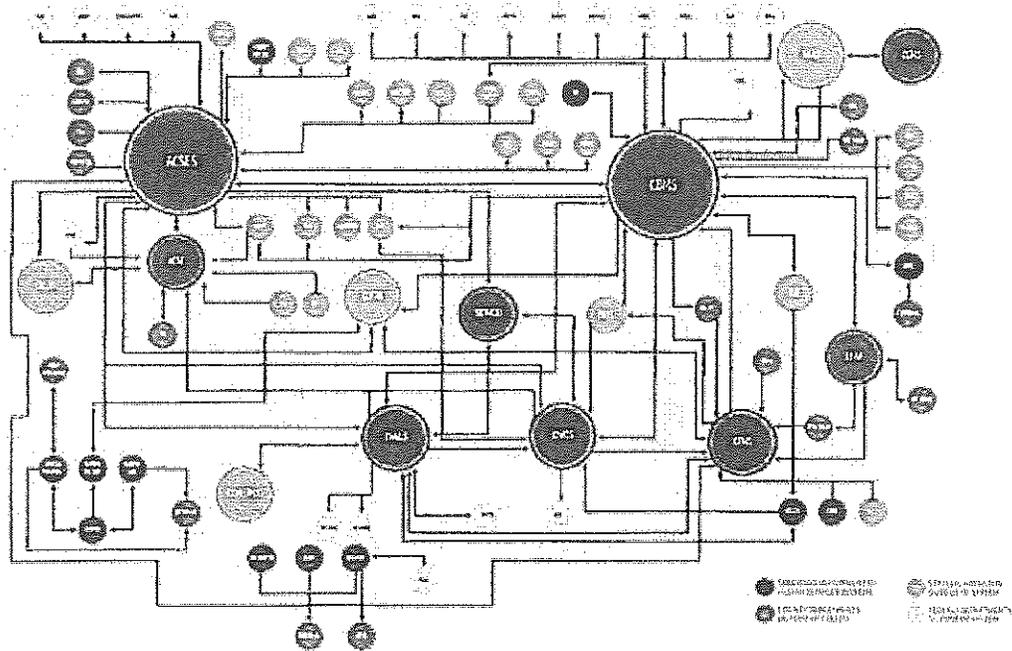
***Faster access to services.*** Multiple, redundant intake and eligibility systems, spread across different agencies and locations, discourage individuals and families from seeking care. Similarly, the public must be able to easily identify and access community resources.

***Casework simplification.*** Simplifying business and technical processes enable caseworkers to spend less time on data entry and manual reporting and more time with clients.

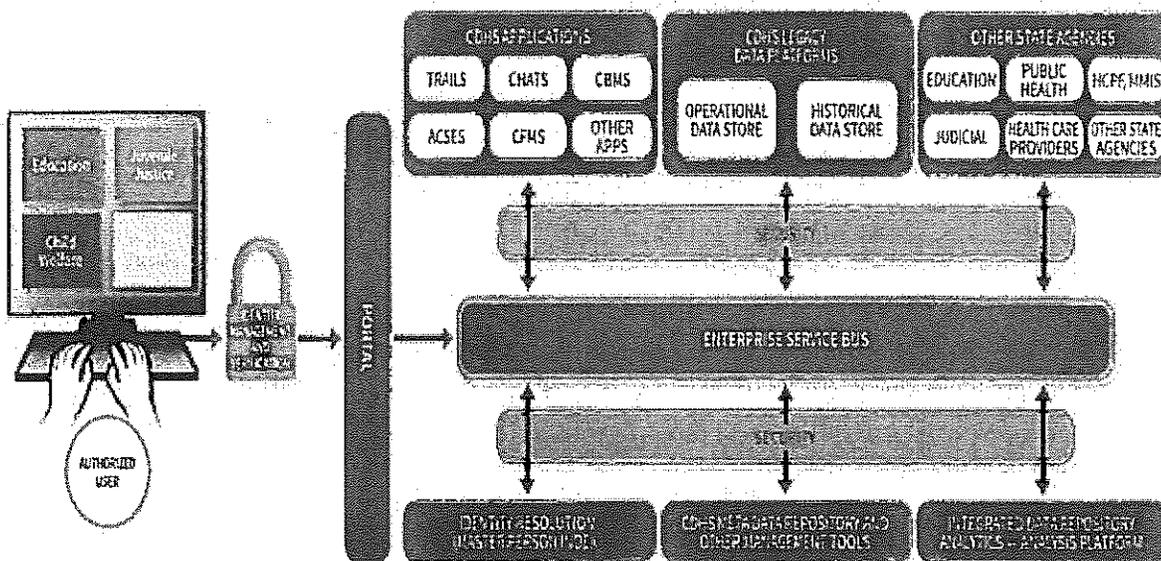
**Safety.** The demand for coordination is heightened when it can increase the safety of individuals, families and communities.

**Outcome measurements.** A global view of clients, services and resource distribution within and across departments and programs, provides meaningful metrics for measuring outcomes.

In summary, Interoperability transforms the Department's data environment from the depiction below:



To this modernized environment:



**Implementation Plan:**

The Interoperability Roadmap<sup>1</sup> provides multiple work streams of initiatives through a phased approach to interoperability. In addition, the Roadmap provides opportunity for successes throughout the plan and lessons learned that will feed into a larger and fully developed implementation strategy.

Governance Work Stream

Activity	Tasks	Deliverable
Create initial interoperability and data governance organization	<ul style="list-style-type: none"> <li>• Build governing council teams to include business data experts, a data architect, business analysts, and a project manager</li> <li>• Establish venues in which the experience and expertise of individuals is shared and leveraged to facilitate interagency collaboration and partnership</li> <li>• Leverage existing Human Services and Health IT associations to encourage the sharing of knowledge, experience and solutions</li> <li>• Develop processes to engage DHS business leadership in strategic interoperability and data planning activities to ensure that business requirements are being met</li> <li>• Establish a formal communication path with OIT for the Interoperability Advisory Council (IAC)/Data Governance Councils</li> </ul>	<i>Initial IAC/DGC Governance Structure</i>

<sup>1</sup> <http://www.acf.hhs.gov/state-of-colorado-interoperability-and-integration-project>

Activity	Tasks	Deliverable
<p>Create a Department Business Data Stewards Council to engage all divisions of the agency and formalize data stewardship activities and processes</p>	<ul style="list-style-type: none"> <li>• Identify business data stewards/ coordinators for DHS data</li> <li>• Create a common baseline of DHS-wide information: a DHS-wide foundation for data sharing, information discovery, future architectures</li> <li>• Open the Council to interagency communities of interest (COI) that have as their goal coordinating, exchanging, and improving the quality of health information and services available to citizens and constituents</li> </ul>	<p><i>Creation of Business Data Architects</i></p>
<p>Create Interoperability Advisory Council</p>	<ul style="list-style-type: none"> <li>• Begin working with OIT and other state agencies on the Proof of Concept (POC) initiatives</li> <li>• Begin developing communication plans and change management strategies</li> </ul>	<p><i>Creation of IAC, Formalize POC planning documents, Creation of Communication and Change Management Plans</i></p>

Meta Data Repository Work Stream

Metadata will be used as a utility source for information and knowledge management, development, and data discovery.

Activity	Tasks	Deliverable
Create an inventory of all information systems in DHS to develop a baseline of all DHS data and systems identified with the business function they support	<ul style="list-style-type: none"> <li>• Complete 'as-is' enterprise information architecture at the department and system level</li> </ul>	<i>Existing Systems Inventory</i>
Create an inventory of all significant data in DHS to have a baseline of all data assets	<ul style="list-style-type: none"> <li>• Complete 'as-is' enterprise information architecture at the data element level</li> </ul>	<i>Existing Data Inventory and Systems cross-reference</i>
<p>Establish and publish DHS data standards and definitions for all data elements</p> <p>Create DHS enterprise conceptual and logical models</p>	<ul style="list-style-type: none"> <li>• Purchase/confirm tool to contain information architecture</li> <li>• Validate Subject Area Model with agencies via data stewards Human Services Data Services Council (HSDSC)</li> <li>• Create Conceptual View of Enterprise Data Model with major data entities</li> <li>• Create Logical View of Enterprise Data Model with major data entity keys and attributes</li> </ul>	<i>Baseline for interoperability and data sharing decisions</i>
Data governance policies, processes and standards are established to manage the flow of data from capture to use	Cross Reference data in systems with National Information Exchange Model (NIEM) naming and model	<i>Create DHS Enterprise Data Models/Data Mappings</i>
Identify authoritative data sources for all data types		<i>Source data and systems of record</i>
Create and implement an enterprise data dictionary and taxonomy		<i>Common communication base</i>
Develop data solutions that serve multiagency business needs to facilitate organizational collaboration and partnership	<ul style="list-style-type: none"> <li>• Identify business data modelers for DHS</li> <li>• Identify projects with data sharing opportunities</li> </ul>	<i>DHS Data interoperability sharing opportunities</i>

Activity	Tasks	Deliverable
Develop a standard set of Metadata components required for DHS data elements	<ul style="list-style-type: none"> <li>• Create metadata component standard</li> <li>• Collect and document the metadata components for data elements</li> </ul>	<i>Implement Metadata Repository</i>
Master Data Management opportunities are identified across DHS to ensure the quality, reliability and integrity of the data	<ul style="list-style-type: none"> <li>• Identify DHS master data target areas</li> </ul>	<i>Interoperability data and systems efficiency targets</i>

Business Intelligence/Analytics – Work Stream

The Interoperability Implementation Roadmap provides a strategy to move forward with more sophisticated data reporting and business analytics capabilities. These capabilities provide a more unified and standardized methodology for business intelligence and analytics while reducing the manual efforts.

