Statewide Immunization Information System (SIIS) Project

Feasibility Study Report

Version 1.1

Date: July 23, 2008
Revised: December 11, 2008
FSR: 4265-11

Information Technology Project Request

Feasibility Study Report
Executive Approval Transmittal

Department Name
California Department of Public Health
Project Title (maximum of 75 characters)
Statewide Immunization Information System

Project Acronym	Department Priority	Agency Priority
SIIS		

APPROVAL SIGNATURES

I am submitting the attached Feasibility Study Report (FSR) in support of our request for the Office of the Chief Information Officer's approval to undertake this project.

I certify that the FSR was prepared in accordance with State Administrative Manual Sections 4920-4930.1and that the proposed project is consistent with our information technology strategy as expressed in our current Agency Information Management Strategy (AIMS).

I have reviewed and agree with the information in the attached Feasibility Study Report.

Chief Information Officer		**Date Signed**
Printed name:	Robert Ferguson	
Budget Officer		**Date Signed**
Printed name:	Debbie Shepherd-Juch	
Department Director		**Date Signed**
Printed name:	Mark Horton, MD, MSPH	
Agency Secretary		**Date Signed**
Printed name:	Kim Belshé	

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2.0 Information Technology Project Summary Package

1.	**Submittal Date**	

		FSR	SPR	PSP Only	Other:
2.	**Type of Document**	X			
	Project Number				

			Estimated Project Dates	
			Start	**End**
3.	**Project Title**	Statewide Immunization Information System		
	Project Acronym	SIIS	7/2009	3/2011
4.	**Submitting Department**	California Department of Public Health		
5.	**Reporting Agency**	California Health and Human Services		

6.	**Project Objectives**
	1. By 12/31/2011, provide California's authorized immunization registry users, including public and private health care providers and public health departments, with aggregated, statewide, and current immunization data. 2. By 12/31/2011, provide authorized parties nationwide with aggregated, statewide, and current immunization data from California to meet the mandates of the Comprehensive Child Immunization Act of 1993.

8.	**Major Milestones**	**Est. Complete Date**
	Procure vendor services • Project Management • IPOC • System Integrator Vendor	 Sept. 2009 Sept. 2009 Apr. 2010
	Hardware & Software Procurement	Nov. 2010
	Build System	Jan. 2011
	Implement System	Mar. 2011
	Key Deliverables	
	Selection of Systems Integrator	Jan. 2010
	System Implementation	Mar. 2011
	Post Implementation Evaluation Report	Mar. 2012

7.	Proposed Solution
	CDPH proposes a business-based procurement of a commercial-off-the-shelf (COTS) software product and integration vendor, with the resulting system to be hosted at the Department of Technology Services (DTS). A business-based procurement, as opposed to defining a specific technical solution, will encourage the most competitive pool of offers possible, and will allow vendors to propose a variety of creative technical solutions. CDPH will select the best value offer in terms of features, technology, cost, compliance with CDPH and DTS technical and security standards, and ability to most effectively accomplish the objectives and functional requirements identified in Section 3 of this FSR. Following the selection of the best-value offer, CDPH will develop and submit a Special Project Report (SPR) to describe the selected technical solution and to report any changes in estimated project cost and schedule. CDPH understands that the SPR must be approved by the OCIO prior to award of the contract to the vendor of the proposed solution.

Project #	**4265-11**
Doc. Type	**FSR**

Executive Contacts								
	First Name	**Last Name**	**Area Code**	**Phone #**	**Ext.**	**Area Code**	**Fax #**	**E-mail**
Agency Secretary	Kim	Belshe	916	654-3724				KBelshe@chhs.ca.gov
Dept. Director	Mark	Horton, MD, MSPH	916	558-1700				Mark.Horton@cdph.ca.gov
Budget Officer	Debbie	Shepherd-Juch	916	327-8093				Debbie. Shepherd-Juch@cdph.ca.gov
CIO	Robert	Ferguson	916	445-8057		916	440-7064	Bob.Ferguson@cdph.ca.gov
Project Sponsor	Howard	Backer, MD, MPH	510	620-3737		510	620-3773	Howard.Backer@cdph.ca.gov

Direct Contacts								
	First Name	**Last Name**	**Area Code**	**Phone #**	**Ext.**	**Area Code**	**Fax #**	**E-mail**
Doc. prepared by		Public Sector Consulting, Inc	916	802-7598				
Primary contact	Robert	Schechter, MD	510	620-3737		510	620-3773	Robert.Schechter@cdph.ca.gov
Project Manager		TBD - Consultant						

1.	**What is the date of your current Operational Recovery Plan (ORP)?**	**Date**	August 2007
2.	**What is the date of your current Agency Information Management Strategy (AIMS)?**	**Date**	November 2003
3.	**For the proposed project, provide the page reference in your current AIMS and/or strategic business plan.**	**Doc.**	Strategic Plan
		Page #	Goals 1 and 3

Doc. Type	**FSR**

		Yes	**No**
4.	**Is the project reportable to control agencies?**	X	
	If YES, CHECK all that apply:		
X	**a) The project involves a budget action.**		
	b) A new system development or acquisition that is specifically required by legislative mandate or is subject to special legislative review as specified in budget control language or other legislation.		
X	**c) The estimated total development and acquisition cost exceeds the departmental cost threshold and the project does not meet the criteria of a desktop and mobile computing commodity expenditure (see SAM 4989 – 4989.3).**		
	d) The project meets a condition previously imposed by Finance.		

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Budget Augmentation Required?								
	No							
	Yes	X	If YES, indicate fiscal year(s) and associated amount:					
			FY	2009/10	FY	2010/11	FY	2011/12	FY	
				$733,007		$1,640,161		$0		$

PROJECT COSTS

	Fiscal Year	FY 2009/10	FY 2010/11	FY 2011/12			TOTAL
	One-Time Cost	$836,315	$1,105,664	$0	$		$1,941,978
	Continuing Costs	$0	$218,808	$656,423			$875,230
	TOTAL PROJECT BUDGET	$836,315	$1,324,471	$656,423	$	$	$2,817,209

SOURCES OF FUNDING

5.	General Fund						$
6.	Redirection						$
7.	Reimbursements - 0462						$
8.	Federal Funds						$
9.	Special Funds						$
10.	Grant Funds	$836,315	$1,324,471	$656,423			$2,817,209
11.	Other Funds						$
12.	PROJECT BUDGET	$836,315	$1,324,471	$656,423	$	$	$2,817,209

PROJECT FINANCIAL BENEFITS

13.	Cost Savings/Avoidances	$0	$0	$0	$0	$0	$0
14.	Revenue Increase	$0	$0	$0	$0	$0	$0

Note: The totals in Item 4 and Item 12 must have the same cost estimate.

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Vendor Cost for FSR Development (if applicable)	$99,820
Vendor Name	Public Sector Consulting, Inc

VENDOR PROJECT BUDGET

	Fiscal Year	FY 2009/10	FY 2010/11	FY 2011/12		TOTAL
1	Primary Vendor Budget	$73,200	$590,832	$	$	$664,032
2	Project Manager	$291,780	$187,620		0	$479,400
3	Independent Project Oversight (IPO) Budget	$84,000	$71,400		0	$155,400
4	Independent Verification and Validation (IV&V) Budget	$53,333	$106,667			$160,000
5	Other Contract Services	$98,769	$61,467		0	$160,236
6	TOTAL VENDOR BUDGET	$601,083	$1,017,986	$	$	$1,619,068
7						

----------(Applies to SPR only)----------

PRIMARY VENDOR HISTORY SPECIFIC TO THIS PROJECT

7.	Primary Vendor	
8.	Contract Start Date	
9.	Contract End Date (projected)	
10.	Amount	$

PRIMARY VENDOR CONTACTS

	Vendor	First Name	Last Name	Area Code	Phone #	Ext.	Area Code	Fax #	E-mail
11.									
12.									
13.									

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RISK ASSESSMENT

	Yes	No
Has a Risk Management Plan been developed for this project?	X	

General Comment(s)
Based on the preferences of the grantor, analysis of costs, the ability to meet requirements, development risk and a comparison of advantages and disadvantages of the alternatives, the department believes that the centralized 'aggregate' database hosted by DTS solution will be the preferred solution to meet requirements while minimizing development risk. If the specifications of the grantor are modified, the department also considers aggregated data from a service provider to be an equally acceptable alternative.

3.0 Business Case

This section provides background on immunization, the existing Statewide Immunization Information System (SIIS) in California, and business objectives and functionality needed to improve SIIS for its many stakeholders, including California Department of Public Health (CDPH).

3.1 1 Business Program Background

The mission of the Immunization Branch within CDPH is to provide leadership and support to public and private sector efforts to protect California against vaccine-preventable diseases. Local and statewide immunization data indicates which populations in California are protected against or vulnerable to life-threatening diseases; therefore, access to immunization data is critical to CDPH's efforts to protect public health. To fulfill its mission, the Immunization Branch needs access to aggregated statewide immunization data.

Benefits of immunizations (vaccines)

Immunizations stimulate the immune system to protect us from life-threatening infections. They are among the greatest achievements of medicine and public health. At the beginning of the 20th century, infectious diseases exacted an enormous toll in the United States. Fortunately, vaccines against life-threatening diseases have been developed, leading to dramatic declines in illness and death as well as large economic savings. As examples:

Polio. Before polio vaccine was licensed in the United States in 1955, an average of 16,316 paralytic polio cases and 1879 deaths from polio were reported each year (1,2). As of 1991, polio has been eliminated from the Western Hemisphere (3)[1]. In 1994, every dollar spent to administer oral poliovirus vaccine saved $3.40 in direct medical costs and $2.74 in indirect societal costs (4).

Measles. Before measles vaccine was licensed in the United States in 1963, an average of 503,282 measles cases and 432 measles-associated deaths were reported each year (1-5). A nationwide measles resurgence of 1989 to 1991 resulted in more than 55,000 cases, 11,000 hospitalizations, 120 deaths, and $100 million in direct medical care costs. California had the most cases in this outbreak. Measles now occurs in the United States at historically low levels, fewer than 200 cases per year. In 1994, every dollar spent to purchase measles-containing vaccine saved $10.30 in direct medical costs and $3.20 in indirect societal costs (6).

Severe Haemophilus influenzae type b (Hib) infection. Before the first Hib vaccine was licensed, an estimated 20,000 cases of Hib invasive disease occurred each year, and Hib was the leading cause of childhood bacterial meningitis and postnatal mental retardation (7). In less than a decade, the use of the Hib conjugate vaccines nearly eliminated Hib invasive disease among children. Every dollar spent to purchase Hib vaccine saved $2 in direct medical costs.

[1] For all references in parentheses, see Attachment A – Section 3 - End Notes

Other vaccines also provide significant cost benefits. The diphtheria, tetanus toxoids, and acellular pertussis vaccine (DTaP) saves $24 in direct medical costs for every dollar spent on immunization. When indirect savings, such as avoidance of work loss by parents of ill children and prevention of death and disability, are factored in, the economic benefits are even higher.(8) The total costs in the table below reflect both direct and indirect costs.(9).

Table 4. Health and Economic Outcomes for Selected Vaccine-Preventable Diseases With and Without a Vaccination Program*

	Without Vaccination Program				Prevented or Saved by Vaccination Program			
	Cases, No.	Deaths, No.	Direct Costs (Million), $	Total Costs (Million), $	Cases, No.	Deaths, No.	Direct Costs (Million), $	Total Costs (Million), $
Diphtheria	247 214	24 721	2358	24 930	247 212	24 721	2358	24 930
Tetanus	153	23	8	29	146	22	8	28
Pertussis	2 662 307	1049	2265	3668	2 614 874	1008	2193	3545
Hib	17 530	663	1434	2696	17 469	661	1430	2689
Poliomyelitis	60 974	723	2084	4890	60 974	723	2084	4890
Measles	3 433 722	2795	2646	5875	3 433 036	2794	2645	5874
Mumps	2 100 718	11	936	1459	2 095 917	11	934	1456
Rubella	1 786 334	14	88	381	1 784 030	14	88	380
Congenital rubella syndrome	616	68	115	173	602	66	112	169
HB	232 001	3427	168	1272	207 353	3024	149	1121
Varicella	3 788 807	70	205	1184	3 160 391	57	173	993
Total	**14 330 376**	**33 564**	**12 307**	**46 557**	**13 622 004**	**33 101**	**12 174**	**46 075**

Abbreviations: HB, hepatitis B; Hib, *Haemophilus influenzae* type b.
*Costs are rounded and given in US dollars.

The more people who are immunized in the community, the less likely that a single case of disease, perhaps introduced from a traveler, will cause an outbreak. Those who are immunized also help to protect vulnerable contacts who:

- are too young to be vaccinated (e.g., children less than a year old cannot receive the measles vaccine but can be infected by the measles virus),
- cannot be vaccinated for medical reasons (e.g., severe allergies, cancer),
- have not responded to vaccination (e.g., weakened immune system, or vaccine inadvertently weakened through improper storage.)

Challenges and Remaining Needs

Despite remarkable progress, several challenges face the U.S. vaccine-delivery system. Many under-immunized children remain, leaving the potential for outbreaks of disease. Each year in the U.S. at least 300 children under age six are hospitalized or die from complications of vaccine preventable diseases.

The infrastructure of the immunization system must be capable of successfully implementing an increasingly complex vaccination schedule, maintaining high coverage of prior immunizations against disease which have not been eradicated, and incorporating new vaccinations into the schedule every few years. 11,000 children are born each day in the United States, each requiring over 20 doses of vaccine by age 18 months to be protected against over a dozen childhood diseases (6). These challenges frequently lead to missed opportunities to provide one or more recommended vaccines during medical appointments.

Many children visit clinics sporadically and do not have a stable primary physician. When these children are first seen by a new health care provider, immunization records

may be absent or incomplete, increasing the chance that children are either under-vaccinated or over-vaccinated.

In addition, the vaccine-delivery system must be extended to adolescents and adults to optimally prevent disease, disability, and death. Each year, thousands of cases of potentially-preventable cases of influenza, pneumococcal disease, and hepatitis B occur in these populations. Many new vaccines, such as the recent shingles and meningococcal vaccines are targeted at these older age groups. Immunization data help state and local health departments develop programs to decrease missed opportunities and improve vaccination coverage at all ages in both the public and private sectors.

Monitoring of immunization records assist in the vital effort to maintain and improve vaccine safety. Knowing the safety profile of vaccines is essential to accurately assess the risks and benefits of vaccination, to formulate appropriate vaccine recommendations, and to address public concerns.