Activity	Tasks	Deliverable
Complete Business Intelligence (BI) Analysis and Purchase of BI Tool(s)	<ul style="list-style-type: none"> <li>• Complete purchases, installation</li> <li>• Training of team, staff on use of selected tool</li> </ul>	<i>Common set of tools with targeted purposes</i>
Proof of Concept for Business Tool(s)	<ul style="list-style-type: none"> <li>• Work with key resources to identify two to three key use cases/insights and develop a working dashboard. (Use Division for Developmental Disabilities DDD Web and bus data as part of proof of concept)</li> <li>• Develop dashboard/data visualization prototype</li> <li>• Review and document process, results</li> </ul>	<i>Tools Validated</i>
Evaluation of process and tools	<ul style="list-style-type: none"> <li>• Determine success of Proof of Concept and moving forward tasks</li> </ul>	<i>Basis for DHS wide reporting and dashboards established</i>
Monitor other BI efforts from other state agencies	<ul style="list-style-type: none"> <li>• Discuss with Secretary of State tools utilized for BI</li> <li>• Discuss with HCPF outcomes from BI RFP</li> </ul>	<i>Review tools available for BI and Analytics for statewide standardization and utilization</i>

Key Stakeholder Implementation – Work Stream

A key element of sustaining and embedding any innovation project is to communicate with key stakeholders effectively and to engage them as early on as possible with the project. Different stakeholders will have different needs and concerns – for instance, practitioners are more likely to want to know why they should adopt and prioritize the project (as opposed to other innovations), if there is good evidence to support its value, how it will benefit them, and the degree of support that they can expect from management.

Activity	Tasks	Deliverable
Internal Dissemination of Colorado Client Information Sharing System (CCISS) Implementation Plan – DHS Leadership - Leadership Dissemination/Overview and Acceptance	<ul style="list-style-type: none"> <li>• Detailed review of CCISS Implementation Plan by DHS EMT/Leadership</li> <li>• Review with CDHS Leadership /EMT after acceptance of Implementation Plan on methods of communication to agency staff, county directors and county staff</li> </ul>	<i>Agency-wide plan and agreement</i>
Initiate development of Communication/Change Management Work Group under Governance Structure		<i>Structure for change and remaining effective</i>
CCISS Interoperability Plan dissemination –external key stakeholders:	<ul style="list-style-type: none"> <li>• Establish where and how the implementation plan is made available (e.g. electronically, all hands meetings, town halls, newsletters, etc.)</li> <li>• Identify methodology for communicating the CCISS Interoperability Implementation Plan goals and objectives to external key stakeholders that will be impacted by DHS interoperability</li> </ul>	

<b>Activity</b>	<b>Tasks</b>	<b>Deliverable</b>
<p>Identify external partners such as: Colorado Department of Education (CDE), the Governor's Office of Information Technology (OIT), the Colorado Department of Health Care Policy and Financing (HCPF), State Judicial, Colorado Integrated Criminal Justice Information System (CICJIS), County Human Services Staff, Colorado Regional Health Information Organization (CORHIO), Health Information Exchange) HIE organizations, Connect for Health Colorado, others identified by Executive Planning Team (EPT)</p>		<p><i>Expanded sphere of effectiveness and influence defined</i></p>
<p>Develop and implement a process on how responses to the plan should be made, recorded, collated and use to further the key stakeholder initiative and include feedback into the overall strategy for implementation</p>		<p><i>Quality control and improvement processes established</i></p>

Business Process Improvement - Work Stream

The introduction of interoperability will require an examination of work flows and processes of the systems and offices that will be affected by the proposed new strategies and associated technologies. The successful execution of these strategies is dependent upon effective and efficient business processes. As each system is examined for inclusion into the interoperability environment, processes will be reviewed and analyzed to determine the level of impact on the business and functional side of the Department. As new tools and technology are introduced, it is imperative that a business process improvement analysis is conducted to ensure that all aspects of the business and operations are considered and included into a new future state solution before implementation of any new system or technology. The activities and tasks below in the business process work stream are high level tasks. A full plan will be developed by the IAC for business process improvement once the IAC has been initiated.

Activity	Tasks	Deliverable
Identify systems to be included in CCISS Interoperability	<ul style="list-style-type: none"> <li>• Review business processes associated with system including areas of improvement identified by DHS users and consumers of the system information</li> <li>• Conduct Business Process Improvement (BPI) analysis of systems and offices</li> <li>• Review with DHS Office Directors proposed business areas impacted by interoperability</li> </ul>	<i>Documented areas included in BPI strategy for interoperability</i>
Involvement of key stakeholders of systems	<ul style="list-style-type: none"> <li>• Review recommendations for BPI strategy</li> <li>• Develop strategy for 'future state' process</li> <li>• Train key stakeholders on future state process</li> </ul>	<i>Document BPI future state process</i>
Implement interoperability strategy/technology	<ul style="list-style-type: none"> <li>• Monitor new future state for possible failure points</li> <li>• Train on interoperability strategy/technology</li> </ul>	<i>Training and future state process documentation</i>

Change Management/Communication Work Stream

The Interoperability Advisory Council (IAC) will develop a Change Management plan that will address the organizational change management requirements for this part of the Roadmap. The change management component of the CCISS Interoperability Roadmap will address the ‘human side’ of the implementation strategy of interoperability. The overarching purpose of change management is to accelerate the speed at which people move successfully through the change process so that anticipated benefits are achieved faster. Through optimizing the efficiency and efficacy of users, an effective change management program will also:

- Improve organizational outcomes and performance.
- Enhance employee satisfaction, morale, and engagement.
- Improve service quality.

Activity	Tasks	Deliverable
Communication development for and Key Stakeholder Engagement (internal / external partners)	<ul style="list-style-type: none"> <li>• Meet with IAC to discuss methods of communication and priorities of Leadership.</li> <li>• Develop communication and messaging plan</li> </ul>	<i>Communication Plan</i>
Work with IAC to identify areas of change within the Interoperability Roadmap	<ul style="list-style-type: none"> <li>• Develop organizational change processes</li> <li>• Identity areas requiring training (Role based training)</li> <li>• Assist with process and procedure development</li> <li>• Training delivery planning</li> </ul>	<i>Training Plan; Process development Plan</i>
Develop Change Management / Communication materials	<ul style="list-style-type: none"> <li>• Develop newsletter; website</li> <li>• Review information from Key Stakeholder Engagement and develop communication materials for dissemination</li> <li>• Review feedback from key stakeholders – incorporate into communication and training materials</li> </ul>	<i>Communication materials; website; newsletter, press releases</i>

### **Alignment with OIT Best Practices:**

The Office of Information Technology (OIT) was an active participant in the planning grant. The implementation of Interoperability will be in cooperation with OIT and will align with their enterprise health IT architecture model. Interoperability will utilize and expand several OIT enterprise services to connect all of the Department's data systems to include, iData, Identity Resolution Information System, metadata repository, enterprise service bus, identity management, rules engine and professional consumer portal.

### **Security and Backup/Disaster Recovery:**

The system of interoperability will have redundant IT components and is designed to meet federal and State IT architecture, security and business continuity requirements. Interoperability and the associated systems will follow the State Cybersecurity Policies set forth by the Office of Information Security. Interoperability will follow the National Institute of Standards and Technology (NIST) 800-53 guidelines that focus on access management and identity management for implementing electronic authentication. NIST defines Identity Management or IDM as '*a process of establishing confidence in user identities that are electronically presented to an information system.*' CCISS Interoperability Roadmap is including the following in its IDM/EAM (Enterprise Architecture Management) framework:

- Centralized provisioning for user authentication,
- Centralized, local or remote authentication of users,
- Federated Single Sign-On that will allow a user's identity to be recognized by multiple systems.

### **Business Process Analysis:**

The Department's Office of Children, Youth and Families (OCYF), was the recipient of a planning grant from the Administration for Children and Families, Office of Child Support Enforcement. OCYF used this grant to create an actionable plan, titled "*Interoperability Roadmap*," to implement a sustainable, strategic pathway to 'connect' all of the internal systems, to make data and human services records available without removing the data from the source systems.

### **Systems Integration Opportunities:**

Interoperability, by design, is intended to integrate all of the Department's IT systems and is extensible to any other State agency's data systems. The funding requested is to integrate the Department's systems.

### **Program Plan:**

Please see the Implementation Plan section of this document.

### **Cost Benefit Analysis and Project Alternatives:**

The Department can continue to build custom interfaces to be developed at costs ranging from \$10,000 to \$80,000, depending on complexity. Industry standard annual maintenance costs for interfaces, of which the Department has over 500, are between \$15,000 and \$30,000 per year, and the Department is not funded to maintain its existing interfaces at this level.

### **Consequences if not funded:**

This is the second year of a 5 year project and if funding from the State for the 10% of the 90/10 match is not received in FY 2016-17 then there will be no federal match and the project will be terminated without achieving the stated objectives.

The Department's current practice significantly impedes the integration of services to improve outcomes and reduce costs. Without developing interoperability, the Department's IT systems will remain disconnected, and will continue to transfer data via legacy disparate interfaces, specifically:

- At the direct services level, a child welfare case worker, a mental health worker, a youth corrections worker, a school counselor, etc., will not have access to all appropriate client information in order to understand, coordinate, and/or provide services to children, youth and families.
- At the managerial level, supervisors will not have the necessary access to client information across systems to maximize effectiveness in providing guidance and recommendations to direct services staff and in analyzing the effectiveness of services.
- At the program administration and policy levels, county and state administrators will not have access to real-time and aggregate information across systems in order to be informed to make operational and strategic decisions regarding services and investments.
- By not maintaining, updating or monitoring the way the Department moves data appropriately, it is creating a risk for future failure or compromise. With 500 interfaces using 28 different methods in varying levels of maintenance, there are significant risks when dealing with highly sensitive personal, health, and financial information.

Currently, the Department is requesting funding that utilizes a 90/10 percent match funding model under the OMB Circular A-87 Cost Allocation Exception for implementing and maintaining an interoperable environment. The Department will request General Fund for 10% and federal funds for 90%. The expiration date of this funding split is currently December 31, 2015, with an extension through December 31, 2018.

### **Request for Proposal:**

The Department has defined deliverables as a part of our planning efforts and we will require service levels specific to this project with our vendor partners and OIT. Performance based contracts will be used with appropriate penalties.

While completing the federal approval process, The Department will complete a Request for Information (RFI) to solicit design, development and implementation information based upon the Interoperability Roadmap from the planning grant. This information and the Roadmap will be combined into one or more Request for Proposals (RFP) to procure a master implementation vendor and functional components.