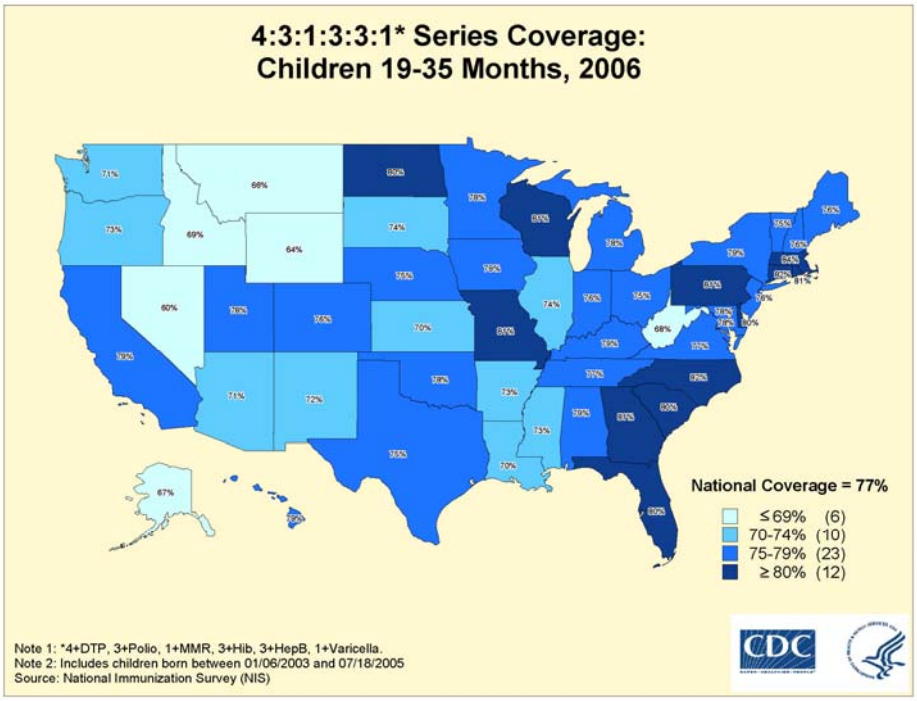
The federal Centers for Disease Control and Prevention (CDC) and Advisory Committee of Immunization Practices (ACIP) have identified effective use of information technology in the support of timely vaccinations as a key step to achieve the full potential of vaccines.(10 and 14).

Status of Immunizations in California

The CDPH Immunization Branch tracks and monitors immunizations and diseases throughout the state; works in partnership with health officials, health care providers, and the public to administer state and national immunization efforts; and provides epidemiological assessments and analyses. CDPH utilizes immunization data for epidemiological assessments and mandatory reporting.

While immunization protects children and adults alike, a majority of immunizations are given to young children, and many of these are required by law for the child to enter kindergarten or licensed child care facilities. More than 20% of two year-old children in California in 2006 were not fully up-to-date with their immunizations. This means that over 100,000 young children born each year in California are under-immunized. These children and their unimmunized contacts of any age are at risk of hospitalization and possible death from whooping cough, influenza, measles and other vaccine-preventable diseases. Immunization rates in California lag behind several Eastern states (Figure 3-1).

FIGURE 3-1



The complexity of the evolving immunization schedule, the migration of children among health care providers through childhood, and the constraints of traditional medical record systems make tracking children's immunizations difficult. These factors contribute to both the lack of immunizations and to over-immunization, which occurs when records cannot be found to verify prior vaccinations. Many of these issues are especially difficult in California given its size and diversity.

3.1.2 California's Registry Initiative

An immunization registry, also known as an immunization information system, is a confidential, computerized aggregation of immunization records that addresses these problems. The registry captures and consolidates all of a child's immunization information, providing a complete record for private and public medical providers, families, and child health and welfare agencies. Registries increase immunization rates while assisting many parties. Benefits of immunization registries include the following (10):

FOR PARENTS:

- Consolidate in one record all immunizations a child has received.
- Provide an accurate, official copy of a child's immunization history for personal, day care, school, or camp entry requirements.
- Help ensure that a child's immunizations are up to date.
- Provide reminders when an immunization is due.
- Provide reminder calls (recalls) when an immunization has been missed.

- Help ensure timely immunization for children whose families move or switch healthcare providers.
- Prevent unnecessary (duplicative) immunizations.

FOR PROVIDERS, PLANS AND PURCHASERS:

- Consolidate immunizations from all providers into one record for each child.
- Provide a reliable immunization history for any child, whether a new or continuing patient.
- Provide definitive information on immunizations due or overdue.
- Provide current recommendations and information on new vaccines.
- Produce reminders and recalls for immunizations due or overdue.
- Complete required school, camp, and day care immunization records.
- Reduction of paperwork.
- Facilitate introduction of new vaccines or changes in the vaccine schedule.
- Help manage vaccine inventories.
- Generate coverage reports for managed care (e.g., Healthcare Effectiveness Data and Information Set [HEDIS®]) and other organizations.
- Reinforce the concept of the medical home (single source for medical information).

FOR COMMUNITIES:

- Help control vaccine-preventable diseases.
- Help identify high-risk populations and under-immunized populations.
- Help prevent disease outbreaks.
- Provide information on community and state coverage rates.
- Streamline vaccine management.

FOR PUBLIC HEALTH OFFICIALS:

- Provide information to identify pockets of need, target interventions and resources, and evaluate programs.
- Promote reminder and recall of children who need immunizations.
- Ensure that providers follow the most up-to-date recommendations for immunization practice.
- Facilitate introduction of new vaccines or changes in the vaccine schedule.
- Integrate immunization services with other public health functions.
- Help to monitor adverse events.

In the last 15 years there has been a national effort supported by the CDC to implement immunization registries. As there is no single national immunization registry, all 50 states have developed separate immunization registries, and most have integrated statewide systems.

During the same period, California incrementally developed a system of nine regional (multicounty) and two county immunization registries known as the Statewide Immunization Information System (SIIS) (Figure 3-2). These regional efforts began as local initiatives in the mid-1990s, largely in response to the measles outbreak mentioned previously. At the time, registries nationally were in a pilot phase aimed at learning what worked and what didn't. California's large size and economically and culturally diverse regions made it a natural laboratory for local and regional experimentation and learning.

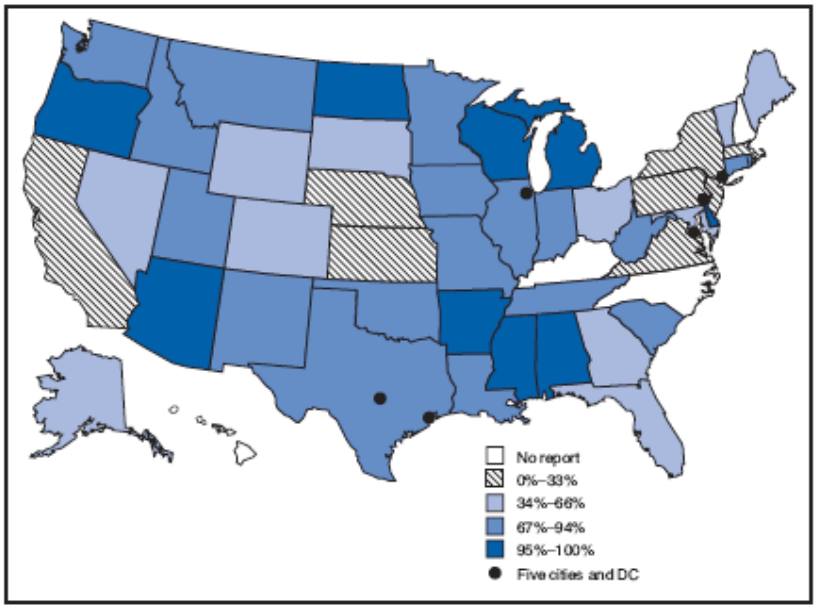
SIIS users include health care providers, public health departments, schools, child care facilities, family child care homes, WIC service providers, foster care agencies, welfare departments, juvenile justice facilities, and other programs either providing, tracking or promoting immunization.

FIGURE 3-2

The federal government's *Healthy People 2010* objectives, a comprehensive national health promotion and disease prevention agenda issued by the U.S. Department of Health and Human Services, assert that 95% of children under age six should be participating in an immunization registry by 2010. As of December 31, 2006, the national participation level was 65%. With existing resources, the current system has accumulated information on approximately 40% of California's pre-school children, an increase from about 30% in 2005 (Figure 3-3). (3)

FIGURE 3-3

FIGURE. Percentage of children aged <6 years participating* in a grantee† immunization information system — United States, five cities, and the District of Columbia (DC),§ 2005



SOURCE: *2005 Immunization Information System Annual Report.*
* Participation is defined as having two or more vaccinations recorded in an immunization information system.
† Grantees include 50 states, five cities, and DC, funded under section 317b of the Public Health Service Act.
§ Chicago, Illinois (34%–66%); DC (67%–94%); Houston, Texas (34%–66%); New York City, New York (95%–100%); Philadelphia, Pennsylvania (95%–100%); San Antonio, Texas (67%–94%); United States (56%).

Immunization registries save more than they cost. A national study estimated at least $2.24 saved for every dollar invested into registries, not including the additional savings from preventing disease cases and outbreaks. (11)

Ensuring age-appropriate immunizations and controlling outbreaks of vaccine-preventable diseases are among public health's oldest and most established areas of responsibility. Immunization information systems provide a powerful tool that harnesses information technology to increase the effectiveness and efficiency of these functions, thus increasing the impact of their health and societal benefits.

3.1.3 Legal Framework

SIIS activities are consistent with the federal Health Insurance Portability and Accountability Act (HIPAA) and are enabled by California Health and Safety Code Section 120440, which was enacted in 1995 and subsequently amended.

California law permits but does not require

- health care providers and people receiving vaccines to participate in the registry.

- data to be shared between local, regional or state jurisdictions in any combination.

All users must treat data in SIIS as confidential. Sharing of data in SIIS requires notification ("opt-out") but not signed consent of participants or their parents/guardians. The rate of declining to share data has been very low, on the order of 1% or less. Some parents who initially have declined to share data have reversed their decision when medical care has shifted to a different provider, after realizing the benefits of participation.

3.2 Business Problem or Opportunity

The following identifies the problems that will be addressed by access to aggregated data from the SIIS databases.

1. **California's multiple regional electronic immunization registries currently cannot easily share information with one another. As a result, immunization records are incomplete for California's mobile populations, and health care providers end up giving too few or too many vaccines.**

   Medical records are often missing or incomplete for mobile populations (up to 15% of children changing address each year, including families of military personnel, migrant workers, children in foster care) who change health care providers. When information is lacking, health care providers either
   - give redundant immunizations, with associated public and private costs, or
   - miss opportunities to immunize, leaving their patients and society vulnerable to life-threatening and costly diseases.

   When information is not available, providers attempt, often unsuccessfully, to obtain immunization records on new patients by telephone or correspondence.

   There is an increased cost to health plans from redundant immunizations, including Medi-Cal and Healthy Families for reimbursement (double charging). The cost of over-immunizations of children insured by Medi-Cal and other State safety net programs has been estimated to be $1,114,000 annually. (11) As more recently introduced vaccines are much more expensive, this cost may be significantly higher.

   Additional savings from children receiving needed immunizations range from $24 in direct medical costs for every dollar spent on DTaP to $2 in direct medical costs for the more recently approved Hib (Haemophilus influenzae type b) vaccine. (8)

   Also, large health care systems can span regional registry boundaries, resulting in the need to access two or more registry applications and work with two or more registry policies and operations in order to assemble a complete assessment of their system's performance in immunizations.

   Electronic access to complete immunization data will assist providers in protecting public health while reducing redundant services.

2. Epidemiologists at CDPH are unable to gather comprehensive and timely immunization information for analysis and assessment.

CDPH is dedicated to optimizing the health and well-being of the people in California. Epidemiologists assist in this effort by tracking and analyzing health trends throughout the state and the nation. This information is used by public health officials and health care providers to manage medical events such as outbreaks of infectious disease, movement of large segments of the population due to natural disasters, and tracking of recalled or expired vaccines.

State and local health departments promptly investigate reports of suspected cases of vaccine-preventable diseases to institute appropriate measures to limit the spread of disease. Analysis of immunization records also provides important information on groups at highest risk for disease and pockets of need. Such data are important for allocating resources, targeting interventions, and making policies to maximize the effectiveness of immunization programs.

a. It is difficult and time-consuming to determine the impact of a new vaccine or immunization outreach strategy.

State and local health departments and their partners are currently unable to identify where, how and to whom vaccines have been administered. Without this information it is difficult to monitor the effectiveness of a new vaccine or the immunization strategy.

b. No system exists to readily identify who has received specific lots of vaccine in case of spoilage or improper manufacture.

Providers and health departments are currently unable to identify where, how and to whom vaccines have been administered. Without this information it is difficult, and at times impossible, to trace and identify where and to whom tainted vaccines have been administered. The inability to quickly identify the locations of contaminated vaccines and the patients that may have received then can result in life-threatening complications.

c. It is cost-prohibitive to identify children at risk during a vaccine-preventable disease outbreak on a community.

When an outbreak occurs in multiple regions, often introduced by someone who has been traveling, it is cost-prohibitive to send public health staff into all area clinics and hospitals to review medical charts and to assemble immunization histories. This is needed not only to identify who is under-immunized and so at risk, but sometimes to identify who could receive added protection by receiving a booster dose earlier than normally given; for instance, providing measles boosters to 4-6 year olds during a measles outbreak rather than waiting until age 6 years. A registry could readily identify these children and their last know health care provider. The registry could help to preserve patient confidentiality while

completely avoiding the need to have chart reviewers examining an entire medical record in order to assemble an immunization history.

Access to aggregated immunization data will allow CDPH and local health departments to gather information in a timely manner and to guide vaccination policies and programs, and to manage public health emergencies.

3. **California is unable to meet the Comprehensive Child Immunization Act of 1993 goal of developing a nationwide network of immunization tracking systems.**

The federal Comprehensive Child Immunization Act of 1993 provided for a collaborative Federal and State effort to track the immunization status of the Nation's children. It authorized the Secretary to make grants to States to establish and operate State immunization registries containing specific information for each child in the State. Access to aggregated immunization data will enable identification of children who need vaccinations and will help parents and providers ensure that children are appropriately immunized. (12)

   a. **California cannot currently provide other states promptly with immunization data on children and families displaced by disaster.**

   Children and families displaced by disaster require proof of immunization to begin school where they relocate. Children evacuated from Gulf Coast States after Hurricane Katrina in 2005 fortunately had their immunization records stored in comprehensive statewide systems that rapidly provided immunization records to California and other states receiving evacuees. California is currently unable to provide complete records rapidly when major disaster strikes here.

Access to aggregated immunization data will allow local health departments and health care providers outside of California, to gather information in a timely and effective manner and to use findings to manage public health emergencies.

4. **It is difficult for health care plans, including those participating in Medi-Cal Managed Care, to obtain immunization data for standard performance measures, such as the Healthcare Effectiveness Data and Information Set (HEDIS).**

HEDIS is a quality assurance tool developed by the non-profit National Committee for Quality Assurance. HEDIS is being used by more than 90 percent of America's health plans, including those participating in Medi-Cal Managed Care, to measure performance on important dimensions of medical care and service. HEDIS consists of 71 separate measures of care, including immunization rates of plan members.

HEDIS makes it possible to compare the performance of health plans. Employers, consultants, and consumers use HEDIS data to help them select the best health plan for their needs. HEDIS data also are the centerpiece of health plan "report cards" that appear in national magazines and local newspapers.

Health plans also use HEDIS results themselves to see where they need to focus their improvement efforts.

Without the use of immunization registries, health plans obtain quality assurance data on immunization through laborious manual chart review. Use of immunization registries for HEDIS saves substantial time and money. As many health plans cover multiple immunization registry regions in California, aggregated data would assist in obtaining HEDIS and related data for Medi-Cal beneficiaries. This could contribute to increased quality and safety of health care for all Californians.

Also, large health care systems can span regional registry boundaries in California, resulting in the need to access multiple registry applications and work with multiple registry policies and operations in order to assemble a complete assessment of their system's performance in immunizations. Aggregated data would simplify obtaining HEDIS and related data for Medi-Cal beneficiaries as well as those covered by the private sector. This could contribute to increased quality, safety and cost-effectiveness of health care for all Californians.

3.3 Business Objectives

California SIIS Goals
SIIS strives to improve immunization rates for all children in California. SIIS intends to make each child's full immunization history available to authorized users in California, including providers, schools, foster care, and juvenile detention centers. The system will ensure that users have rapid access to complete and up-to-date immunization records, as well as expert vaccine forecasting. A major objective is to eliminate both missed opportunities to immunize and unnecessary duplicate immunizations.

SIIS Strategic Goals
SIIS strategic goals include the secure sharing of data among all regional registries.

The objectives for this enhancement of SIIS are as follows:

3.3.1 Objective 1: By 12/31/2011, provide California's authorized immunization registry users, including public and private health care providers and public health departments, with aggregated, statewide, and current immunization data.

Data aggregation would achieve the vision of a statewide information system and facilitate assessment, quality improvement, and program evaluation. Benefits of aggregated registry data include:

- Information of where children are under- or over-immunized in California by geographic and demographic breakdowns.
- Increased completeness of records, leading to avoidance of duplicating immunizations to children when records are absent.
- Uniform data quality and data standards.
- Greater access to data across registries by providers.
- Expedite restorative efforts in wide-spread emergencies.

3.3.3 Objective 2: By 12/31/2011, provide authorized parties nationwide with aggregated, statewide, and current immunization data from California to meet the mandates of the Comprehensive Child Immunization Act of 1993.

Meeting the mandates of the Comprehensive Child Immunization Act of 1993 will allow data exchange of immunization information between state registries, increasing the potential for availability of accurate and timely data during a disaster or pandemic.

3.4 Business Functional Requirements -

This section presents the key functional requirements of the SIIS project. Most functional requirements are relevant to more than one project goal or opportunity for improvement. Collectively, these functional requirements define the functional aspects of the proposed solution.

Functional Requirement 1: The system must provide access to aggregated immunization records on individuals across Regional Registries

The system must allow data from each of the current registries to be available to all authorized users. Aggregated immunization records must be current within a 24-hour period. Aggregated data will be of value to all users including the state and local health departments, juvenile facilities, foster agencies, WIC agency and other state health plans.

Functional Requirement 2: The system must provide users the ability to access data to perform analysis.

Data must be available to authorized users to perform additional data analysis. Analyses include:

- Demographic – look at immunization rates over time by various attributes (age, sex, and ethnicity/race. May track disease outbreaks to determine immunization needs. Which populations are protected and which need additional immunization services.
- Geographic – immunization rates by county and city. May track disease outbreaks to determine immunization needs. Which geographic areas are protected and which need additional immunization services.
- Trend – How are immunization rates and services changing over time? To know whether interventions are working. Are more shots being given in public versus private sectors? Allows for the identification and planning course correction, if needed.
    - Statistical – To support interventions or support the design of interventions. The way in which you know how things are trending and how they are different from each other. How many children have been immunized and their records reside in the registry.
- Quality measures – Immunization rates by practice, health plan (e.g. HEDIS) or institution. Quality of data within the registry. A fully functioning registry could assist Medi-Cal and Healthy Families plans by monitoring immunizations rates of beneficiaries. Reduce over-immunization making it less likely that a Medi-Cal provider will give a redundant shot and be reimbursed for it.

- Access to aggregated data will improve the ability of the affiliated institutions to analyze data.
    - Institutional affiliation fields (Medi-Cal eligibility, WIC, educational, child health agency, juvenile facilities, and foster agencies) enrollment/legal requirement for all kids must be up-to-date for all schools. Often children attend schools in a county or geographic area that is different from the county or geographic area in which the child lives.

Functional Requirement 3: The system must provide users the ability to export data to perform analysis.

Users must be able to export data to popular file formats such as Text (TXT), Comma Separated Values (CSV), Crystal Reports (RPT), Tab-separated text, HTML or XML.

Functional Requirement 4: The system must provide continuous availability of data

The data should be available 24 hours a day, seven days a week with scheduled maintenance windows as appropriate. Immediate access to immunization records is required, whenever an encounter between a patient and provider allows the possibility of a timely immunization being provided. Emergency rooms and newborn nurseries, for example, are environments that are open 24 hours a day. One of the major causes for low immunization rates is missed opportunities. Whether a child goes for a well-child visit or because of illness, good pediatric practice calls for assessing whether any immunizations are due.

Functional Requirement 5: The system must support Data Exchange

The aggregated data must be capable of being exchanged with authorized external users.

Functional Requirement 6: The system must ensure data Security

The aggregated data must comply with existing state and federal law including California Health and Safety Code Section 120440.

Functional Requirement 7: The system must be capable of supporting SIIS data capacity.

Currently, SIIS contains records on approximately 40 percent of California's children. The system must support 100 percent of the data currently maintained by all registries combined and capable of supporting a 10 percent annual growth.

The Table 3-4 displays the relationship between the existing problems, the project objectives and the business functional requirements.

TABLE 3-1
PROBLEM/OBJECTIVE/FUNCTIONAL REQUIREMENTS

PROBLEM	OBJECTIVE 1	OBJECTIVE 2	FR 1	FR2	FR3	FR4	FR 5	FR 6	FR 7
1. California's multiple regional electronic immunization registries currently cannot easily share information with one another.	√		√	√	√	√	√	√	√
2. Epidemiologists at CDPH are unable to gather comprehensive and timely immunization information for analysis and assessment.	√		√	√	√			√	√
3. California is unable to meet the Comprehensive Child Immunization Act of 1993 goal of developing a nationwide network of immunization tracking systems.		√	√	√	√		√	√	√
4. It is difficult for health care plans, including those participating in MediCal Managed Care, to obtain immunization data for standard performance measures, such as the Healthcare Effectiveness Data and Information Set (HEDIS).	√		√	√	√			√	√

ATTACHMENT A

Section 3 – End Notes

(1) HHS, *Adult Immunization Action Plan*, Report of the Workgroup on Adult Immunization. Washington, DC: HHS, 1997. http://www.cdc.gov/od/mvpo/adult.htm> November 23, 1999.
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(3) CDC, http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5549a3.htm
(4) Abrmson, J.S.; O'Shea, T.M.; Ratledge, D.L.; et al. Development of a vaccine tracking system to improve the rate of age-appropriate primary immunization in children of lower socioeconomic status. *Journal of Pediatrics* 126(4): 583-586, 1995.
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(6) National Vaccine Advisory Committee. The measles epidemic: the problems, barriers and recommendations. *Journal of the American Medical Association* 266 (11): 1547 – 1552, 1991.
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(8) Ekwueme, D.U.,; et.al. Economic evaluation of use of diphtheria, tetanus, and acellular pertussis vaccine (DTaP) or diphtheria, tetanus and whole-cell pertussis vaccine (DTwP) in the United States, 1997. *Archives of Pediatric and Adolescent Medicine* (in press) August 2000.
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(10) http://www.cdc.gov/mmwR/preview/mmwrhtml/00056803.htm].
(11) http://www.hhs.gov/nvpo/nvac/reports.html
(12) Savings to State of California After completion of a Statewide Immunization Registry," *California Department of Health Services, Immunization Branch, April 27, 2005*.
(13) THE WHITE HOUSE, Office of the Press Secretary, April 1, 1993, http://www.ibiblio.org/pub/archives/whitehouse-papers/1993/Apr/Child-Immunization-Act-of-1993-40193
(14) http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5515a1.htm.

4.0 Baseline Analysis

The purpose of this section is to provide a clear understanding of the technical environment that supports California's current immunization system. This section builds upon the Business Case provided in Section 3.0, and supports the need to implement the proposed solution described in Section 5.0.

4.1 Current Method

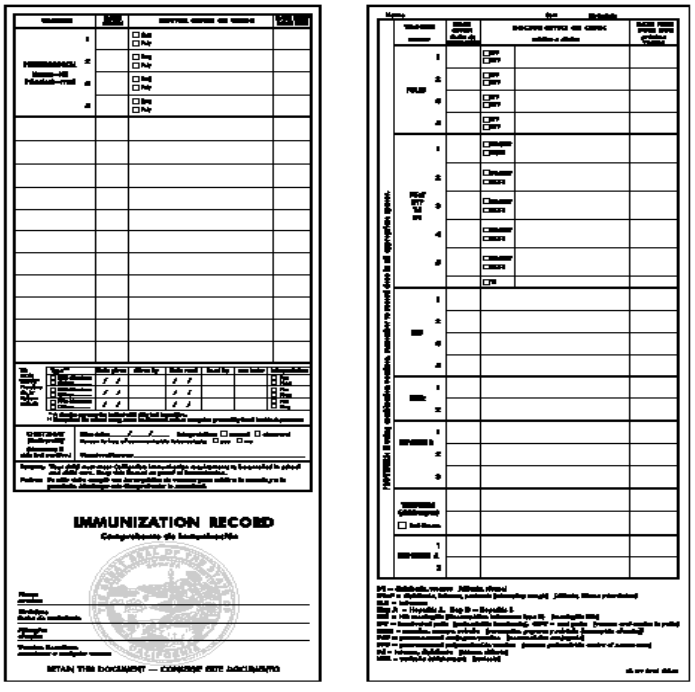
Immunization information is recorded, tracked or analyzed in California by thousands of health care providers and other parties, including A) Providers not using a Registry B) Regional Registries and their users, and C) the State.

A. Immunization Providers not using a Regional Registry

Immunization information for individuals in the United States is stored by health care providers in medical charts, either as paper copies or in electronic health records. Providers fill out copies of histories for the personal use by patients and their families on paper forms such as the California Immunization Record (CIR) or "Yellow Card." [Figure 4-1.] The form typically includes name, birth date, and immunization history.

FIGURE 4-1

Sample California Immunization Record



Note: Not shown at actual size. The California Immunization Record (yellow card) can be folded to fit into the plastic holder.

When a child receives an immunization, typically the parent or guardian presents the child's paper record to the provider for amendment or replacement. However, the paper record is often lost or incomplete, especially if immunizations have been given by multiple providers throughout early childhood, as is common for California's highly mobile population.

A provider who does not use a regional immunization registry has few options to obtain missing immunization information on a new patient. The provider may attempt to contact previous providers by telephone or correspondence, but this is time-consuming, laborious, and often unsuccessful.

When information is absent, providers either give possibly redundant shots to assure protection or choose not to administer a vaccine, which may result in under-immunization. Under-immunization leaves the child and the population at risk for disease, while redundant immunizations incur unnecessary costs that are increasing, as newer vaccines tend to be much more expensive than their predecessors.

B. Regional Immunization Registries and their users

Over the last 15 years, California has incrementally developed a decentralized system of nine regional and two county immunization registries. These registries are collectively known as the Statewide Immunization Information System (SIIS). (Figure 4-2) SIIS users include local health care providers, public health departments, schools, child care facilities, family child care homes, WIC service providers, foster care agencies, welfare departments, juvenile justice facilities, and other programs either providing, tracking or promoting immunization. Some programs, such as WIC, CalWORKS or schools, are required by federal or California law to track client immunizations, whether or not by using a registry.

Each Regional Registry is independently managed and operated at the regional or local level; the registries are external to CDPH. Each region has identified a "host jurisdiction" for the maintenance and sharing of regional data. All counties within that region sign Joint Powers Agreements or Intra-Governmental Agreements. Each region has a separate governance mechanism for decision making. Since there is no legal requirement for providers to participate in the registry, each Registry is responsible for recruiting its providers using a regional provider agreement.

Six different software systems, three of them web-based, are used by the SIIS registries. See Figure 4-2 and Table 4-1 below. Each system allows users to see patient demographic data, immunization history, immunization forecasting, contraindications, overdue immunizations, and other functions. The software systems also provide copies of patient Yellow Card and Blue Cards, usage reports, appointment remainders, and inventory management. One of these software systems, California Automated Immunization Registry (CAIR), is used in separate installations in six regions.