### **Operating Budget Impact:**

There is no new operating fund request in FY 2016-17; the \$1,323,360 from FY 2015-16 will continue in the base for FY 2016-17. After the 5-year development and implementation, there will be an operational budget request to fund the ongoing support and maintenance of the environment at a 75/25 federal match. The amount will be determined based on on-going operational needs.

**Assumptions for Calculations:**

The full assumptions used to calculate this request can be found in the accompanying spreadsheets and in the Interoperability Roadmap. All personal services costs are based on contract consulting hourly rates.

Estimated Costs	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	Total Cost
Consulting Services	\$3,815,440	\$3,503,520	\$3,503,520	\$3,503,520	\$3,530,660	\$17,856,660
IV&V	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$1,000,000
Infrastructure	\$8,800,500	\$5,585,000	\$5,585,000	\$5,585,000	\$5,535,000	\$31,090,500
Agency	\$1,323,360	\$1,323,360	\$1,323,360	\$1,323,360	\$1,323,360	\$6,616,800
<b>Total Budget (Est)</b>	<b>\$14,139,300</b>	<b>\$10,611,880</b>	<b>\$10,611,880</b>	<b>\$10,611,880</b>	<b>\$10,589,020</b>	<b>\$56,563,960</b>
Federal Funding (90%)	\$12,725,370	\$9,550,692	\$9,550,692	\$9,550,692	\$9,530,118	\$50,907,564
State GF (10%) Match	\$1,413,930	\$1,061,188	\$1,061,188	\$1,061,188	\$1,058,902	\$5,656,396
<b>Total Budget (Est)</b>	<b>\$14,139,300</b>	<b>\$10,611,880</b>	<b>\$10,611,880</b>	<b>\$10,611,880</b>	<b>\$10,589,020</b>	<b>\$56,563,960</b>

**Cost Savings and Improved Performance Outcomes:**

The Department will be able to utilize interoperability to view clients across all data systems to align services for cost savings, fraud avoidance, and to reduce program administration costs.

The interfaces are disbursed across the Department's core IT systems. Based on industry standards, the cost to develop a custom interface is estimated to be approximately \$40,000, depending on complexity and type of protocol used for its development. This also includes the development of the infrastructure.

Industry standard development costs for batch service interfaces range from \$15,000 to \$30,000. Direct Access screen interfaces, with an estimated three to five screens per interface, is less expensive at \$7,000 – \$8,000 per interface. In addition, the expected costs of annual support and maintenance over a 5+ year life cycle for each interface is estimated to be between \$15,000 and \$30,000 per year, per interface, or a total of \$125,000 to \$200,000 each, again over a 5 year life cycle. The existing Department interface protocols break out as follows:

Type of Protocols	Number per Protocol
FTP (Secure FTP, SFTP, FTP with PGP, FTP)	172
Broker	126
Infomover	70
Mainframe	35
Direct Access	24
Web Services	23
Cyber fusion	20
Manual	11
All Others	29
ADABAS/IEBGENER/3270 Batch	11
<b>Total</b>	<b>520</b>

A proposed strategy of the CCISS project is to begin to replace some of the existing protocols such as Infomover and manual interfaces (a total of 81). Using the standard interface maintenance costs of \$15,000

to \$30,000 per year, and eliminating over 80 interfaces, there would be an initial immediate savings of \$2,430,000 in the first year. The Enterprise Service Bus (ESB) strategy would allow the Department to begin porting over its systems in a phased approach and allow for savings that would be re-invested in the overall enterprise architecture and interoperability plan. Over the five year implementation plan, the Department would show a savings of \$12,150,000 just on the replacement of the Infomover protocol and manual interfaces. As other interfaces are identified as enterprise service bus (ESB) ready and illustrated in Diagram 2, additional savings will be realized that would allow for additional cost benefit and savings to the Department. This analysis and present cost factoring will be validated during the first year of implementation and will be balanced with the potential cost allocation that is currently under exploration with the Department of Health Care Policy and Financing (HCPF) and the U.S. Department of Health and Human Services' Centers for Medicare and Medicaid Services (CMS).

**Return on Investment:**

The principle return on investment is in the improvement in the delivery of services to clients, efficiency of the workforce and being able to prove the effectiveness of services delivered. Specific areas include:

*Faster access to services.* Multiple, redundant intake and eligibility systems, spread across different agencies and locations, discourage individuals and families from seeking care. Similarly, the public must be able to easily identify and access community resources.

*Casework simplification.* Simplifying business and technical processes enable caseworkers to spend less time on data entry and manual reporting and more time with clients.

*Safety.* The demand for coordination is heightened when it can increase the safety of individuals, families and communities.

*Outcome measurements.* A global view of clients, services and resource distribution within and across departments and programs, provides meaningful metrics for measuring outcomes.

There is also the opportunity over the five-year implementation plan for the Department to save up to \$12,150,000 just on the replacement of the Infomover protocol and manual interfaces. Please refer to Cost Savings and Improved Performance Outcomes section for additional details.

<b>ESTIMATED PROJECT TIME TABLE (PENDING FEDERAL APPROVAL)</b>		
<b>Steps to be completed</b>	<b>Start Date</b>	<b>Completion Date</b>
Implement Governance & Key Stakeholder Engagement	July 2015	<b>On Going</b>
Implement Meta Data Repository	July 2015	<b>June 2017</b>
Implement Identity Management, Security, Enterprise Service Bus	July 2015	<b>June 2017</b>
Integrate Data Systems into Interoperable Environment	July 2015	<b>June 2020</b>
Implement Professional Consumer Portal	July 2015	<b>June 2017</b>
Implement Business Intelligence / Analytics	July 2015	<b>June 2020</b>

<b>ADDITIONAL REQUEST INFORMATION</b>	
Please indicate if three-year roll forward spending authority is required.	<input checked="" type="checkbox"/> X Yes <input type="checkbox"/> No
Date of project's most recent Business Process Analysis:	January 31, 2014
Please provide the link to the Business Process Analysis or attached the first page of the analysis to this document:	<a href="http://www.acf.hhs.gov/state-of-colorado-interopability-and-integration-project">http://www.acf.hhs.gov/state-of-colorado-interopability-and-integration-project</a>
Request 6-month encumbrance waiver?	<input checked="" type="checkbox"/> X Yes <input type="checkbox"/> No
New construction or modification? N/A	<input type="checkbox"/> New <input type="checkbox"/> Renovation <input type="checkbox"/> Expansion <input type="checkbox"/> Capital Renewal
Total Estimated Square Footage	N/A      ASF      GSF
Is this a continuation of a project appropriated in a prior year?	<input checked="" type="checkbox"/> X Yes      No
If this is a continuation project, what is the State Controller Project Number?	2016-013115

<b>CONTINUATION HISTORY</b>		
	FY 2015-16 Appropriated	Total Appropriations
Total Funds	14,139,300	14,139,300
General Fund	1,413,930	1,413,930
Cash Funds	0	0
Reappropriated	0	0
Federal Funds	12,725,370	12,725,370

**CC-IT: CAPITAL CONSTRUCTION INFORMATION TECHNOLOGY REQUEST FOR FY 2016-17**

Agency or Institution:	Human Services	Signature: Department or Institution Approval:	<i>Melissa Tavellet</i> 9-29-15
Project Title:	Modernizing the Child Welfare Case Management System	Signature: CICHE Approval:	
Project Year(s):	FY 2015-16 to FY 2017-18	Signature: OIT Approval:	
Agency or Institution Priority Number:	1	Signature: OSPB Approval:	<i>Goetz</i> 10/1/15
Program Plan:	Name and e-mail address of preparer:		

Revision? Yes No	Total Project Costs	Total Prior Year Appropriations	Current Request FY 2016-17	Year 2 Request	Year 3 Request	Year 4 Request	Year 5 Request
(1) Land /Building Acquisition	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(1) Consultants/Contractors	\$ 9,013,790	\$ 3,048,588	\$ 2,842,601	\$ 2,982,601	\$ -	\$ -	\$ -
(2) Quality Assurance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(3) Independent Verification and Validation (IV&V)	\$ 642,822	\$ -	\$ 321,411	\$ 321,411	\$ -	\$ -	\$ -
(4) Training	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(5) Leased Space (Temporary)	\$ 250,000	\$ 100,000	\$ 75,000	\$ 75,000	\$ -	\$ -	\$ -
(6) Feasibility Study	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(7a) Inflation for Professional Services	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(7b) Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(8) Other Services/Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(9) Total Professional Services	\$ 9,906,612	\$ 3,148,588	\$ 3,379,012	\$ 3,379,012	\$ -	\$ -	\$ -
(1) (a) New GSF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
New \$ /GSF							
(b) Renovate GSF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(2) Renovate \$ /GSF							
(3) Site Work/Landscaping	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(4) Other (Specify)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(5a) Inflation for Construction	\$ 1,080,000	\$ 551,000	\$ 264,500	\$ 264,500	\$ -	\$ -	\$ -
(5b) Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(6) Total Construction Costs	\$ 1,080,000	\$ 551,000	\$ 264,500	\$ 264,500	\$ -	\$ -	\$ -
(1) Software COTS	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(2) Software Built	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(4a) Inflation on Software	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(4b) Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(5) Total Software	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(1) Servers	\$ -	\$ 2,800,000	\$ 2,800,000	\$ 2,800,000	\$ -	\$ -	\$ -
(2) PCs, Laptops, Terminals, PDAs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(3) Printers, Scanners, Peripherals	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(4) Network Equipment/Cabling	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(5) Other (Specify)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(6) Miscellaneous	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(7) Total Equipment and Miscellaneous Costs	\$ 8,400,000	\$ 2,800,000	\$ 2,800,000	\$ 2,800,000	\$ -	\$ -	\$ -
(1) Maintenance Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(2) Repair Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(3) Staffing/Employee Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(4) Other	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(5) Total Operating Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total Project Costs</b>	<b>\$ 18,366,612</b>	<b>\$ 6,499,588</b>	<b>\$ 6,443,512</b>	<b>\$ 6,443,512</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
(1) 5% for New	\$ 937,189	\$ 324,979	\$ 308,105	\$ 308,105	\$ -	\$ -	\$ -
(2) 10% for Renovation	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(3) Total Contingency	\$ 937,189	\$ 324,979	\$ 308,105	\$ 308,105	\$ -	\$ -	\$ -
<b>Total Budget Request (F+G)(3)</b>	<b>\$ 20,323,801</b>	<b>\$ 6,824,567</b>	<b>\$ 6,749,617</b>	<b>\$ 6,749,617</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
GF	\$ 14,087,941	\$ 4,648,707	\$ 4,709,617	\$ 4,709,617	\$ -	\$ -	\$ -
CF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
RF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
FF	\$ 6,255,860	\$ 2,175,860	\$ 2,040,000	\$ 2,040,000	\$ -	\$ -	\$ -



**COLORADO**  
Department of Human Services

John W. Hickenlooper  
Governor

Reggie Bicha  
Executive Director

FY 2016-17 IT Capital Construction Request | October 1, 2015

*Melissa W. [Signature]* 9.30.15  
Signature Date

*Department of Human Services IT Capital Construction Priority: II-1  
Phase 2: Modernizing the Child Welfare Case Management System*

Summary of IT Capital Construction Request	Total Funds	CCFE	Federal Funds
FY 2016-17	\$6,749,617	\$4,709,617	\$2,040,000
FY 2017-18	\$6,749,617	\$4,709,617	\$2,040,000

**Request Summary:**

The Department requests \$6,749,617 (\$4,709,617 General Fund and \$2,040,000 federal funds) in FY 2016-17 and FY 2017-18 to enhance and modernize Colorado's current Statewide Automated Child Welfare Information System (SACWIS) compliant case management system (Trails) and underlying infrastructure. This is Phase Two of a multi-phase approach. Funding will continue this 3-year Trails modernization project making it easier to use, maintain, and adjust to program needs and new initiatives implemented by the Department. The system will be designed to allow faster implementation of system modifications to better reflect changing child welfare practices.

Trails, the current case management system, needs to be modernized to make it easier to use, maintain, and adjust to program needs and new initiatives implemented by the Department. The Department received \$6,824,567 total funds in FY 2015-16 for the first year of funding.

**Project Description:**

The modernized system will be designed to allow faster implementation of system modifications to better reflect changing child welfare practices. The benefit of augmenting the existing system as opposed to developing a new system is that it leverages previous investments, work force familiarity, and existing working relationships with the Governor's Office of Information Technology (OIT). Colorado's automated case management system is a critical component to county child protection practice. Building upon the existing system minimizes the potential for service interruption.

This option utilizes a practice already employed by the State to modify and improve the current Trails system in order to meet the changing needs of its users and beneficiaries. Changes and extensions to the system have been supported for some time and the general consensus among stakeholders, management and users is that a more concerted, focused effort is required to enable better interfaces, reporting, and ultimately service outcomes. Critical needs that were identified include:

- Mobile device compatibility and support – the use of hand-held computing devices is pervasive. It is imperative to provide systems that can be used effectively on mobile devices in support of work functions, such as:
  - The ability to present data and provide input capabilities on mobile devices, and
  - The ability to work on mobile devices offline and upload content at a later time.
- Data integration – new and standardized data interfaces will help promote the effective use and availability of data across multiple systems that influence child welfare to improve overall case management and outcomes. This includes the ability to add unstructured or external data (e.g. photos or call recordings) to a case file.
- Profile driven capabilities – whether for data administration purposes or ease of use, providing interfaces appropriate to user roles (agency-specific and/or job function related) will help promote effective use of the system, minimize IT support demands and dependency and improve data quality and child welfare services.

Changes to the system will improve how counties perform case management. County departments of human/social services have indicated for several years they are understaffed when it comes to caseworkers. The Department received funding in the 2013 legislative session for the Office of the State Auditor (OSA) to perform a workload study. This workload study resulted in the funding of 100 FTEs for additional casework staff and a caseload study in FY 2015-16. Additionally, the Department received funding in FY 2014-15 to implement a central Hotline for child abuse and neglect reporting, which became operational in January 2015. Reports of suspected child abuse and neglect are expected to increase due to the Hotline, requiring additional staffing needs at the county level. Since January 2015, there have been 109,678 calls received by the Hotline. Information on each call recording is required to be entered into the Trails application for the Hotline. Of the total number of calls received, 45,407 calls were referrals of child abuse or neglect, which requires county staff time. Counties then needed to investigate 16,378 of those calls, as the remaining calls did not warrant an investigation. County staff already have a difficult time inputting information into Trails, even as the State has provided modifications and improvements. The nature of their work takes them many places besides the county office, including court, case residences, and twenty-four hour placement facilities. Being required to input a large amount of information into an antiquated system which is not easy to navigate makes it difficult to keep current on case management documentation. Updating the Trails system, coupled with improving mobile data capability, will allow greater flexibility and faster data input. The result will be a quicker assessment of data necessary to make the right case decisions at the right time leading to appropriate services and better outcomes for children involved with Child Welfare.

Trails is due for an upgrade, to make the system more efficient and effective. If the Department was unable to provide an upgrade to the case management system, there would still be navigation issues, mobility needs, and lack of data integration. Caseworkers in county human/social services offices will continue to experience difficulty moving within the system, and data input will remain time consuming. As the Department is implementing workforce tools and mobile technology to counties, modernizing Trails will improve flexibility in how caseworkers can conduct business in the field.

**Background and Justification:**

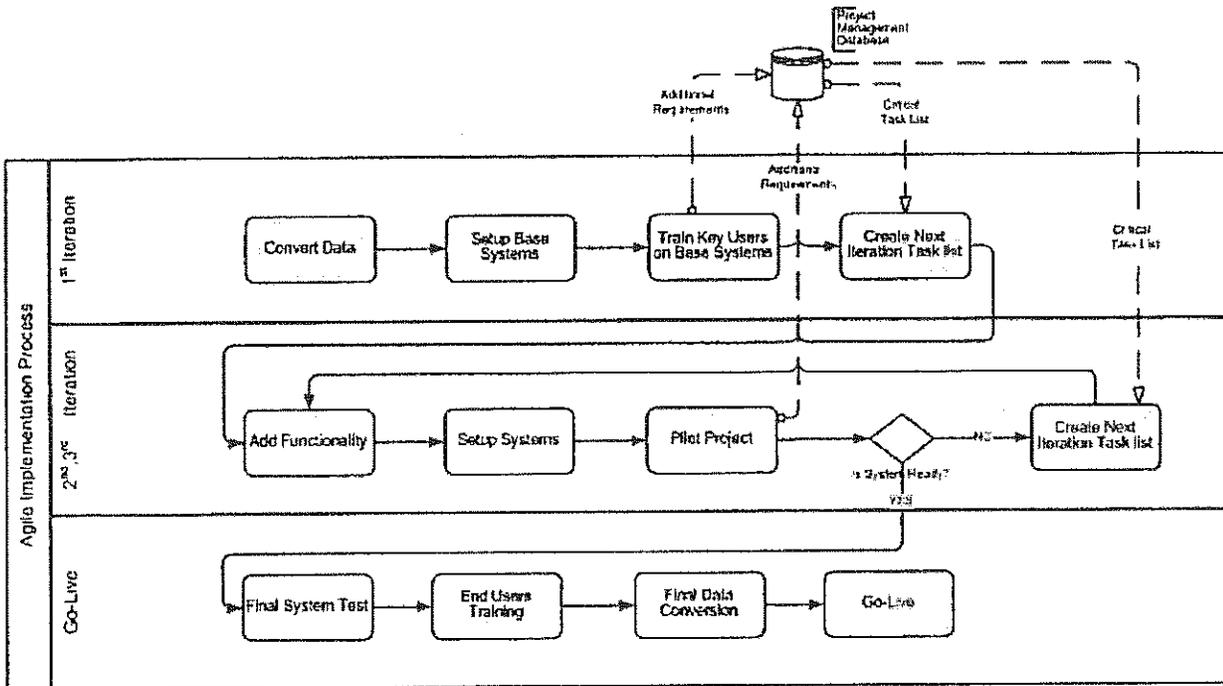
Colorado’s current Statewide Automated Child Welfare Information System (SACWIS), better known as Trails, has been in use for the past thirteen years. It is a complex and comprehensive system that has evolved over time since 2001, resulting in benefits and challenges to its continued use. Trails is a system purchased from New Hampshire and tailored to fit Colorado’s needs. There have been many changes over the years to Trails, as process changes occur and new requirements are identified. The system is used by

Child Welfare, Youth Corrections, Early Childhood, Administrative Review, the Office of Colorado's Child Protection Ombudsman, sixty-four county Departments of Human and Social Services, and certain contracted providers. It is the reporting system for several sets of federal requirements and has been SACWIS compliant since 2011. Additionally, Trails integrates with eleven other systems via eighty-seven unique interfaces within the Department and other state agencies. Internal and external stakeholders have identified limitations with the current system, including but not limited to, outdated system architecture, limited mobile system access, redundant data entry, missing data interfaces, data integrity, inability to augment case data with attachments, and ad hoc reporting capabilities. Users are required to enter the same information in more than one area, they have difficulty navigating a complex system, and the system has a slow response time due to a client-server based technology. Providing an upgrade to Trails will simplify Trails navigation, provide greater access to the system for the use of mobile technology, and improve accuracy and efficiency of services. This funding request addresses the current condition of the state child welfare case management system that is operating on an antiquated technology platform. To better serve the children and families in Colorado, counties need a system that functions effectively, maintains program integrity, and is easy to use.