FIGURE 4-2


California Regional Immunization Registries
Immunization Network of Northern California (INNC)
Shots for Tots KIDS Regional Immunization Registry
Bay Area Regional Immunization Registry (BARR)
County Registries: Imperial County
Contra Costa Automated Immunization Registry (CCAIR)*
Regional Immunization Data Exchange (RIDE)
Central Valley Immunization Information System (CVIIS)
Central Coast Immunization Registry (CCIR)
Los Angeles-Orange Immunization Network (LINK)
VaxTrack Regional Immunization Registry
San Diego Regional Immunization Registry (SDIR)
* County registry.
DEL NORTE
SISKIYOU
MODOC
HUMBOLDT
TRINITY
SHASTA
LASSEN
TEHAMA
PLUMAS
MENDOCINO
GLENN
BUTTE
SIERRA
COLUSA
YUBA
NEVADA
PLACER
LAKE
SUTTER
EL DORADO
YOLO
SONOMA
NAPA
SACRAMENTO
AMADOR
ALPINE
SOLANO
CALAVERAS
MARIN
CONTRA COSTA
SAN JOAQUIN
TUOLUMNE
MONO
SAN FRANCISCO
ALAMEDA
STANISLAUS
MARIPOSA
SAN MATEO
SANTA CLARA
MERCED
SANTA CRUZ
MADERA
SAN BENITO
FRESNO
INYO
MONTEREY
TULARE
KINGS
SAN LUIS OBISPO
KERN
SAN BERNARDINO
SANTA BARBARA
VENTURA
LOS ANGELES
RIVERSIDE
ORANGE
SAN DIEGO
IMPERIAL

TABLE 4-1
REGIONAL REGISTRIES AND SYSTEMS

REGION	SYSTEM USED	USER ACCESS
Bay Area Regional Immunization Registry (BARR)	CAIR	Web
Central Coast Immunization Registry (CCIR)	CAIR	Web
Central Valley Immunization Information System (CVIIS)	CAIR	Web
County Registries: Imperial County	County-Specific	Web
Contra Costa Automated Immunization Registry (CCAIR)	County-Specific	Client Server
Immunization Network of Northern California (INNC)	CAIR	Web
Los Angeles-Orange Immunization Network (LINK)	CAIR	Web
Regional Immunization Data Exchange (RIDE)	Region-Specific	Web
San Diego Regional Immunization Registry (SDIR)	Region-Specific	Web
Shots for Tots KIDS Regional Immunization Registry	CAIR	Web
VaxTrack Regional Immunization Registry	Region-Specific	Client Server

Participating providers and other authorized users can easily review immunizations on a new patient recorded in their Regional Registry. But, if previous providers are located in different Regions (or do not participate in a Registry), then a child's complete immunization record will not be available electronically, leaving the registry user in the same quandary as the non-user; whether to immunize, perhaps redundantly, to assure protection or risk leaving the child unprotected. Similarly, immunizations given outside the region are not readily available to local public health departments trying to control disease outbreaks or determine immunization rates of local residents. Aggregated immunization data would increase the completeness of individual records and assist registry users in protecting their clients.

C. State of California

CDPH provides Local Assistance funding to the regional registries in SIIS and coordinates multi-regional activities, such as including hosting conferences, meetings, and conference calls. CDPH does not own or manage the immunization information in SIIS.

Aggregated SIIS data would supplant or supplement other data sources for critical CDPH functions. As an example, each primary school in California collects paper immunization records as a legal requirement for matriculation. CDPH currently uses these records to assess immunization rates around the state. When a child enters kindergarten, his or her immunization information is transcribed onto a form ("Blue Card") that is placed into that child's school file. Blue Card data are reviewed by CDPH to determine immunization status at 24 months of age, approximately three years prior to kindergarten entry. Aggregated SIIS data would allow real-time assessment, instead of the current three year lag time, when evaluating the effects of specific immunization programs or policies.

CDPH also obtains immunization rate estimates from the CDC's annual National Immunization Survey (NIS), a random telephone sampling from all states. However, the NIS' use of a limited sample precludes analysis of many important subgroups in California. Continued use of the NIS is threatened by increasing costs from increased exclusive usage of cellular telephones, requiring more dialing to achieve

the desired sample and potentially introducing bias into the results. Some states are starting to use their immunization registries to augment or possibly replace NIS.

Aggregated SIIS data would be valuable to CDPH for epidemiological studies, and legislative and public health reports. It would also support improved monitoring and accountability of publicly-financed vaccines for children enrolled in Medi-Cal.

D. Typical Business Processes

SIIS users include health care providers, public health departments, schools, child care facilities, family child care homes, WIC service providers, foster care agencies, welfare departments, juvenile justice facilities, and other programs either providing, tracking or promoting immunization.

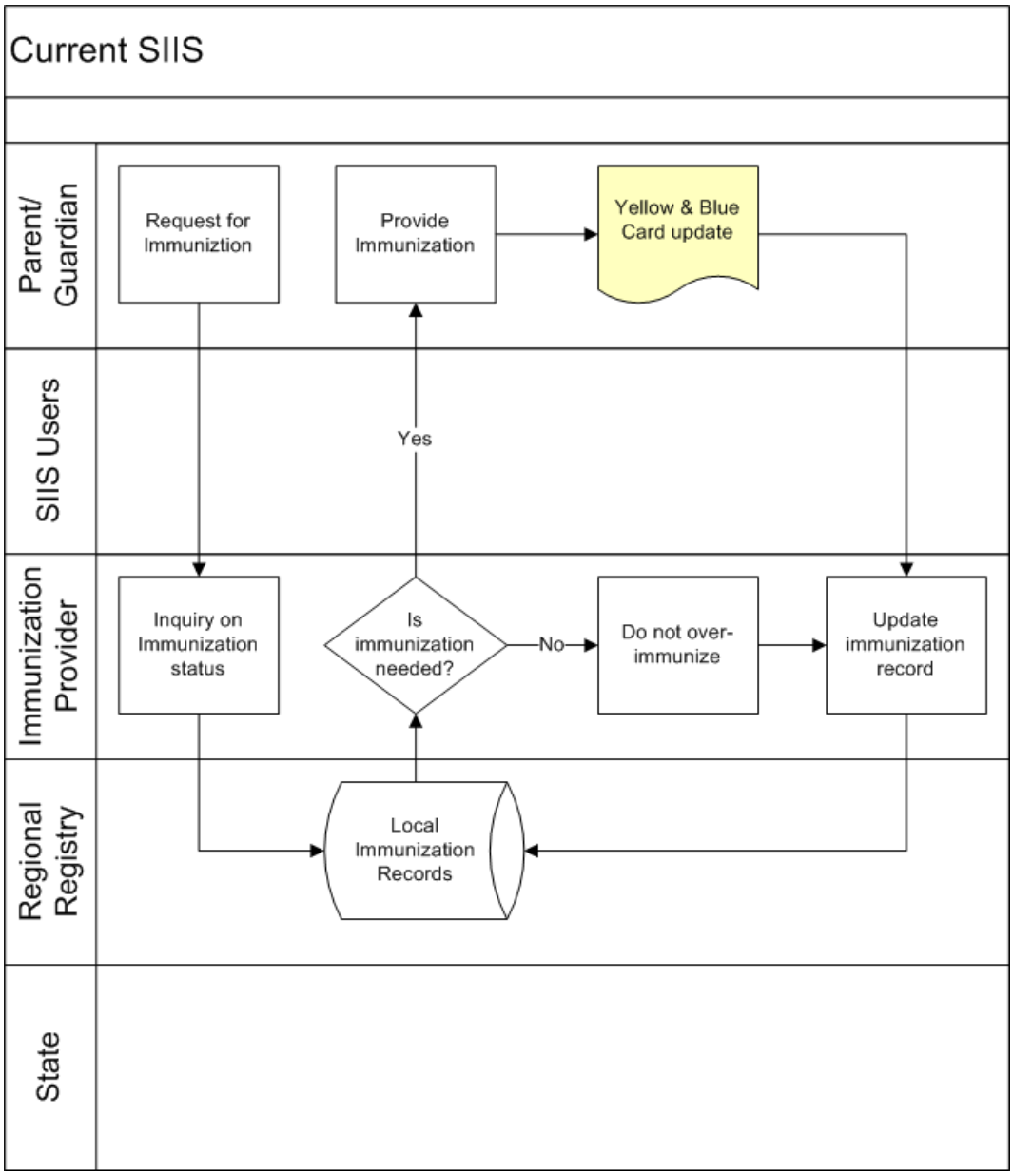
A typical business process starts with a family's visit to an immunization provider for routine childhood immunizations or a copy of immunization records (e.g., yellow cards and blue cards). These records are required for a variety of activities, some required by law, most notably admission to school. (See Figure 4-3 Workflow)

Participating providers search the Regional Registry to review prior immunizations given to a patient, calculate the immunizations needed at that particular visit (if any) and produce a copy of the immunization record for families. Each Regional Registry currently contains information on residents of that specific region but not other regions.

Regional Registries encourage providers to use the registry to:

- Immunize patients completely and on time
- Collect and manage immunization data
- Simplify immunization vaccine inventory management
- Monitor and improve the delivery of age-appropriate immunizations by avoiding over- and under-immunization.
- Provide copies of standard records (Yellow or Blue Cards) to families more accurately and efficiently than through hand transcription.

FIGURE 4-3 WORK FLOW



4.1.1. Costs

As noted in Section 3, there are many current direct and indirect costs associated with over- and under-immunization of children. For example, based on a national study (see below), the annual current cost of unnecessary doses of vaccine administered to children in California can be conservatively estimated at more than $3.8 Million. Registry use can potentially save DHCS over $400,000 annually in vaccine administration reimbursements alone by reducing unnecessary immunizations of Medi-Cal beneficiaries (estimation detailed in Table 4-2 Medi-Cal Cost Reductions). This savings would increase as the number of children's records in the registries increases. This estimate does not include the savings in state- or federal-purchased vaccines through reduced over-immunization, at a cost per dose from $10 -150.

TABLE 4-2
MEDI-CAL COST REDUCTIONS

ESTIMATE	ASSUMPTIONS	SOURCE OF INFORMATION
562,157	Number of children born in CA in 2006.	http://www.cdph.ca.gov/data/statistics
X 50%	Percentage of young children who require immunization insured by Medi-Cal and other State safety net programs	
281,078	Number of children each year under State medical insurance	50% X 562,157
X 21%	Percentage of children receiving redundant immunizations	Feikema SM, et al. *JAMA* 2000;282:1311-17)
59,026	Children under State insurance receiving redundant immunizations	281,078 X 23%
X $18	Average cost of two unnecessary immunizations X $9.00 administration fee per shot.	
$1,062,475	Potential Medi-Cal cost reductions, if all over immunizations were eliminated	59,026 X $18
X 40%	Number of children in the registry compared to the entire population	
$424,989	Potential Medi-Cal cost reductions at current level of registry participation, if registry use prevented all redundant immunizations.	$1,062,475 X 40%

4.1.2 Functional Requirements

The current system of decentralized, regional registries cannot achieve all of the business objectives stated in Section 3 of this report. In Table 4-3, the current system is compared to the Business Functional Requirements identified in Section 3.4 of this report.

TABLE 4-3
CURRENT SYSTEM ASSESSMENT

FUNCTIONAL REQUIREMENT	MET?	COMMENTS
FR 1 – Access to aggregated, statewide, and current immunization data.	○	Not available in the current system
FR 2- Ability to access aggregated data to perform analysis	○	Not available in the current system
FR 3 - Ability to export aggregated data to perform analysis	○	Not available in the current system
FR 4 - Continuous availability of aggregated data	○	Not available in the current system
FR 5 - Support Data Exchange	○	Not available in the current system
FR 6 - Data Security	●	Local registries provide data security
FR 7 - System Capacity	⊙	Local registries have capacity for local records

● = Meets requirement
⊙ = Partially meets requirement
○ = Does not meet requirement

4.1.3 Security, Privacy, and Confidentiality

CDPH, the independent Regional Registries, and authorized SIIS users meet local, state and federal security, privacy and confidentiality requirements, law including California Health and Safety Code Section 120440.

4.1.4 Personnel Requirements

The regional registries are managed and funded at the local level with some Federal and General Fund funding from CDPH. There are currently 5000 users and the current system will support 100 concurrent users.

4.2 Technical Environment

SIIS consists of nine multi-county regional immunization registries and two county registries. All registries but two use secure web-based applications, while the remainder use client-server architectures. The web-based registries rely on separate application and database servers, the former to enable user access through a browser and the actual database operating behind an additional firewall and other added security measures. Client-server registries install thin clients and remote access software in the providers' workstations, which then access the database server at the regional or county level. See Table 4-1 above.

4.2.3 State-Level Information Processing Policies

CDPH is currently not processing SIIS data but would do so, once access to aggregated data is available. Access to and processing of SIIS data would be in compliance with existing state and federal law and regulation including California Health and Safety Code Section 120440, the State Administrative Manual, and standard policies and procedures of OCIO and CDPH.

4.2.5 Legal and Public Policy Environment

Although there is no mandate for an integrated immunization system providing aggregated data to all users, implementation of this system addresses Goals 1 and 3 of CDPH's Strategic Plan, March 28, 2008, the 2004 California Performance Review Recommendation HHS-16 and the CDC's *Healthy People 2010* Objectives.

5.0 Proposed Solution

The CDPH proposes a business-based procurement of a commercial-off-the-shelf (COTS) software product and integration vendor, with the resulting system to be hosted at the Department of Technology Services (DTS). A business-based procurement, as opposed to defining a specific technical solution, will encourage the most competitive pool of offers possible, and will allow vendors to propose a variety of creative technical solutions. The CDPH will select the best value offer in terms of features, technology, cost, compliance with CDPH and DTS technical and security standards, and ability to most effectively accomplish the objectives and functional requirements identified in Section 3 of this FSR.

- Objective 1 - Aggregated, Statewide, and Current immunization data available to authorized users within California.
- Objective 2 - Aggregated, Statewide, and Current immunization data available to authorized parties nationwide.

Following the selection of the best-value offer, the CDPH will develop and submit a Special Project Report (SPR) to describe the selected technical solution and to report any changes in estimated project cost and schedule. The CDPH understands that the SPR must be approved by the OCIO prior to award of the contract.

The department reviewed each of the alternatives considered in this feasibility study and compared each alternative to the business objectives and functional requirements for an aggregated immunization information solution. Aggregated information is "formed by the conjunction or collection of particulars into a whole mass or sum; total; combined"[2]. The department developed three conceptual models that satisfy the functional objectives and solve the business problem.

Using the conceptual models as a foundation, technical research was completed to discover what was technically feasible. Three viable approaches meet the business objectives and functional requirements:

- Proposed solution: Business-based COTS/Integration Vendor procurement, resulting system hosted at the DTS.
- Alternative 1: ***CDPH Only:*** Use California Department of Public Health Staff to aggregate, support, and host statewide immunization data
- Alternative 2: ***Service Provider:*** Procure a service provider to aggregate, support, and host statewide immunization data.

Based on the preferences of the grantor, analysis of costs, the ability to meet requirements, development risk and a comparison of advantages and disadvantages of the alternatives, the department believes that business-based solution hosted by DTS will be the preferred solution to meet requirements while minimizing development risk. If the specifications of the grantor are modified, the department also considers aggregated data from a service provider to be an equally acceptable alternative.

[2] www.dictionary.com

The proposed solution along with the alternatives considered is presented in the following sections:

5.1 Proposed Solution Description

The CDPH proposes a business-based procurement of a commercial-off-the-shelf (COTS) software product and integration vendor, with the resulting system to be hosted at the Department of Technology Services (DTS). .

In the proposed solution, an aggregated state registry will be created in the State (DTS) environment using a commercial off-the-shelf (COTS) solution that provides the capability of collecting the immunization information from the 11 independent Regional / County environments. The aggregated data would be used 1) to provide a state-wide look-up of a person's immunization history, and 2) to provide state-wide data for trending and reporting. The proposed solution will support up to 12,000 users including up to 250 concurrent users.

At a high level, the following steps would be followed when searching for a person's immunization history.

1. An authorized user would search for the immunization history in their regional registry database.

2. If a match is found, the regional registry would return the person's immunization history to the provider's system for review.

3. If a match is not found or not current, the regional registry would initiate a real-time search of the state registry.

4. The state registry would return the immunization history to the regional registry.

5. The regional registry presents the immunization history to the provider's system for review.

At a high level, the following steps would be followed for modifying a child's immunization record.

1. If the person's record is not found in the regional or state registry, the provider would create a new record in their regional registry database. New immunization history is added to the regional registry.

2. A batch processing scenario would be used to update the state registry on a nightly or periodic basis.

3. Trend analysis and statistical reporting – The new state-wide aggregated immunization system will reside at DTS. The system will include data aggregation and reporting tools. CDPH will use the tools for trend analysis and statistical reporting.

The sections below describe typical components of expected vendor-proposed solutions. Using a business-based procurement approach, the actual technical solution will be determined by the selected best-value vendor offer.

5.1.1 Hardware

A typical solution will require four file servers hosted by DTS with a standard compliment of hardware support including uninterrupted power supply and periodic data backups. Table 5-1 identifies the servers required to support various functions.

TABLE 5-1
SERVER TYPE AND FUNCTION

SERVER TYPE	FUNCTION	QTY
Intel based, 2 processor Quad Core, 4GB memory, Tier II • Running Windows Enterprise Edition, Microsoft SQL database	State Registry 'aggregate'	1
Intel based, 2 processor Quad Core, 4GB memory, Tier II • Running Windows Enterprise Edition, Microsoft SQL database, • Analysis & Reporting product	Trend Analysis Reporting Server	1
Intel based, 2 processor Quad Core, 4GB memory, Tier II • Running Windows Enterprise Edition, Agent Runner	Agent Runner Server	1
Intel based, 2 processor Quad Core, 4GB memory, Tier II • Running Windows Enterprise Edition, Agent Load Balancer & Scheduler	Agent Monitor Load Balancing Scheduler Server	1

5.1.2 Software

Working in conjunction with DTS, CDPH will purchase the necessary software and services in support of the SIIS. Table 5-2 identifies the typical software needed to support the hosting environment.

TABLE 5-2
SOFTWARE TYPE AND FUNCTION

SERVER SOFTWARE TYPE	FUNCTION	QTY
Windows Enterprise Edition, Microsoft SQL database	State Registry 'aggregate'	1
Windows Enterprise Edition, Microsoft SQL database, Analysis & Reporting product	Trend Analysis Reporting Server	1
Windows Enterprise Edition, Agent Runner	Agent Runner Server	1
Enterprise Edition, Agent Load Balancer & Scheduler	Agent Monitor Load Balancing Scheduler Server	1

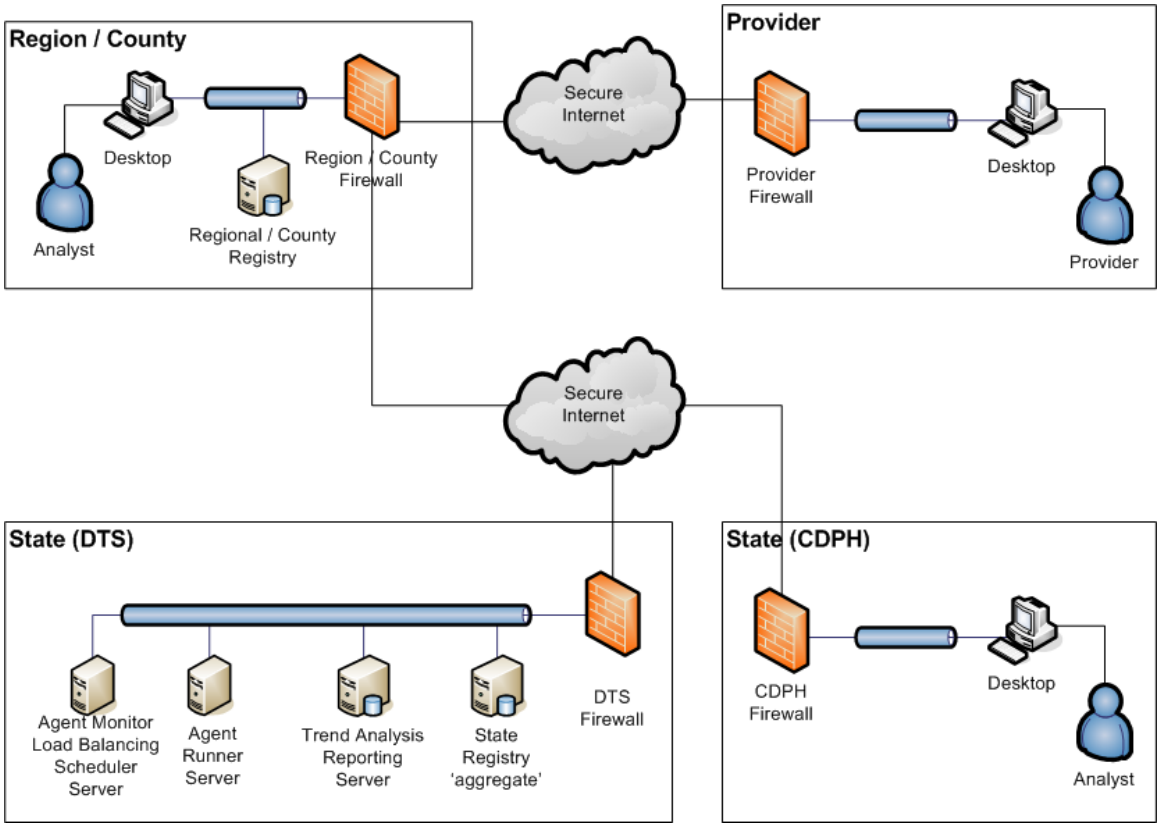
Initial software costs are estimated at $50,000.

5.1.3 Technical Platform

The proposed solution will use hardware and operating system software that complies with CDPH and DTS standards, which are widely supported in the marketplace.

The connectivity between environments is shown in Figure 5-1.

FIGURE 5-1
ENVIRONMENT CONNECTIVITY DIAGRAM



5.1.4 Development Approach

The Department will procure and assign both a contract Project Management consultant and an Independent Project Oversight consultant (IPOC). A systems integrator will utilize a standard Systems Development Life Cycle (SDLC) approach which will require requirements identification and validation, system design, build, test and implementation. Implementation will be managed using Project Management Institute (PMI) best practices.

5.1.5 Integration Issues

Regional Registries may require modifications or enhancements made to their systems to interface with the state registry. File transfer and transaction monitoring will be necessary to efficiently and securely send to and receive from the state registry. A standard communication protocol will be used by all registries.

The systems integrator will evaluate, communicate, and interface with Regional registries to establish real-time search and response as well as nightly batch updates to the SIIS.

5.1.6 Procurement Approach

The CDPH will conduct a business-based leveraged procurement using the California Information Technology (IT) Consultant Master Service Agreement (MSA) to select a COTS solution and system integration vendor. The CDPH will procure Project Management, Independent Project Oversight, and Independent Verification and Validation services using California Multiple Award Schedule procurements.

5.1.7 Technical Interfaces

The system integrator in conjunction with CDPH will design, build, and test all technical interfaces between the Regional Registries and the SIIS.

5.1.8 Testing Plan

The systems integrator, CDPH staff, the project manager, and the IV&V vendor will play a significant role in the testing for the SIIS master database, real-time updates, batch updates, and reporting. The selected technical solution will determine the software development life cycle (SDLC) approach, including unit testing, system testing, performance testing, and User acceptance testing.

Each component of the system offered by the systems integrator will be tested by CDPH staff before it is accepted. Simulation of actual scenarios will be carried out under various modes of Internet access to reflect the various access methods that may be employed in the field. CDPH will describe the necessary tests to be performed, the expected results, and will report the actual test results. Documentation for review and discussion will be based on completed tests. The tests will include a description of the function being tested, initial conditions required to be present, and the test scripts that will be used to do the test.

User function testing will begin on a test system. Function testing will be performed by state and Regional Registry staff, who will assume the various roles of providers, epidemiologists, public health officials, and Regional Registry Operators. Representatives from these various groups will be encouraged to participate in all life cycle decision points, especially in the testing and creation of function test scripts. CDPH will also review the scripts with the systems integrator, to avoid errors related to misunderstandings of how the system is expected to operate. Function test scripts and results will be shared with all stakeholders.

Once the user function test has been completed successfully, installation in the production environment and the official acceptance process will begin. CDPH personnel will give training to the Regional Registry staff volunteering to take part in the acceptance testing. Any issues identified during acceptance testing will be reported back to the systems integrator. The systems integrator will fix program defects, while other issues will be input to the Change Control process implemented for the system.

5.1.9 Resource Requirements

Upon execution of the project manager consultant and systems integrator contracts, CDPH, the project manager, and the systems integrator will work together to provide a consistent and realistic work plan for the milestones of the SIIS implementation.

Table 5-3 provides an overview of the Resource Requirements and Table 5-4 and overview of the work effort by task to complete SIIS implementation.

TABLE 5.3
RESOURCE REQUIREMENTS

STAFF	FUNCTION	PYS/AMTS
State Staff	Project Director	.7 PYs
Contract Staff	Software Customization	$424,800
	Technical Support (Redirection of existing program contract staff)	$664,032

TABLE 5.4
WORK EFFORT

TASK	RESOURCE OWNER	WORK EFFORT
Procurement • Project Manager • IPOC • IV&V • System Integrator • Hardware • Software	Department staff, Project manager, and consultants	233 days of duration and 1,552 hours of work
Plan and manage the Project	Project Manager and System Integrator	417 days of duration and 3,895 hours of effort
Build the database, real-time, batch, and analytics components	System Integrator	75 days of duration and 2,098 hours of effort.
Test the database, real-time, batch, and analytics components	System Integrator, Department Staff, Regional Registry staff	245 days of duration and 409 hours of effort.
Implement the database, real-time, batch, and analytics components	System Integrator, Department Staff, Regional Registry staff	132 days of duration and 1,935 hours of effort.
Close the Project	Department staff and the	30 days of duration and 334

TASK	RESOURCE OWNER	WORK EFFORT
	Project Manager	hours of work effort.

5.1.10 Training Plan

The CDPH will solicit subject matter experts within the Regional registries. The subject matter experts will be provided with Train-the-Trainer training. The systems integrator will document the training requirements, create the training plan and schedule and develop training materials. The training will be focused on use of the system, analytics, trending, and reporting.

All training material will be prepared by the systems integrator for CDPH review and approval. Potential sources for training include the face-to-face, distance learning, computer-based training and online help software for training.

5.1.11 Ongoing Maintenance

The CDPH Division of Communicable Disease Control will supply on-going application and database maintenance and perform operations to ensure the viability of SIIS.

In order to support the needs of the Regional Registries, providers and public health officials, access to the system will be required on a consistent daily basis, except for scheduled maintenance periods to be agreed upon by CDPH and the DTS.

Maintenance to the hardware and system software will be planned and conducted by the DTS. CDPH staff will approve the timing of the maintenance, and participate in testing the system to ensure that the change did not create any problems. Any required software maintenance will be applied to a test system first, so problems can be identified and resolved prior to installing the change in production.

5.1.12 Information Security

The SIIS will comply with the CDPH Information Security Policy contained in the Health Administrative Manual Section 6-1000, CDPH Security Requirements for Projects (SR01), CDPH Web-Based Application Architecture Standards, CDPH IT Hardware and Software Standards, and any other applicable CDPH and DTS technical and security standards.

SIIS activities are consistent with the federal Health Insurance Portability and Accountability Act (HIPAA) and are enabled by California Health and Safety Code Section 120440, which was enacted in 1995 and subsequently amended. California law permits but does not require:

- Health care providers and people receiving vaccines to participate in the registry.
- Data to be shared between local, regional or state jurisdictions in any combination.

All users must treat data in SIIS as confidential. Sharing of data in SIIS requires notification ("opt-out") but not signed consent of participants or their parents/guardians. The rate of declining to share data has been very low, on the order of 1% or less. Some parents who initially have declined to share data have reversed their decision when medical care has shifted to a different provider, after realizing the benefits of participation.

5.1.13 Confidentiality

CDPH, the independent Regional Registries, and authorized SIIS users meet local, state and federal security, privacy and confidentiality requirements, law including California Health and Safety Code Section 120440.

5.1.14 Impact on End Users

The end-user presentation, the screens utilized by regional registries, provides and public health officials are not expected to change. End users will be presented with more complete and more accurate immunization history information but end user should not see a change in the format of information displayed.

5.1.15 Impact on Existing System

The systems integrator will work with Regional Register staff to design, implement, and test the real-time and batch aspects of the SIIS solution. There is no impact on existing State systems.

5.1.16 Consistency with Overall Strategies

The Department of Public Health is a new entity and is in the process of establishing an Agency Information Management plan. The SIIS effort has been addressed and is included in the draft AIMS. Implementation of this system does address Goals 1 and 3 of CDPH's Strategic Plan, March 28, 2008, the 2004 California Performance Review Recommendation HHS-16 and the CDC's *Healthy People 2010* Objectives.

5.1.17 Impact on Current Infrastructure

The system integrator will establish the SIIS infrastructure. In order for CDPH to fully utilize analytic, trend, and reporting functionality, reporting software will be required for CDPH personal computers needing this functionality.

5.1.18 Impact on Data Center

The proposed solution requires system implementation at DTS and DTS support for hosting the selected solution.

5.1.19 Backup and Operational Recovery

The DTS will provide data backup and restore services. The CDPH Operational Recovery Plan will document SIIS catastrophic recovery processes.

5.1.20 Public Access

Authorized users will have real-time access to patient data via their SIIS interface. Department Staff and Regional Registry staff will have access to the SIIS aggregated data for analytic, trend and reporting.

5.1.21 Costs and Benefits

The estimated one-time cost of implementing the proposed solution is $**1,941,978**. The continuing costs are projected to be $**875,230**. The expenses are identified in Table 5.5 below.

TABLE 5.5
PROPOSED SOLUTION
ONE-TIME AND ONGOING EXPENSES

ONE-TIME COST	
Technical Support	$75,270
Software	$50,000
Software Configuration	$664,032
Project Management	$479,400
Independent Project Oversight Contractor	$155,400
IV&V Contract Services	$160,000
Other Contract Services	$160,236
Data Center Services	$57,570
Other	$82,500
TOTAL ONE-TIME COST	**$1,941,978**
CONTINUING COST	
Staff	$60,216
Software Maintenance/Licenses	$100,000
Contract Services	$566,400
Data Center Services	$148,641
TOTAL CONTINUING COST	**$875,320**
TOTAL PROJECT COSTS	**$2,817,209**

A more detailed explanation of costs and assumptions used is presented in Section 8.0.