The Department contracted with a vendor in FY 2013-14 for an independent analysis of Trails, which resulted in a recommendation to modernize the system. The budget request approved for FY 2015-16 was based on the recommendation and was included in a capital request. The changes to modernize the system will be achieved through technology upgrades and enhanced data interfaces. Some benefits include: a more modern, effective, and elegant interface that is easy to navigate and supports common data views and capabilities provided by other, similar systems; a more modern technology platform; greater reporting flexibility and data analytics capabilities; and greater system interoperability to facilitate data sharing and overall case management outcomes. Trails is critical to implementing the Governor's Child Welfare Plan "Keeping Kids Safe and Families Healthy 2.0" and supporting the daily operation of county departments and youth corrections. Advanced analytical capabilities and a quality case management system will allow child welfare agencies to track current and historical services across multiple programs leading to a more comprehensive view and understanding of the needs of Colorado children and a greater ability for the child welfare agencies to provide services. Modernizing Trails will result in greater efficiencies for the workforce and will allow caseworkers to make faster and better informed responses leading to improved safety and well-being of Colorado children.

**Implementation Plan:**

Following is a diagram of the implementation plan for this project. In the flow chart below, the first iteration represents the existing Trails application.



Agile/Iterative Continued Improvement focuses on providing incremental system releases with maximum value to the organization. We will continue to analyze business and propose improvements. An "Improvements Wish List" will be prioritized after each iteration and a new set of modifications will be scheduled and the project plan updated as needed. This process gradually transforms into a general support operation but the culture of continued improvement will help us optimize the system while reaching the goal of system modernization.

Iterations will be determined by considering both distinct and dependent business areas. Priorities will be documented within the Trails Project Management plan. Trails will work in conjunction with program business partners (stakeholders) to define the order of operations for design, development and implementation.

**Alignment with OIT Best Practices:**

The Department has worked with OIT to develop costs and plans for this system upgrade. OIT staff have reviewed the independent report, and have been in consultation with the Department throughout the development of the original request and Phase 1 development. All processes are in conformity with OIT best practices. The implementation of this project will be in cooperation with OIT and will align with their enterprise health IT architecture model. It will allow the Department and OIT to connect data systems and create a single, comprehensive view of clients, allowing for a more efficient and cost effective program delivery and connection with agencies and health information partners. The Department will also continue its partnership with OIT throughout the life of the project.

**Security and Backup/Disaster Recovery:**

The infrastructure for the Trails (SACWIS) application is hosted in the Federated Cloud environment. There are defined backup and disaster recovery plans in that environment. These plans will be amended to ensure compliance per the requirements of the SACWIS application.

The Backup & Recovery plan and controls associated will also be documented in the System Security Plan to be reviewed by the Chief Information Security Officer.

CenturyLink Federated Cloud is designed to provide immediate response and subsequent recovery from any unplanned computing services interruption such as loss of utility services, building evacuation, or a catastrophic event at the data centers.

**Business Process Analysis:**

The independent review included an analysis of methods used to conduct a thorough and comprehensive view of the current Trails system and potential replacement alternatives including:

- developing questionnaires for stakeholder and state interviews, and vendor responses;
- conducting stakeholder and state interviews;
- soliciting vendor information;
- establishing a repository of reference materials;
- analyzing relevant information; and
- developing evaluation tools.

This upgrade is intended to modernize the current automated case management system to make it more efficient.

**Systems Integration Opportunities:**

The current Trails system integrates with eleven (11) other systems through 87 unique interfaces within the Department and other state agencies. This upgrade will not change this interaction, but will enhance its capabilities.

**Program Plan:**

As mentioned earlier, the Department contracted with a vendor to conduct an analysis of Trails and present options for enhancement or replacement of the system.

The independent review included variables such as the system's history, diversity of stakeholders, varied organizational objectives, available alternative products, simultaneous Department technology-related initiatives, and limited resources.

Based on available information and understanding of Department goals in analyzing alternatives to replace and/or enhance Trails, the independent review recommended the Department pursue a technology upgrade and interface enhancement approach, rather than wholesale system replacement.

**Cost Benefit Analysis and Project Alternatives:**

Modernizing Trails was compared to several other options for consideration by the Department. One option was to leave the existing system alone and do nothing. This was not a feasible approach as evidenced by the problem statement outlined in the previous section of this funding request. The State could replace the Trails system, in its entirety, with a Commercial Off-The-Shelf (COTS) solution. The benefits to this

approach (based on modern interface paradigms and service-oriented, n-tier architecture; developed and supported by Subject Matter Experts; and greater business rule control) were outweighed by the risks (cost, time, degree of organizational change; customization required to match current Trails functionality; required data conversion at substantial cost and risk; and greater learning curve and training needs). Currently, the state has two-tier architecture of PowerBuilder on the front end and Oracle on the back end. Moving to n-tier architecture eliminates the need for client server technology, thus transitioning to a web-based application. According to the research done by the vendor, of the states that chose full replacement, Commercial-Off-The-Shelf (COTS) solutions costs ranged from \$26-\$45 million and annual operating costs (including personal services) between \$6-\$7 million. Of the states that are maintaining/enhancing an existing system, Wisconsin included an annual cost of \$4.3 million for vendor services. Washington, D.C. was able to convert a PowerBuilder-based system to .Net (which is one of the software languages used to develop web-based applications.) with interface enhancements and re-engineered code through a vendor contract for \$4.6 - \$5 million annually during their 18-month conversion.

**Consequences if not funded:**

Trails is due for an upgrade to make the system more efficient and effective. If the Department were not to provide an upgrade to the case management system, there will still be navigation issues, mobility needs, and lack of data integration. Caseworkers in county human and social services offices will continue to experience difficulty moving within the system, and data input will remain time consuming. If funding is not provided during years two and three of this project, the impact to ongoing operations may even be compounded. As the Department implemented workforce tools and mobile technology to counties, modernizing Trails will improve flexibility in how caseworkers can conduct business in the field and youth corrections provide detention and commitment.

**Request for Proposal:**

New development activities will be defined by a dedicated team of internal and contracted team members across a three-year time horizon. As part of Phase 1, the project team is undergoing a Request for Proposal process with vendors and plans to have a vendor selected in September 2015. This approach will be organized into phased, modular, incremental release cycles using an Agile methodology. There will be a contract development team located in OIT consisting of one Project Manager, one Independent Verification and Validation Specialist, one Technical Architect, one half-time Engagement/Integration Manager, eight Application Developers, four Business Analysts, and four Technical Analysts. These positions will be involved in the project for three years, starting in FY 2015-16, until the changes have been developed and implemented. This modernization project requires contract staff to assist with design and build activities. Once the new development is functional, the contract development team will no longer be needed. The State will still be required to maintain the current system and dedicate appropriate resources to maintenance and support.

**Operating Budget Impact:**

In addition to the contract team for OIT, the Division of Child Welfare requested, and received funding for in FY 2015-16, a Budget Analyst, a Data Programmer, and an Administrative Assistant. The operating cost of modernization includes adding twenty servers, with 16 GB Ram, 250 GB Disk, IIS8 and 4+ Core.

**Assumptions for Calculations:**

Table 1 outlines the costs for Phases 2 and 3 of this project, as well as FY 2015-16 costs as funded.

Table 1: FY 2016-17  
 Modernizing the Child Welfare Case Management System  
 Phase 2

Element	FY 2015-16	General Fund	Federal Fund	FY 2016-17 FY 2017-18	General Fund	Federal Fund
<b>Technology and Programming</b>						
Servers - configuration is dual core 250 GB, RAM 16GB	\$ 2,800,000	\$ 1,848,000	\$ 952,000	\$ 2,800,000	\$ 1,848,000	\$ 952,000
<b>Software</b>						
- Windows Server 2012 Standard	\$ 11,500	\$ 7,590	\$ 3,910	\$ -	\$ -	\$ -
- User CALS (licenses for concurrent users)	\$ 7,500	\$ 4,950	\$ 2,550	\$ -	\$ -	\$ -
<b>Developer Software</b>						
- TOAD licenses	\$ 10,800	\$ 7,128	\$ 3,672	\$ 10,800	\$ 7,128	\$ 3,672
- Visual Studio 2013	\$ 7,200	\$ 4,752	\$ 2,448	\$ 7,200	\$ 4,752	\$ 2,448
- Project Manager Software	\$ 750	\$ 495	\$ 255	\$ 750	\$ 495	\$ 255
- Developer/Technical Architect Software	\$ 750	\$ 495	\$ 255	\$ 750	\$ 495	\$ 255
Report Needs	\$ 292,500	\$ 193,050	\$ 99,450	\$ 45,000	\$ 29,700	\$ 15,300
Database Services	\$ 220,000	\$ 145,200	\$ 74,800	\$ 200,000	\$ 173,514	\$ 26,486
<b>Totals - Technology</b>	<b>\$ 3,351,000</b>	<b>\$ 2,211,660</b>	<b>\$ 1,139,340</b>	<b>\$ 3,064,500</b>	<b>\$ 2,064,084</b>	<b>\$ 1,000,416</b>
<b>Personal Services</b>						
<b>OIT Contracting</b>						
- Application Developers (8)	\$ 1,414,400	\$ 933,504	\$ 460,896	\$ 1,414,400	\$ 933,504	\$ 480,896
- Business Analysts (4)	\$ 540,800	\$ 356,928	\$ 183,872	\$ 540,800	\$ 356,928	\$ 183,872
- Technical Analysts (4)	\$ 540,800	\$ 356,928	\$ 183,872	\$ 540,800	\$ 356,928	\$ 183,872
- Project Manager (1)	\$ 187,200	\$ 123,552	\$ 63,648	\$ 187,200	\$ 123,552	\$ 63,648
- Technical Architect (1)	\$ 187,200	\$ 123,552	\$ 63,648	\$ 187,200	\$ 123,552	\$ 63,648
- Engagement/Integration Manager (1/2)	\$ 93,600	\$ 61,776	\$ 31,824	\$ 93,600	\$ 61,776	\$ 31,824
- PC's for contractors - Lease (19)	\$ 10,051	\$ 6,634	\$ 3,417	\$ 10,051	\$ 6,634	\$ 3,417
- Telephones for contractors (19)	\$ 8,550	\$ 5,643	\$ 2,907	\$ 8,550	\$ 5,643	\$ 2,907
- Office furniture for contractors one-time (19)	\$ 65,987	\$ 43,551	\$ 22,436	\$ -	\$ -	\$ -
Office Space (Empty building at FLMHC, per year \$3-\$4/sq ft)	\$ 100,000	\$ 100,000	\$ -	\$ 75,000	\$ 49,500	\$ 25,500
<b>Totals - Personal Services</b>	<b>\$ 3,148,588</b>	<b>\$ 2,112,068</b>	<b>\$ 1,036,520</b>	<b>\$ 3,057,601</b>	<b>\$ 2,018,017</b>	<b>\$ 1,039,584</b>
<b>Totals - Technology and Personal Services</b>	<b>\$ 6,499,588</b>	<b>\$ 4,323,728</b>	<b>\$ 2,175,860</b>	<b>\$ 6,122,101</b>	<b>\$ 4,082,101</b>	<b>\$ 2,040,000</b>
OIT Project Contingency - 5%	\$ 324,979	\$ 324,979	\$ -	\$ 306,105	\$ 306,105	\$ -
Subtotal				\$ 6,428,206	\$ 4,388,206	\$ 2,040,000
<b>IV&amp;V - Independent verification and validation</b>						
				\$ 321,411	\$ 321,411	
<b>Totals - Technology/Personal Services/Contingency/IV&amp;V</b>	<b>\$ 6,824,567</b>	<b>\$ 4,648,707</b>	<b>\$ 2,175,860</b>	<b>\$ 6,749,617</b>	<b>\$ 4,709,617</b>	<b>\$ 2,040,000</b>

Table 2 portrays the estimated time table for the project.