5.1.22 Sources of Funding

The proposed solution will be wholly funded through an award from the California Children and Families Commission (CCFC-7007) of up to $3.6 Million for up to 3 years. There are no Fiscal Year restrictions on the funds once initiated. When the CCFC grant is fully expended, ongoing costs will be funded through federal special project funds from the Immunization Grant (Project# 95159S/95159L; Federal Catalog Number 93.268). All

funding is consistent with the SIIS Business Plan dated August 2007, approved by the Centers for Disease Control (CDC),

The funding needed by fiscal year is presented in Table 5.6.

TABLE 5.6
REQUIRED FUNDING BY FISCAL YEAR

	FISCAL YEAR		
	2009/10	2010/11	TOTAL
One-Time	$836,315	$1,105,664	$1,941,978
Continuing	$0	$218,808	$875,230
TOTALS	**$836,315**	**$1,640,161**	**$2,817,209**

5.2 Rationale for Selection

A business-based procurement will encourage the most competitive pool of offers possible, and will allow vendors to propose a variety of creative technical solutions. Hosting the system at the DTS complies with the state strategic direction of consolidated information technology services. The solution also meets the grantor's current preference for a data system owned and operated by the department. An assessment of the functional requirements is shown below:

TABLE 5.7
PROPOSED SOLUTION ASSESSMENT

FUNCTIONAL REQUIREMENTS	MET?	COMMENTS
FR 1 – Access to aggregated, statewide, and current immunization data.	●	The selected solution will establish Statewide aggregated immunization data that is up to date.
FR 2- Ability to access data to perform analysis	●	Data analytics, trend, and reporting tools used against the aggregated immunization data.
FR 3 - Ability to export data to perform analysis	●	The solution will provide export services.
FR 4 - Continuous availability of data	●	Immunization data will be no more than 24 hours old based on the nightly batch update. Real-time searches will be available during standard business hours.
FR 5 - Support Data Exchange	●	The solution will support data exchange.
FR 6 - Data Security	●	Compliant with State and CDPH standards for data security.
FR 7 - System Capacity	●	DTS will be required to provide capacity that exceeds current program participation and have the capacity for growth.

● = Meets requirement
⊙ = Partially meets requirement
○ = Does not meet requirement

An assessment of the advantages and disadvantages is shown below:

TABLE 5.8
PROPOSED SOLUTION ADVANTAGES / DISADVANTAGES

ADVANTAGES OF PROPOSED SOLUTION	DISADVANTAGES OF PROPOSED SOLUTION
Provides immunization providers with a complete view of a patient's immunization history.	Anticipates participation from Regional Registry operators who may choose not to participate.
Statewide aggregated immunization information is available for analysis, trend analysis, and reporting.	Regional registry data may require conversion and cleansing
Costs efficiencies can be evaluated and implemented	Technical risk due to knowledge transfer required.
Proposed solution meets the First 5 requirement for funding.	The Department cannot manage costs or push for efficiencies related to hosting services. The Department cannot control any increase in the cost of hosting services.

5.2.1 Assumptions Used When Choosing Solution

Scope – The scope of the proposed solution addresses the functional requirements in solving the two identified business problems; 1) over and under immunization of patients and 2) aggregated data reporting. While the systems integrator will be held accountable for management of changes required to Regional Registries, the Regional Registry Operators are responsible for the Regional Registry and may be required to make changes to their systems to implement SIIS.

Schedule – Approval of this Feasibility Study Report and a required Budget Change Proposal will be submitted. Approval of both the FSR and BCP allows the project to start procurement activities in the 2009/2010 fiscal year.

Budget – The budget is based on the documentation in the Economic Analysis Worksheets.

- The new SIIS will be queried every time an immunization provider looks up a patient's record.
- The national goal of combining state data presumes that the data is entered, stored, and reporting in a manner that can be combined and reported.
- The Department assumes that searches must have sub-second response.
- The Department assumes that the solution must support an initial capacity of 500GB based on 50kB per patient x 10,000,000 patients = 500,000,000kB = 500GB
- The Department assumes that the solution must support an average annual growth rate of 25GB based on 50kB per patient x 500,000 annual patients = 25,000,000 = 25GB.

5.2.2 Constraints on Choosing a Solution

The following constraints are recognized relative to the selection of the proposed solution.

- According to SAM – Chapter 4900 'The Health and Human Services Agency Data Center (HHSDC) shall serve all agencies within the Health and Human Services Agency.' Also, 'Agencies proposing to process information at a single-agency, dedicated-use data processing center must obtain approval from Finance.'

- The grantor's (CCFC- First 5) preference is for a data system owned and operated by the State. . If the specifications of the grantor are modified, the department also considers aggregated data from a service provider to be an equally acceptable alternative.

5.3 Other Alternatives Considered

The Department has identified two other alternative solutions to the proposed solution.

- **Alternative 1 – CDPH Only:** Use California Department of Public Health staff to aggregate, support, and host statewide immunization data
- **Alternative 2 – Service Provider:** Use a service provider to aggregate, support, and host statewide immunization data

A more detailed understanding of the alternatives is found in the following sections.

5.3.1 Alternative 1 – CDPH Only

Alternative 1 – *CDPH Only:* Use CDPH staff to aggregate, support, and host statewide immunization data

This alternative would provide all the services of the Service Provider in the proposed solution. Department staff would be responsible for:

- Planning and managing the Project
- Procuring Services
- Establishing and maintaining hosting services for the SIIS hardware and software
- Building the database, real-time, batch, and analytics components
- Testing the database, real-time, batch, and analytics components
- Implementing the database, real-time, batch, and analytics components
- Closing the Project

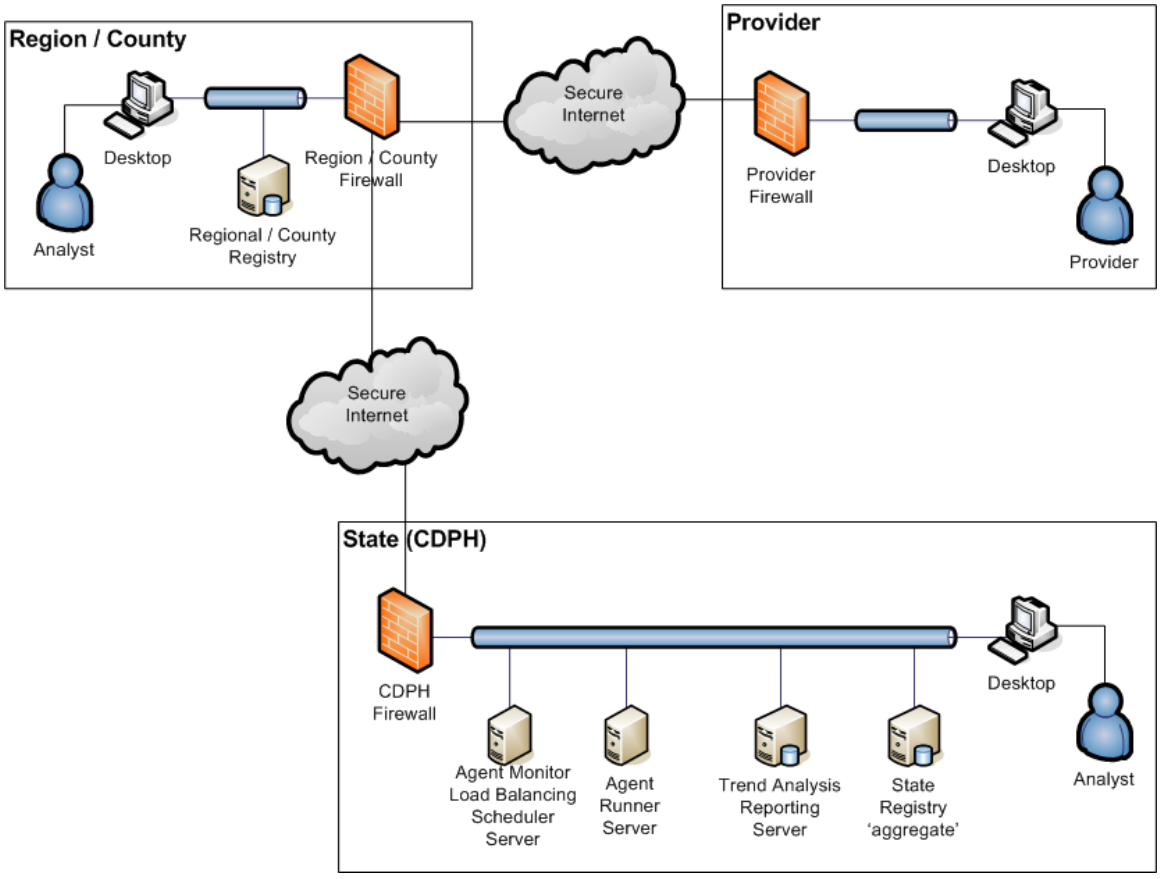
- Performing maintenance and operations for the SIIS solution.

5.3.1.1 Technical Platform

The alternative would use hardware and operating system software that complies with CDPH standards, which are widely supported in the marketplace.

The connectivity between environments is shown in Figure 5-2.

FIGURE 5-2
ENVIRONMENT CONNECTIVITY DIAGRAM



5.3.1.2 Costs and Benefits

The estimated one-time cost of implementing this alternative is **$2,118,705.** The continuing costs are projected to be **$988,408**.

The expenses are identified in Table 5.9 below.

TABLE 5.9
ALTERNATE 1
ONE-TIME AND ONGOING EXPENSES

ONE-TIME COST	
Technical Support	$271,614
Hardware	$95,523
Software	$50,000
Software Configuration	$664,032
Project Management	$479,400
Independent Project Oversight Contractor	$155,400
IV&V Contract Services	$160,000
Other Contract Services	$160,236
Other	$82,500
TOTAL ONE-TIME COST	**$2,118,705**
CONTINUING COST	
Staff	$322,008
Software Maintenance/Licenses	$100,000
Contract Services	$566,400
TOTAL CONTINUING COST	**$988,408**

A more detailed explanation of costs and assumptions used is presented in Section 8.0.

5.3.1.3 Analysis of Functional Requirements

An assessment of the functional requirements is shown in Table 5-10 below:

TABLE 5.10
ALTERNATIVE ASSESSMENT

FUNCTIONAL REQUIREMENTS	MET?	COMMENTS
FR 1 – Access to aggregated, statewide, and current immunization data.	●	The proposed solution establishes a Statewide aggregated immunization requires that are up to date.
FR 2- Ability to access data to perform analysis	●	Data analytics, trend, and reporting tools used against the aggregated immunization data.
FR 3 - Ability to export data to perform analysis	⊙	The Department will be required to provide export services. This is a new service area for the Department
FR 4 - Continuous availability of data	●	Immunization data will be no more than 24 hours old based on the nightly batch update. Real-time searches will be available during standard business hours.
FR 5 - Support Data Exchange	⊙	The Department will support data exchange. This is a new service area for the Department
FR 6 - Data Security	●	Compliant with State standards for data security.
FR 7 - System Capacity	●	The Department will provide capacity that exceeds current program participation and have the capacity for growth.

● = Meets requirement
⊙ = Partially meets requirement
○ = Does not meet requirement

5.3.1.4 Advantages and Disadvantages

An assessment of the advantages and disadvantages is shown below:

TABLE 5.11
ALTERNATIVE ADVANTAGES / DISADVANTAGES

ADVANTAGES OF ALTERNATIVE 1	DISADVANTAGES OF ALTERNATIVE 1
Provides immunization providers with a complete view of a patient's immunization history.	Requires participation from Regional Registry operators who may choose not to participate.
Statewide aggregated immunization information is available for analysis, trend analysis, and reporting.	Regional registry data may not be compatible and may not allow analytical and trend analysis.
Costs efficiencies can be evaluated and implemented	Higher technical risk due to knowledge transfer required.

5.3.2 Alternative 2 – Service Provider

Alternative 2 - Service Provider: Use a service provider to aggregate, support, and host statewide immunization data

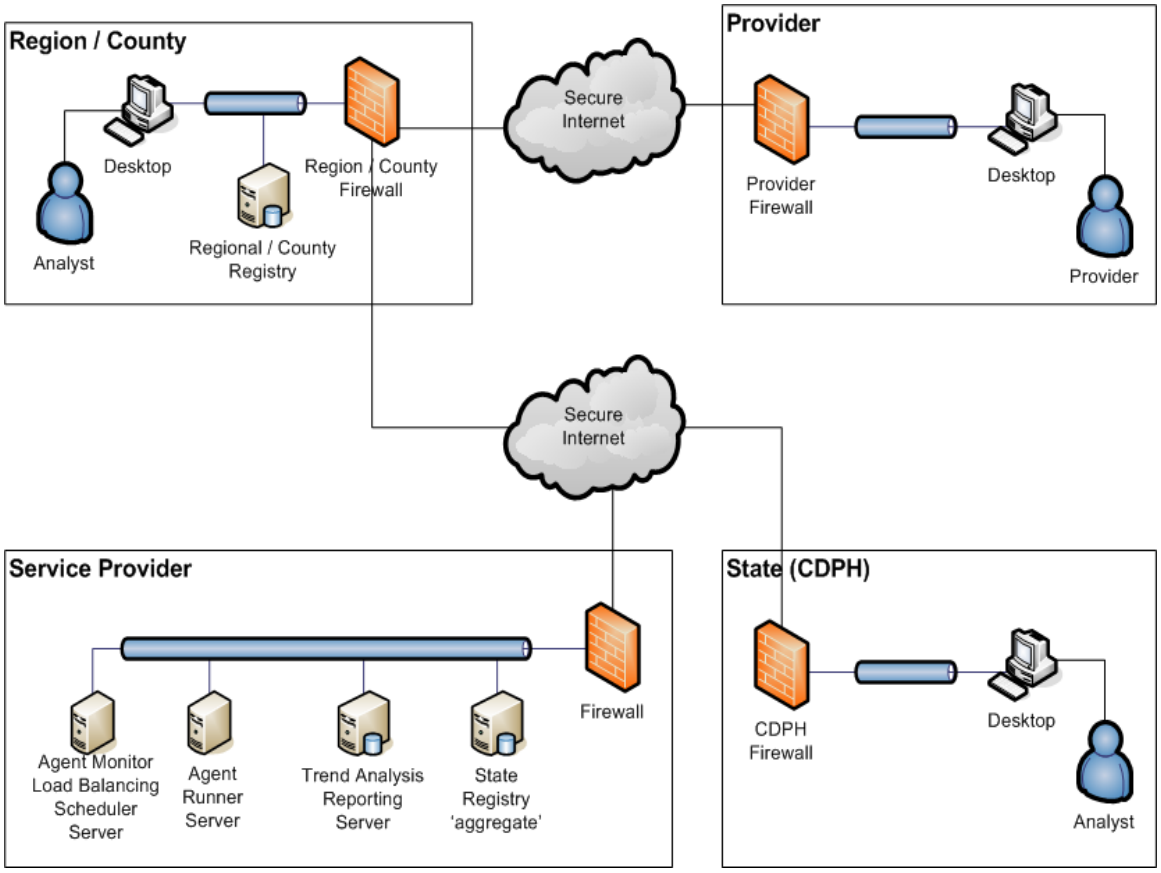
In this alternative, a service provider would implement and host a statewide aggregated solution called the Statewide Immunization Information System (SIIS). The service provider would be free to choose the mix of hardware, software, and services to meet the business needs. The service provider provides real-time statewide look-up of a person's immunization history fed back to the regional registry, and 2) to statewide aggregated data for trending and reporting. These two services are detailed below:

5.3.2.1 Technical Platform

The alternative would use hardware and operating system software that complies with CDPH standards, which are widely supported in the marketplace.