<b>Table 2: ESTIMATED PROJECT TIME TABLE</b>			
<b>Steps to be completed</b>	<b>Description</b>	<b>Start Date</b>	<b>Completion Date</b>
Project Management Planning and Activities	Initial project plan with high level requirements will be defined and revisited throughout the life cycle of this project.	07/01/2015	6/30/2018
Infrastructure setup	Infrastructure and security requirements will be defined and revisited throughout the life cycle of this project.	07/01/2015	03/31/2018
Business Requirement and Proposed Solution	This is the phase where business requirements are finalized, the software package is learned, and a solution using the package is defined to meet the business requirements.	07/01/2015	12/31/2015
High Level Design (Functional Specifications)	The planned solution is further clarified by functionally specifying how the system will operate.	10/1/2015	06/30/2016
Detailed Design (Design Specifications)	In this phase detailed design specifications are developed (e.g., table values are defined; specifications as to exactly how reports will look and work are developed, etc.).	01/01/2015	3/31/2018
System Configuration, Customization and Development	The system is "programmed" by setting up its parameters and tables with the values defined in the phases above. Interfaces, data conversion and customized programming are also done in this phase. Quality assurance (systems and user testing) is completed.	03/01/2016	01/31/2018
System Implementation	In this phase the system is implemented and operations are converted to the new system.	07/01/2016	06/30/2018

**Cost Savings and Improved Performance Outcomes:**

The modernization of Trails will provide savings in the form of development and maintenance costs for OIT, as well as anticipated workload efficiencies for caseworkers across the State.

The technology and current system architecture of the Trails system is over 20 years old and much of the underlying hardware and software is outdated and no longer supported by the manufacturers of the systems. As the platform itself is outdated there are few experienced programming resources available for development and maintenance in Trails. Experienced Powerbuilder programming resources are difficult to find and require better compensation of more than \$100 per hour for their services. In comparison, .NET programming resources are 30% less expensive to hire on average (\$70/hour). There are currently 12 development FTE on the Trails team and on average 3 additional OIT contractor resources each year. This equates to a total of 31,200 hours of programming resources annually. At current compensation levels, a 30% decrease in salary for 15 FTE could amount to \$936,000 in development savings annually. These potential savings would be realized in future years, after the new system is fully operational.

In addition, modernizing the technology is expected to reduce costs in other areas. While these costs have not yet been quantified it is expected that by bringing Trails interfaces onto one common technology platform, known as Enterprise Service Bus (ESB), for all Trails interfacing systems will reduce costs related to maintaining separate software and hardware licenses that are required to assist the disparate

systems from communicating effectively. This could effectively assist in OIT's vision of a statewide technology platform that is easier and cheaper to maintain and service.

The OSA workload study reported that 35% (16.1 hours each week) of a caseworker's time was devoted to documentation and administration, which includes documentation of required information in Trails (*Colorado Child Welfare County Workload Study, ICF International Inc., 2014*). In October 2014, a work group of State and County members was formed to develop recommendations based on the OSA workload study. One of the recommendations is quoted here:

"TRAILS is Colorado Child Welfare's automated case management system - Currently, TRAILS is outdated which makes it a difficult and cumbersome system for caseworkers to perform the data management element of their jobs. According to the study, TRAILS could be modernized to expand the system's capabilities. Modernizing the system would create workflow efficiencies for Colorado caseworkers through easier navigation and simplified reporting. This could include simplifying the capturing of data through document imaging technology, programming the system to automatically populate duplicative fields, and allowing remote access to the system through mobile devices."

While the work group did not specifically quantify how much time could be saved through modernization of the system, it is anticipated that ease of navigation through different modules, reducing duplicative data entry, and improving mobile access alone would free up caseworker time to devote effort towards directly serving the children, youth, and families of Colorado. Additionally, the proposed modernization efforts are expected to improve the quality of information collected by improving integration with external systems, improving data integrity through the use of more efficient business rules, and more timely (less reliant on notes or memory) data entry from caseworkers in the field. Accurate, timely data collection and quality of the data entered is paramount to improving the quality of service provided to the children, youth, and families of Colorado.

One suggested gain in worker efficiency could be realized by creating a dashboard for case workers to find pertinent information on all open cases within Trails. Currently, the Trails system is difficult to navigate and finding that one relevant contact, treatment plan, or case note can take a worker an estimated 10 to 15 minutes of navigating through the system to find. Modernizing Trails would create the flexibility within the systems architecture to develop caseworker and supervisor dashboards. These dashboards would need to be designed with feedback from County and State users to maximize efficiency, but with the right information at caseworker's fingertips the search time for the most relevant information could be reduced to less than a minute or two. Even a conservative estimate (reduction of 5 minutes per day per each of the over 1100 caseworkers) equates to over 90 hours in productivity gain per day across the child welfare system.

#### **Return on Investment:**

The principle return on investment is in the improvement in the delivery of services to clients, efficiency of the workforce and being able to prove the effectiveness of services delivered. Specific areas include:

*Faster access to services.* Multiple, redundant intake and eligibility systems, spread across different agencies and locations, discourage individuals and families from seeking care. Similarly, the public must be able to easily identify and access community resources.

*Casework simplification.* Simplifying business and technical processes enable caseworkers to spend less time on data entry and manual reporting and more time with clients.

*Safety.* The demand for coordination is heightened when it can increase the safety of individuals, families and communities.

*Outcome measurements.* A global view of clients, services and resource distribution within and across departments and programs, provides meaningful metrics for measuring outcomes.

<b>ADDITIONAL REQUEST INFORMATION</b>	
Please indicate if three-year roll forward spending authority is required.	<input type="checkbox"/> Yes <input type="checkbox"/> No
Date of project's most recent Business Process Analysis:	
Please provide the link to the Business Process Analysis or attached the first page of the analysis to this document:	
Request 6-month encumbrance waiver?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
New construction or modification?	<input type="checkbox"/> New <input type="checkbox"/> Renovation <input checked="" type="checkbox"/> Expansion <input type="checkbox"/> Capital Renewal
Total Estimated Square Footage	ASF GSF
Is this a continuation of a project appropriated in a prior year?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
If this is a continuation project, what is the State Controller Project Number?	

<b>CONTINUATION HISTORY (DELETE IF NOT APPLICABLE)</b>		
	<b>FY 2015-16 Appropriated</b>	<b>Total Appropriations</b>
<b>Total Funds</b>	\$6,824,567	\$6,824,567
<b>General Fund</b>	\$4,648,707	\$4,648,707
<b>Cash Funds*</b>	\$2,175,860	\$2,175,860
<b>Reappropriated / CFE</b>	\$0	\$0
<b>Federal Funds</b>	\$0	\$0

**CC-IT: CAPITAL CONSTRUCTION INFORMATION TECHNOLOGY REQUEST FOR FY 2016-17**

Agency or Institution	Colorado Department of Public Health and Environment	Signature Department or Institution Approval		Date				
Project Title	Laboratory Information Management System	Signature CCIME Approval		Date				
Project Year(s)	FY 2016 - 2018	Signature OIT Approval	<i>David B. Ziegler</i>	Date	8-25-15			
Agency or Institution Priority Number	1	Signature OSIPs Approval	<i>Christina McGroarty</i>	Date	8-25-15			
Program Plan	no	Christina McGroarty christina.mcgroarty@state.co.us	<i>Christina McGroarty</i>	Date	10/1/15			
Revision? Yes No		Total Project Costs	Total Prior Year Appropriations	Current Request FY 2016-17	Year 2 Request	Year 3 Request	Year 4 Request	Year 5 Request
if yes, list submission date								
(1) Land/Building Acquisition	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(1) Consultants/Contractors	\$ 120,000	\$ -	\$ 60,000	\$ 60,000	\$ -	\$ -	\$ -	\$ -
(2) Quality Assurance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(3) Independent Verification and Validation (IV&V)	\$ 22,465	\$ -	\$ 16,591	\$ 5,874	\$ -	\$ -	\$ -	\$ -
(4) Training	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(5) Leased Space (Temporary)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(6) Feasibility Study	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(7a) Inflation for Professional Services	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(7b) Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(8) Other Services/ Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(9) Total Professional Services	\$ 142,465	\$ -	\$ 76,591	\$ 65,874	\$ -	\$ -	\$ -	\$ -
(1) (a) New GSF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
New \$ /GSF								
(b) Renovate GSF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(2) Renovate \$ /GSF								
(3) Site Work/Landscaping	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(4) Other (Specify)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(5a) Inflation for Construction	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(5b) Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(6) Total Construction Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(1) Software COTS	\$ 379,541	\$ -	\$ 358,966	\$ 20,575	\$ -	\$ -	\$ -	\$ -
(2) Software Built	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(4a) Inflation on Software	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(4b) Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(6) Total Software	\$ 379,541	\$ -	\$ 358,966	\$ 20,575	\$ -	\$ -	\$ -	\$ -
(1) Servers	\$ 14,754	\$ -	\$ 14,754	\$ -	\$ -	\$ -	\$ -	\$ -
(2) PCs, Laptops, Terminals, PDAs	\$ 5,600	\$ -	\$ 5,600	\$ -	\$ -	\$ -	\$ -	\$ -
(3) Printers, Scanners, Peripherals	\$ 9,487	\$ -	\$ 9,487	\$ -	\$ -	\$ -	\$ -	\$ -
(4) Network Equipment/Cabling	\$ 14,720	\$ -	\$ 14,720	\$ -	\$ -	\$ -	\$ -	\$ -
(5) Monitors (to see sample / worksheets)	\$ 6,784	\$ -	\$ 6,784	\$ -	\$ -	\$ -	\$ -	\$ -
(6) Miscellaneous	\$ 4,500	\$ -	\$ 4,500	\$ -	\$ -	\$ -	\$ -	\$ -
(7) Total Equipment and Miscellaneous Costs	\$ 55,845	\$ -	\$ 55,845	\$ -	\$ -	\$ -	\$ -	\$ -
(1) Maintenance Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(2) Repair Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(3) Staffing/Employee Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(4) Other	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(6) Total Operating Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Project Costs	\$ 577,851	\$ -	\$ 491,402	\$ 86,449	\$ -	\$ -	\$ -	\$ -
(1) 5% for New	\$ 28,893	\$ -	\$ 24,570	\$ 4,322	\$ -	\$ -	\$ -	\$ -
(2) 10% for Renovation	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(3) Total Contingency	\$ 28,893	\$ -	\$ 24,570	\$ 4,322	\$ -	\$ -	\$ -	\$ -
Total Budget Request (F+G(3))	\$ 606,744	\$ -	\$ 515,972	\$ 90,771	\$ -	\$ -	\$ -	\$ -
GF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
CH	\$ 214,016	\$ -	\$ 192,119	\$ 21,897	\$ -	\$ -	\$ -	\$ -
RF	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
FF	\$ 392,727	\$ -	\$ 323,853	\$ 66,874	\$ -	\$ -	\$ -	\$ -



# COLORADO

## Department of Public Health and Environment

John W. Hickenlooper  
Governor

Dr. Larry Wolk  
Executive Director

FY 2016-17 Capital IT Request | October 1, 2015

  
Signature

9-30-15  
Date

**Department or CCHE Capital Construction Priority: 01**  
**Laboratory Information System – Colorado Public Health and Environment State Laboratory**

Summary of Capital Construction Request	Total Funds	Cash Funds*	Federal Funds
FY 2016-17	\$515,972	\$192,119	\$323,853
FY 2017-18	\$90,771	\$21,897	\$68,874

### Request Summary:

The Department of Public Health and Environment is requesting \$515,972 total funds including \$192,119 from the laboratory cash fund in FY 2016-17 and \$90,771 total funds including \$21,897 cash funds in FY 2017-18 to purchase and off-the-shelf Laboratory Information Management System. Since 2003, the Colorado Department of Public Health and Environment (CDPHE) Laboratory Services Division (LSD) has been using a Laboratory Information Tracking System (LITS) to track end-to-end laboratory data, processing, and reporting. The system has become outdated and unable to fulfill the needs of the laboratory and its customers. The LSD will issue an RFP for this project. Ongoing support will likely be \$60,000 annually, but will be funded within the Department's existing system maintenance funding.

### Project Description:

The scope of this project requires purchasing Laboratory Information Management System (LIMS) software and support from an outside vendor. The system will be an off-the-shelf product and requirements will include HIPAA compliant electronic reporting, electronic billing capabilities, electronic test requisitions/requests, and ability to interface with laboratory instrumentation, chain of custody tracking, workflow assessment, Quality Assurance (QA) capabilities, inventory maintenance, and data analysis functionality. The current LITS system will be maintained strictly for data retention purposes until retention schedules expire. Infrastructure is primarily going to be servers in addition to scanning hardware and various networking equipment to transfer data. New servers will need to be procured as the current servers will need to continue to maintain the legacy LITS+ system for validation of the new system as well as queries to testing, billing and customer information. Solutions hosted by outside vendors will also be considered in the bid evaluation process. This project builds on the department's (CDPHE) objective to get quality data into the CDPHE Data Repository and to the Centers for Disease Control (CDC). The need to update this system is so critical that the CDC has offered to pay for the cost associated with updating the data transfers from the old LITS system to the LIMS system when the new system is procured. The system will also build on the existing environment by providing direct uploading of laboratory result and quality control (QC) data from laboratory instruments replacing manual entry, staff created excel macros, and paper records. It will also expand data messaging capabilities for all data types to all capable recipients (LIMS, PHILP, HL7, SQL, external/internal customer needs), supply a web-based portal for data

exchange, reduce the risk of human error by minimizing the need for manual data entry, provide HIPAA and ISO 17025 compliant chain of custody, sample management, and electronic reporting, streamline laboratory data workflows, expand query capabilities and create standardized reports, provide data trending and tracking of specific metrics with statistical analysis of routine data collection and control charts, update supply inventories by monitoring testing work lists, interface with LSD's billing system and provide customer auto-pay and accounting e-billing capabilities.

### **Background and Justification:**

Though the current LITS system is functional, the LSD as well as other divisions within CDPHE (Water Quality, Hazardous Materials, and Disease Control, Center for Health and Environmental Data, and Air Quality) also have a need for cleaner and higher quality data. The current system is also unable to reconcile billings and collected revenue to the states accounting system. A new system would also have a high impact on both internal (CDPHE divisions) and external customers (paying residents and federal grant funding). A new system would allow the Lab to perform business functions, maintain integrity of data, tracking and reconciliation of revenue and the ability to obtain required regulatory certification.

An external analysis was done by contacting other state laboratories to identify if they were still using the free CDC issued LITS+ system. Colorado is one of the last labs to be using this outdated and restricting technology. Other labs have moved to web based off the shelf, configurable software specific to laboratories.

### **Implementation Plan**

The project will follow OIT direction and a PMP certified OIT project manager will be assigned. There will be software cycle requirement analysis, RFP drafting, review and development, RFP evaluation. Scope drafting and RFP evaluation will include review by multiple subject matter experts in all applicable professions (OIT, chemistry, microbiology, fiscal, security, accessioning and representatives from CDPHE divisions such as Water Quality, Air Quality, Hazardous Materials and Disease Control Division). Change management will be part of the RFP requirements as the awarded vendor will be responsible for providing training materials as well as on-site training. The Laboratory Information System Project has gone through Gate 1 of the OIT governance process on Monday June 29th and has received approval to move forward. As this project progresses, the Program will complete the project planning documentation and next steps in the gating process as dictated by the OIT project governance process.

### **Alignment with OIT Best Practices**

This request aligns with best practices in a variety of ways. Updated software will allow OIT to support the system that aligns with current programming languages and messaging standards. It will also be built on current platforms, which will decrease technical debt. Additionally, if the system selected through the RFP process is web based and vendor hosted, the project will align with OIT's Cloud First Initiative.

Furthermore, the replacement of the current legacy LITS+ system will prevent and/or eliminate redundant applications. Currently, LITS+ needs to be copied daily and is transformed in the Integrated Data Repository (IDR). This occurs because of the limited reporting functionality of LITS+.

The LITS+ system is unsupported which makes the lab vulnerable. LSD implemented the LITS+ information management system in 2001. Outside vendor support for the system was lost in 2003. Since then the system has been supported internally with the assistance of a single consultant without any significant updates. LSD requires a LIMS system with firm vendor support which will allow future updates.

The current LITS+ system does not meet OIT or industry standards. In the last 14 years the requirements for a functional laboratory information system have evolved. Electronic messaging standards have been adopted by LSD's stakeholders for secure data exchange. Laboratory quality assurance standards now require functionality beyond the capability of LITS.

The primary deficiency of the LITS+ system is the lack of data exchange functionality. All specimen and customer information is manually entered into the system from paper records. Data produced by laboratory instruments must be manually transcribed into LITS+. The vast majority of sample results are reported on paper records. The structure of the LITS+ database prohibits elegant and secure access to information by other state agencies.

The OIT business strategy focuses on information security, providing a customer-oriented business strategy, and inter-agency data exchange. LITS+ does not have the functionality for LSD to meet these goals. An ideal LIMS system will utilize industry data messaging standards to securely exchange data bi-directionally between LSD and its stakeholders while adhering to OIT information security policies. The new system will provide a web-based interface for private citizens and organizations to efficiently order testing and receive laboratory results. Such a system will improve internal workflow to minimize redundancies, reduce human error, and provide the analytical capabilities necessary to identify processes with potential for improving efficiency and reducing errors. Without these functionalities, LSD will continue to have deficient regulatory audit findings, not meet industry standards, fail to meet the needs of its customers, and isolate necessary information from other state agencies.

Finally, the replacement of the LITS+ system is consistent with the following Department strategic goals and objectives.

1. Promote Programmatic Excellence (Data driven strategies, Meet Regulatory and Statutory Requirements, Keep Up with the Speed of Business)
2. Create a More Efficient, Effective, Customer Oriented Department (Deliver Excellent Customer Service, Employ Lean Methodologies to Improve Business Processes (Use New and Alternate Technologies to Optimize Employee Performance))

### **Security and Backup/Disaster Recovery**

Current disaster recovery is a nightly backup process. Backups are stored offsite. The current LITS system has little security however it is an internal application so it is inherently more secure. Employee logins have no system or login policy.

The new system will have a similar backup / disaster recovery process, however it is not known at this time if this service will be handled by state OIT staff or a contractor. A new system would have a system and login policy.

### **Business Process Analysis**

The CDPHE Laboratory Services Division is currently working with the Governor's OIT office and has been working with an OIT business analyst in regards to all system requirements and business processes that are not laboratory specific. This project has received approval from CDPHE's Business Technology Team (BTT) and Executive Leadership Team (ELT). A vision and scope document has been submitted to the OIT gating committee.