The connectivity between environments is shown in Figure 5-3.

FIGURE 5-3
ENVIRONMENT CONNECTIVITY DIAGRAM



5.3.2.2 Costs and Benefits

The estimated one-time cost of implementing the alternative is **$1,897,968**. The continuing costs are projected to be **$1,051,294.**

The expenses are identified in Table 5.12 below.

TABLE 5.12
ALTERNATE 2
ONE-TIME AND ONGOING EXPENSES

ONE-TIME COST	
Technical Support	$75,270
Software	$70,000
Software Configuration	$664,032
Project Management	$479,400

Independent Project Oversight Contractor	$155,400
IV&V Services	$160,000
Other Contract Services	$160,236
Other	$133,630
TOTAL ONE-TIME COST	**$1,897,968**
CONTINUING COST	
Staff	$15,054
Software Maintenance/Licenses	$140,000
Contract Services	$896,240
TOTAL CONTINUING COST	**$1,051,294**

A more detailed explanation of costs and assumptions used is presented in Section 8.0.

5.3.2.3 Analysis of Functional Requirements

An assessment of the functional requirements is shown below:

TABLE 5.13
ALTERNATIVE ASSESSMENT

FUNCTIONAL REQUIREMENTS	MET?	COMMENTS
FR 1 – Access to aggregated, statewide, and current immunization data.	●	The proposed solution establishes a Statewide aggregated immunization requires that are up to date.
FR 2- Ability to access data to perform analysis	●	Data analytics, trend, and reporting tools used against the aggregated immunization data.
FR 3 - Ability to export data to perform analysis	●	The Service Provider will be required to provide export services as part of the scope of work.
FR 4 - Continuous availability of data	●	Immunization data will be no more than 24 hours old based on the nightly batch update. Real-time searches will be available during standard business hours.
FR 5 - Support Data Exchange	●	The Service Provider will be required to support data exchange as a part of the scope of work.
FR 6 - Data Security	●	Compliant with State standards for data security.
FR 7 - System Capacity	●	The Service Provider will be required to provide capacity that exceeds current program participation and have the capacity for growth.

● = Meets requirement
⊙ = Partially meets requirement
○ = Does not meet requirement

5.3.1.4 Advantages and Disadvantages

An assessment of the advantages and disadvantages is shown in Table 5-14 below:

TABLE 5.14

ALTERNATIVE ADVANTAGES / DISADVANTAGES

ADVANTAGES OF ALTERNATIVE 2	DISADVANTAGES OF ALTERNATIVE 2
Provides immunization providers with a complete view of a patient's immunization history.	Grantor currently prefers system owned and operated by Department
Statewide aggregated immunization information is available for analysis, trend analysis, and reporting.	Requires participation from Regional Registry operators who may choose not to participate.
Costs efficiencies can be evaluated and implemented	
If specified, services could be transferred to Department for ownership and maintenance	The Department has limited management of costs or push for efficiencies related to hosting services. The Department cannot control any increase in the cost of hosting services.

5.4 Evaluation of Alternatives

A summary assessment of each of the alternatives is shown below and includes the underlying criteria in each major category (for example, benefits, cost, time and risk) and how each alternative is ranked in each category.

TABLE 5.15
EVALUATION OF ALTERNATIVES

CATEGORY	PROPOSED SOLUTION	ALT 1	ALT 2
Benefits - Effectiveness - Efficiency - Management Oversight	**High** - Might not be flexible enough to respond to statutory, regulatory, or agency changes	**Moderate** - Might not be flexible enough to respond to statutory, regulatory, or agency changes	**High** - Increased flexibility to respond to statutory, regulatory, or agency changes
Cost - Acquisition - Implementation - Ongoing operation	**High** - Higher implementation cost	**Moderate** - Lower implementation cost	**High** - Higher implementation cost
Time - Acquire systems - Implement - Test - Stabilize	**High** - Longest time to acquire and implement - Requires greatest staff resources to support	**High** - Longest time to acquire and implement - Requires greatest staff resources to support	**Low** - Shortest time to acquire and implement
Risks - Functional - Technical - Implementation	**Moderate** - Higher technical risk due to knowledge transfer required	**Moderate** - Higher technical risk due to knowledge transfer required	**Low** - Lower technical risk due to experience of service provider

6.0 Project Management Plan

CDPH Immunization Branch is committed to a structured, methodical approach to project management, and recognizes that this is required to ensure a successful outcome for this project. The Project Management Plan (PMP) outlined in this section will help ensure a successful implementation, and is compliant with the State's Information Technology Project Management Methodology, managed by the Office of the State Chief Information Office/California Technology Evaluation and Consulting (OCIO/CTEC). The OCIO website is http://cio.ca.gov/ITpolicy/.

After the project has been approved and the contract has been awarded, the Project Manager Consultant (PMC) will develop a preliminary project management plan for review and approval by the Project Planning and Management Branch (PPMB) Project Management Office (PMO) Project Director (PD). The plan will describe the project schedule and the methods and approaches to be taken for project management tasks, including change management, quality control, human resources, communications and risk management.

6.1 Project Manager Qualifications

Exacting and professional project management techniques and policies are necessary to complete the SIIS project. PPMB-PMO and Immunization Branch will obtain the services of a well-qualified PMC who will be responsible for managing the schedule, assessing deliverables, tracking issues, managing risks and confirming appropriate Immunization Branch staff members are involved with the project. To assure project success, the PMC will be required to have proven experience planning and managing projects involving the development and implementation of projects of equivalent scope and complexity.

Desired Minimum Qualifications for the PMC:

1. Five (5) years full-time experience using structured project management techniques and practices to manage or oversee major system design, development, and implementation (DD&I) projects of a similar size, scope, and complexity, including experience in managing an independent DD&I vendor responsible for a solution implementation similar in size, scope, and complexity to this effort
2. Two (2) years experience managing successful State of California IT projects from planning through implementation and successful acceptance as evidenced by user acceptance testing (UAT), including data conversion activities involving integration from diverse systems
3. Two (2) years experience working with cultural change impacts and related business process change activities as a result of a new system implementation. Demonstrated ability to coordinate vendor and State project team members, as evidenced by project references showing experience in managing a project which required the ability to coordinate and motivate the work of a variety of individuals, groups, and organizations both internal and external to the client
4. Demonstrated ability to coordinate vendor and Strategic team members, as evidenced by project references showing experience in managing a project, which

required the ability to coordinate and motivate the work of a variety of individuals, groups, and organizations both internal and external to client.

5. Two (2) years experience leading project risk management activities including identification of risks and related mitigation and contingency activities, and reporting of risks to internal and external oversight stakeholders, and experience in performing conflict resolution with stakeholders, vendors and staff
6. Two (2) years work experience in developing IT project management plans, the use of project scheduling tools and IT application development strategies and methods

6.2 Project Management Methodology

The PMC will receive guidance on the CDPH Project Management Methodology from and report to the CDPH PPMB-PMO PD assigned to the project.

The CDPH Project Management Methodology adheres to the following guidelines:

1. California State Information Management Manual (SIMM), Section 200
2. The project management methodology includes the recommended project management and risk management practices from the State's IT Project Oversight Framework
3. The Project Management Body of Knowledge (PMBOK), third edition, from the Project Management Institute

The PMBOK provides an approach to successfully manage the challenges of IT systems implementation. These management challenges arise from such factors as the complexity of the core business, specific customer needs, technology alternatives, and scarce resources. PMBOK project management processes include project initiation, planning, execution, control, and closeout. Within each process, the project work plan, risk management plan, communication plan, and contracts must be carefully monitored to mitigate changes to project scope, budget, and resource requirements. Adhering to a sound project management methodology at each stage of the project—from planning to evaluation—ensures that the project will achieve desired business outcomes, meet end-user expectations, and conclude on schedule and within budget.

The specific project management activities will include:

- Project planning
- Execution and management of the project
- Change control
- Resource allocation
- Project reporting of progress made with project phases, milestones and scheduled tasks
- Product review and approval, and formulating product acceptance criteria
- Project evaluation and other closeout activities

The PMC will develop project management deliverables, including the Project Charter and the Project Management Plan (PMP), and will provide written status reports regularly to the PPMB PMO. The PMC will, at a minimum, implement the required project management practices specified in SIMM 45 for reportable projects and will be responsible for the following tasks:

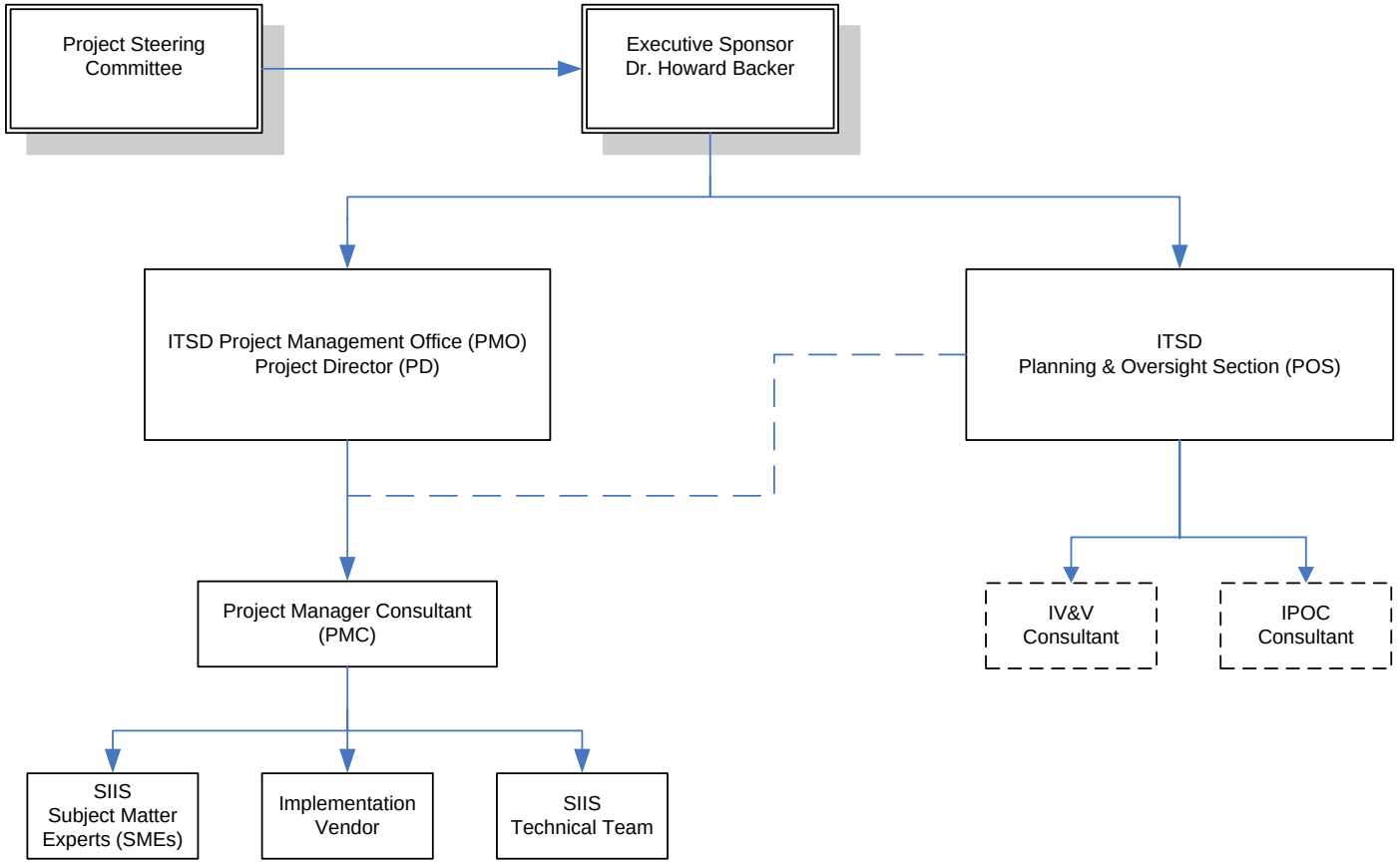
- Developing and maintaining the project charter to be reviewed by the PD and approved by the Project Sponsor. The Charter defines project goals and objectives, roles and responsibilities, scope, high-level milestones and deliverables and gives the PMC the authority to execute the project.
- Developing and maintaining a detailed PMP, to be reviewed and approved by the PD
- Developing and maintaining a detailed project schedule, for review by the PD and to be approved by the Steering Committee. The project schedule defines the phases, activities, timeframe, resources, dependencies, milestones, and deliverables, and monitor planned versus actual performance
- Maintaining and managing the DOF approved project budget
- Performing resource, quality, and configuration planning and management
- Utilizing a predefined issue management, risk management and change management process
- Developing bi-weekly project status reports
- Identifying and documenting successful system implementation criteria
- Utilizing a predefined structured approach to review and seek Program approval of project deliverables
- Conducting ongoing performance reviews and recommends corrective actions to the PD as needed
- Develop monthly project management reports to be reviewed and approved by the PD

Additional project management activities are described in Section 6.5.4, Roles and Responsibilities.

6.3 Project Organization

This section describes the Project Team and Oversight Organization
the figure below represents the SIIS project hierarchy. A description of the roles and responsibilities of the project team is further described in 6.5.4 *Project Team Roles and Responsibilities.*

FIGURE 6-1:
SIIS PROJECT TEAM



6.4 Project Priorities

All projects have three components that must be managed:

- Schedule
- Scope
- Resources

Each of these is interrelated; a change in any one factor will almost certainly impact the others. Prior to beginning the project, it is important to determine the relative importance and flexibility of each. The terminology used is defined as:

- **Improved:** The component is most flexible, and will probably change if needed
- **Constrained:** The component is least flexible, and is least likely to change
- **Accepted:** The component is somewhat flexible, and may change somewhat if needed

The table below represents the trade-off matrix for the Project schedule, scope, and resources.