LSD is performing an internal assessment of all laboratory specific processes that currently or will interface with a LIMS system in the future. While evaluating each process, representatives from each department within the division are determining the specific needs of the LIMS interface and how fulfillment of these needs will improve the status quo. Findings are routinely discussed with LSD management. The results of

this assessment will be the basis for the requirements written into the RFP. Metrics for evaluating response to the requirements are being determined concurrently. After completion of the assessment, the requirements of the system will be prioritized using a numeric scale based on their expected improvement in the quality of laboratory data being produced, benefit to division stakeholders, and the amount of data that will be impacted.

### **Systems Integration Opportunities**

The new system will utilize the HL7 data messaging standard to securely share clinical data with internal and external stakeholders such as local health care providers and federal agencies. Improvements in data storage structure will allow improved access by internal and external stakeholders to data of minimal to low sensitivity. Furthermore the new system will continue to export data to the IDR / CDC. "Real time" data export capabilities will be highly likely.

### **Program Plan**

Since this project is less than \$2 million, a program plan has not been included. The LIMS procurement process has been broken down into two separate OIT projects. The first medium sized project is drafting the RFP, the bidding process, and vendor selection. The RFP is expected to be released in early 2016 with approval by the Joint Technology Committee (JTC). Vendor selection will be performed by a committee, operating in conjunction with CDPHE's procurement office to ensure a complete and fair review. The selection committee will review and score each proposal submitted based on the criteria determined during the business process analysis. The top three proposals may be presented to the committee before final selection. Once the selection is made, the first project will be completed. If the legislature approves the request, vendor selection is expected to be completed by the end of FY 2015-16.

Design and implementation of the selected LIMS system will be a second OIT project and will begin once a contract has been signed and the vendor is ready to begin. Due to the size and scope of the project, a PMP certified OIT project manager will be utilized to assure timely completion and fulfillment of the contract. Executive Governance Committee (EGC) oversight and Independent Verification and Validation (IV&V) will most likely be required. At this point, the length of time and total cost of design and implementation is unknown, but will fit within the budgetary timeline outlined elsewhere in this document.

Once the LIMS system is operable, LSD will conduct an internal validation process to compare the reliability of specimen data handling and operability with the current LITS+ system. The LITS+ relies exclusively on paper records for data submission and primarily on paper records for reporting. Two thousand specimens will be run in parallel on both systems. LSD will collaborate with submitting agencies to compare the accuracy of information exchanged electronically to current paper methods. The evaluation will be considered successful if records are exchanged with the same or greater percent accuracy as LITS+. LITS+ does not include any of the workflow management, Quality Assurance (QA), billing, or instrument integration capabilities anticipated in the replacement LIMS system. Evaluation of these processes will be done indirectly through evaluation of the number of corrections needed, processing time of laboratory samples and number of samples billed during the trial period. Any shortfalls found will be followed up with the vendor.

### **Cost Savings and Improved Performance Outcomes**

Though cost savings is not the primary motivation for this initiative it will save money in the long run. A service agreement / support for the LIMS system is estimated to cost approximately \$60,000 annually. Currently the LSD pays a 3rd party contractor (the original programmer who worked for the CDC) between

\$20,000 and \$48,000 per year to maintain the system. This cost will be eliminated and used for support for the new system and applicable service agreements as needed.

Additionally 1.5 OIT FTE who currently support LITS+ and approximately \$187,000 will be saved by the department once the LITS+ system is eventually taken off-line. This savings will accrue to the Payments to OIT line in the Administration and Support Division.

#### **Cost-Benefit Analysis and Project Alternatives**

LSD's cost saving associated with implementation of a modern LIMS system are primarily expected to be attained through improved consolidation of resources, better alignment of staff work expectations, and consolidation of current software systems.

The limitation of the current LITS system has lead to the need for multiple ancillary software packages to perform functions that will be consolidated in a new system. In addition to specimen tracking using the LITS+ system, LSD employees use separate software packages for chemical inventory, supply inventory, sample repository tracking, and sample reporting, all of which will be included in a new LIMS system. In addition to the license fees for each of these packages, support costs of these systems by on site OIT staff will be eliminated.

Improved data handling capabilities are expected to better align staff work with position expectations by eliminating redundancies, minimizing manual data entry, and time spent dealing with error related problems. Currently all data entry must be done manually and is performed by laboratory assistant staff. Scientific staff are responsible for reconciling samples with recorded data. Scientific staff are also responsible for reporting data either verbally, by fax, or in some cases by post. A new LIMS system will utilize electronic messaging for the majority of data transmission. This will free up laboratory assistant staff for reconciling samples with received data. The cost benefits of doing this are two-fold. First, by shifting sample reconciliation to assistant staff, scientific staff will be able to focus on laboratory testing and duties more appropriate for their position descriptions. Secondly, up front quality control of data will reduce costly downstream errors which cost staff time and laboratory resources. Electronic messaging will also reduce the burden of reporting on scientific staff, allowing them to focus on meeting growing grant expectations.

Consolidation of resources is also an expected cost benefit. Currently laboratory supplies, reagents, and samples stored throughout the department and inventories are maintained by individual work units. This results in redundant ordering of supplies. The current LITS system is outdated and has been customized / configured beyond its initial purpose. At this point it cannot be upgraded and maintaining the system is becoming higher risk as all the systems that support it continue to advance while LITS cannot. Both CDPHE and OIT feel that the only alternative is to procure a new off the shelf system that can be configured to the needs of the Colorado State Public Health Laboratory. New systems are web based and can be upgraded to extend the useful life of the system.

Electronic reporting and billing allows reconciliation with the CORE accounting system (allowing lost revenues to be recognized and billed). Customers will also be able to log in and submit samples as well as review statements of account on-line.

#### **Consequences if not funded:**

Failure to fund the LIMS project would have a high, negative impact on customers (internal divisions and external customers) and on internal users. Consequences include the inability to perform business functions, inability to maintain integrity of data, low image and functionality of Colorado laboratory

services, loss of revenue due to inability to provide electronic reporting and billing, inability to obtain required regulatory certification, risk of unsupported IT infrastructure/software and risk of CDPHE divisions having to contract with external labs which ultimately will cost them more.

**Operating Budget Impact:**

This request will not impact the operating budget. The program projects that the on-going operating and maintenance costs for the new LIMS system are estimated to be approximately \$60,000 per year. This estimate is based on 10% of the costs to develop the system. The labs existing annual operating appropriation should be able to sustain these maintenance costs from savings associated with maintaining the current system. The RFP will address ongoing system upgrades / new versions so the system does not need to be replaced in 5 years.

**Assumptions for Calculations:**

- Capital Purchase for LIMS software and implementation \$379,541.00
- Estimated expenditures for land purchases; \$0.00
- Estimated expenditures for professional services; \$142,465.00
- Estimated expenditures for construction; \$0.00
- A list of equipment and furnishings, including estimated prices; \$55,845.00
- Calculations for art in public places, as necessary; \$0.00
- Inflation assumptions by year and component; \$0.00
- A discussion of costs associated with High Performance Certification Program (HPCP), or LEED certification, and the target certification level. If HPCP certification will not be pursued, please provide an explanation as to why the project is exempt from this requirement; and \$0.00

This is an information technology project therefore the land, construction, building and art items do not apply. The professional services dollars are for a half time OIT project manager and independent verification and validation. Equipment costs are for servers, peripheral devices and other necessary equipment. Please note the system may be a hosted solution in which case servers may not be necessary. Costs are estimates based on preliminary research of likely systems. The program did not believe inflation would significantly impact the project, thus did not ask for inflation costs.

ADDITIONAL REQUEST INFORMATION			
Please indicate if three-year roll forward spending authority is required.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
Date of project's most recent program plan:	Current 6/2015		
Please provide the link to the program plan or attached the first page of the analysis to this document:	Attached		
Request 6-month encumbrance waiver?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
New construction or modification?	<input checked="" type="checkbox"/> New	<input type="checkbox"/> Renovation	
	<input type="checkbox"/> Expansion	<input type="checkbox"/> Capital Renewal	
Total Estimated Square Footage	N/A	ASF	N/A GSF
Is this a continuation of a project appropriated in a prior year?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
If this is a continuation project, what is the State	N/A		

Controller Project Number?				
	FY 2XXX-XX Appropriated	FY 2XXX-XX Appropriated	FY 2XXX-XX Appropriated	<b>Total Appropriations</b>
<b>Total Funds</b>	0	0	0	<b>0</b>
<b>General Fund</b>	0	0	0	<b>00</b>
<b>Cash Funds*</b>	0	0	0	<b>0</b>
<b>Reappropriated / CFE</b>	0	0	0	<b>0</b>
<b>Federal Funds</b>	0	0	0	<b>0</b>

<b>ESTIMATED PROJECT TIME TABLE</b>		
<b>Steps to be completed</b>	<b>Start Date</b>	<b>Completion Date</b>
OIT / Gate 1 / Approval Stages	4/2015	9/2015
Scope review and development / bid posting / review / evaluation	9/2015	3/2016
Vendor selection and contract negotiation	3/2016	6/2016
System Configuration	7/2016	7/2017
Ongoing maintenance	7/2017	Ongoing

<b>CASH FUND PROJECTIONS</b>			
Cash Fund name and number:	26A0 – Laboratory Cash Fund		
Statutory reference to Cash Fund:	C.R.S. 25-1.5-101		
Describe how revenue accrues to the fund:	Cash collected from fees charged for lab testing performed		
Describe any changes in revenue collections that will be necessary to fund this project:	Next year lab testing fees will need to be reviewed and possibly increased. This is normal operating procedure for the laboratory.		
If this project is being financed, describe the terms of the bond, including the length of the bond, the expected interest rate, when the agency plans to go to market, and the expected average annual payment (delete row if unnecessary):	N/A		
<b>FY 2014-15 Actual Ending Fund Balance</b>	<b>FY 2015-16 Projected Ending Fund Balance</b>	<b>FY 2016-17 Projected Ending Fund Balance with Project Approval</b>	<b>FY 2017-18 Projected Ending Fund Balance with Project Approval</b>
\$463,789 0	\$278,052	\$288,750	\$254,874