TABLE 6-1:
SUMMARY OF PROJECT PRIORITIES

SCHEDULE	SCOPE	RESOURCES
Accepted	Improved	Constrained

6.5 Project Plan

Project planning defines the project goals and objectives, the activities and resources that will be required to accomplish them, and the means used to perform them. The project plan defines each major task, estimates the time and resources required to accomplish it, and provides a framework for management review and control. Project planning activities include defining the following:

- Project schedule
- Scope
- Assumptions
- Project phasing
- Project team roles and responsibilities

6.5.1 Scope Management

Scope management is a means to ensure the project design is followed and a formal process is undertaken when changes are necessary. The business requirements described in this document provide the basic scope of the project. The Scope

Management Plan in the PMP defines the processes and procedures to manage the scope of the project. Changes will be undertaken using a structured change control process. Scope management processes will include:

- Verify and confirm the business and functional requirements of the project at each successive project phase.
- Analyzing changes to the project scope and managing such change through the change control process
- Managing vendor contracts to the vendor contract specifications
- Continuously evaluating project scope against time, cost, functionality and requirements

The scope of this project will consist of the activities required to address the functional requirements listed in Section 3.4., Business Functional Requirements, of this document, including:

- Procuring vendor services for:
  - Project Management
  - IV&V
  - IPO
  - DD&I Services for solution implementation
- Performing detailed business requirements analysis
- Performing data migration from the current system and databases, as necessary
- Performing unit and system acceptance testing
- Providing system and user documentation
- Performing training and knowledge transfer to users and maintenance and support staff
- Providing one year of maintenance and operation support as needed

6.5.2 Project Assumptions

The major assumptions for this project include:

- Immunization Branch will ensure that funding is available throughout the life of the project.
- Negotiations with vendors will result in a budget similar to the estimates provided in this FSR.
- Business requirements will not change substantially during project implementation.
- Issues will be resolved and risks mitigated on a timely basis.
- Higher priority issues will not impact the schedule or resources needed.

- Executive sponsorship will continue through to project completion.
- Information Technology Services Division (ITSD) will provide services as needed to ensure adequate technical environments for the implementation of the new system.
- SIIS stakeholders, including SIIS program and technical staff will participate in requirements definition, user acceptance testing, training and implementation of the project solution.
- ITSD staff will participate in the technical aspects of project requirements definition, user acceptance testing, and implementation.

6.5.3 Project Phasing

The project will be implemented through a phased approach. The major project steps include project planning and procurement, followed by requirements analysis, design, development, systems testing and implementation, then Maintenance and Operations (M&O).

6.5.3.1 Project Planning and Procurement

The project will utilize a Request for Offer (RFO) process, soliciting firms on the California IT Multiple Award Schedule (CMAS) or IT Multiple Service Award (MSA) contract lists to acquire as needed project management, and project oversight consultants. The project will utilize a competitive procurement process for the implementation vendor. An Information Technology Procurement Plan (ITPP) will be developed by the PMC which will elaborate the procurement approach in detail.

6.5.3.2 Solution Implementation

The project implementation vendor will perform a thorough analysis of the information and functional requirements needed to support this project. This will include detailing the final set of functional business and systems requirements for the project solution. Prior to production implementation, the project implementation vendor will implement testing appropriate for the solution (e.g., conduct unit, system, load, and stress testing) to ensure it complies with the project functional and technical requirements. Upon request by SIIS, the project implementation vendor will provide training and knowledge transfer to end users and other parties specified by SIIS.

6.5.3.3 Maintenance and Operations

Upon acceptance of the solution by the Immunization Branch the project implementation vendor will be required to provide a warranty period that includes one quarter of maintenance and operations (M&O) support for the solution.

6.5.4 Project Communications

The Immunization Branch recognizes that open, project communication between stakeholders is critical to the success of the project and plans to incorporate best practices for developing the communication management strategy for the project. This

will include the processes required to ensure timely and appropriate generation, collection, dissemination, storage, and ultimate disposition of project information. The PMC will ensure compliance in implementing, at a minimum, project communication activities and strategies in alignment with the State's IT Project Oversight Framework.

The PMC will use planned and typical methods of exchanging information both within the project and to stakeholders and interested parties outside of the project and will ensure that effective communications occur among control agencies, project team members and internal and external stakeholders. The major element of the project communication strategy is defined as follows:

- Communication Planning
- Issue and Action Item Tracking
- Issue Resolution
- Escalation Process
- Problem/Defect Tracking
- Status Reporting
- Vendor Deliverable Reviews

The PMC will communicate with the project stakeholders continuously throughout the project to help ensure the ultimate success of the project.

6.5.5 Project Team Roles and Responsibilities

Personnel resources from the Immunization Branch and ITSB will be involved in various activities of the project phases of business analysis, technical requirements analysis, acceptance testing and training.

To ensure an understanding of the various roles and responsibilities of the primary project participants, they have been outlined in Table 6-2 below.

TABLE 6-2:
PROJECT IMPLEMENTATION ROLES AND RESPONSIBILITIES

ROLE	RESPONSIBILITIES	REPRESENTATIVE
Project Steering Committee – Branch Chiefs	♦ Assists with prioritizing and resolving business priorities related to the SIIS project that impacts the Program ♦ Provides Program-wide leadership and support for the project ♦ Participates as a member of the Change Control Committee ♦ Publicly supports the project by communicating the project's goals and objectives and working with program headquarters and district offices to reduce barriers and mitigating risk ♦ Allocates Program support staff	Chief, Immunization Branch

ROLE	RESPONSIBILITIES	REPRESENTATIVE
	(headquarters and district offices) ♦ Provides issue resolution across the Program for issues that impact the Program ♦ Provides advice regarding consistency with Program-wide strategies, direction, and policies	
Project Sponsor	♦ Chairs the project Steering Committee ♦ Communicates with Stakeholders ♦ Owns the project and is responsible for overall project success ♦ Performs key business decision-making for the project and provides strategic guidance. ♦ Confirms project goals and scope. ♦ Provides SIIS project resources and ensure resource availability for the project. ♦ Participates in the escalated change management process. ♦ Participates in escalated risk and issue management process. ♦ Provides executive sponsorship oversight & guidance ♦ Approves significant changes to scope, cost, and schedule ♦ Accepts final project	Chief, Immunization Branch
Project Director	♦ Applies CDPH Project Management Methodology and Departmental standards applicable to the project and the PMC. ♦ Responsible for directing the project. ♦ Provides day to day project decision making ♦ Presents monthly PMR. ♦ Serves as liaison to the OCIO, DOF, and DGS ♦ Reviews project process and deliverable quality along with PMC. ♦ Interviews and hires the PMB ♦ Reviews and approves modifications made to the project plan as appropriate ♦ Reviews project status with the PMC at a weekly basis. ♦ Reviews project status at each significant milestone. Communicates status to external stakeholders. ♦ Resolves or escalates issues which could not be solved by the project team. ♦ Reviews and approves deliverables from	Planning & Project Management Branch (PPMB) / Project Management Office (PMO)

ROLE	RESPONSIBILITIES	REPRESENTATIVE
	the PMC. ♦ Reviews and approves invoices for the PMC. ♦ Reviews and recommends approval of the Project Charter	
Project Oversight	♦ Assists in procuring IPO services. ♦ Manages the IPO contracts. ♦ Oversees project reporting requirements	PPMB/Planning and Oversight Section (POS)
Independent Project Oversight Consultant (IPOC)	♦ Serves as an independent expert to oversee and assist in all activities critical to the project's success. ♦ Evaluates the project to ensure that it is following an approved, well-structured approach. ♦ Reviews deliverables to ensure that they are aligned with defined standards, needs, and contractual requirements. ♦ Prepares periodic project assessments and develop monthly OCIO progress reports in coordination with the project solution project management. ♦ Oversees the project in accordance with the OCIO IT Project Oversight Framework by performing the following tasks: ♦ Produces products (e.g., Project Risk Lists, Project Risk Management Forms) required by the Information Technology Project Oversight Framework for the CDPH and the OCIO. ♦ Reviews and recommends improvements to the project plan and associated documents and processes. ♦ Serves as liaison with OCIO and DGS for project oversight purposes.	IPOC Vendor (to be procured)
Project Manager	♦ Drafts the project schedule to be reviewed by the PD and approved by the Steering Committee. ♦ Drafts the monthly Project Management Report (PMR) to be reviewed and approved by the PD. ♦ Assists the Project Director in managing the project, including overseeing overall project scope, schedule, and cost. ♦ Drafts the project management plan components, including plans for quality assurance, communication, risk management, testing, implementation and training as well as a detailed work plan for Project Director approval. ♦ Attends and provide development status at monthly Project Steering Committee	Project Management Consultant (PMC) Vendor (to be procured)

ROLE	RESPONSIBILITIES	REPRESENTATIVE
	meetings ♦ Maintains Roles and Responsibilities Matrix for staff project resources. ♦ Coordinates project team meetings. ♦ Reviews and assesses changes to scope, schedule, and cost of the project. ♦ Modifies project management plans as appropriate to be reviewed and approved by the PD. ♦ Provides periodic written evaluations of the project in weekly status reports that include business and technical assessments of project status, direction, risks, issues, deliverables, and budgets. ♦ Identifies, tracks and communicates project issues, risks and change management requirements, elevating risks and recommended mitigation measures to the appropriate organization level. ♦ Assists in identifying business needs. ♦ Participates in the change management process. ♦ Resolves project issues at the lowest level, escalating to the PD as necessary. ♦ Tracks the vendor contracts and invoices. Coordinates with vendor staff to oversee and track project work efforts. Maintains information on contracted budgets and actual costs. ♦ Liaises between the project implementation vendor staff, SIIS, Immunization Branch and ITSB participants to communicate project status to stakeholders. ♦ Regularly communicates with the project implementation vendor to address project tasks, including project management, system requirements gathering, data interface design, data migration, solution implementation, testing, training and documentation. Captures lessons learned	
Internal IT Technical Support	♦ Participates in the procurement process to secure an implementation vendor and to ensure that the selected vendor and its approach meets project technical standards. ♦ Supports the PMC in managing tasks and resources in the project work plan related to technical requirements and ITSB staff involvement.	ITSB

ROLE	RESPONSIBILITIES	REPRESENTATIVE
	♦ Assists the PMC in providing assessment and evaluation of the project from a technical perspective, to identify and mitigate program risks. ♦ Assists the PMC in tracking technical project risks, issues and change management requirements. ♦ Assists the PMC in reviewing technical deliverables from the project implementation vendor. ♦ Assists in developing test cases for user acceptance testing. ♦ Works with subject matter experts, to ensure appropriate and complete system and acceptance testing. ♦ Assist the PMC in defining project success criteria ♦ Updates the Operational Recovery Plan (ORP) ♦ Participates in training, knowledge transfers, and transition	
Project Subject Matter Experts (SMEs)	♦ Participate in the project implementation vendor procurement process to help ensure that the selected vendor and its proposed approach best meet the needs of program stakeholders. ♦ Ensure that relevant program staff are identified and involved in the project solution functional requirements definition, acceptance testing and training. ♦ Help the PMC to identify and track program project issues and risks, as well as change management requirements. ♦ Provide assessment and evaluation of the project from a business perspective to mitigate program risks. ♦ Assist in the identification of information requirements impacted by the project solution, and develop new business rules to ensure data quality. ♦ Assist the project implementation vendor to define and identify data elements and data inter-relationships. ♦ Assist in the identification of business functional requirements and process flows impacted by the project solution implementation. ♦ Assist the project implementation vendor in defining functional and technical	Subject Matter Experts from the Immunization Branch and other stakeholders

ROLE	RESPONSIBILITIES	REPRESENTATIVE
	requirements. ♦ Assists in establishing process targets and key performance indicators for the project solution user acceptance criteria. ♦ Perform user acceptance testing, including development test process flow cases, and testing of the solution. ♦ Assist in developing training materials by identifying specific training needs. ♦ Defines success criteria for system implementation ♦ Participates in lessons learned sessions. ♦ Review vendor deliverables to ensure program needs are met. ♦ Monitor process metrics and ongoing user acceptance issues. ♦ Recommend functional improvements involving process and/or data changes. ♦ Reviews and sign-off to accept DD&I deliverables.	
Project Implementation Consultants	♦ Develop a detailed work breakdown structure for project tasks of the projects requirements to be reviewed and approved by Program, the PMC, and the PD. ♦ Validate and implement the project solution according to the documented functional and technical requirements in the RFP. ♦ Coordinate task scheduling with the project PMC. ♦ Identify current process functions and sub-functions that will be in the scope of the project solution. ♦ Work with Immunization Branch to establish process targets and key performance indicators for use as solution acceptance criteria. ♦ Consult with ITSB on system technology architecture. ♦ Develop the technical project tasks and resource requirements for project plans. ♦ Maintains an integrated technical development project schedule managed by the PMC ♦ Perform walkthroughs of prototypes with stakeholders. ♦ Perform and assist in functional team training, unit, system testing and UAT testing until system is accepted by SIIS and Immunization Branch. ♦ Provides weekly updates on project	Project Implementation Vendor (to be procured)

ROLE	RESPONSIBILITIES	REPRESENTATIVE
	status. ♦ Ensure CDPH and ISO technical standards and requirements are followed. ♦ Manage implementation vendor team resources and assignments, and adhere to the detailed work plan approved by SIIS. ♦ Assist in identifying potential risks and issues related to project solution and report these to the PMC. ♦ Monitor the development and testing of deliverables according to the project quality assurance plan. ♦ Provide user manuals and systems documentation. ♦ Develop training materials, and conduct training to ensure smooth system transition. ♦ Participates in Project Steering Committee as needed.	
Independent Verification and Validation (IV&V)	♦ Serve as an independent expert to provide oversight and recommendations for technical activities critical to the project's success. ♦ Evaluate technical products of the project to ensure that the each product satisfies the requirements levied on it, and that the final result of the project will meet the objectives and functional requirements described in section 3 of this FSR. ♦ Provide an independent, disinterested assessment of the technical aspects of the project to the PMC, PD, and Steering Committee. ♦ Develop and maintain the project Requirements Traceability Matrix. ♦ Independently identify and evaluate technical risks. ♦ Prepare monthly IV&V reports. ♦ Oversee the project in accordance with IEEE standard 1012-2004, tailored as appropriate for the project. ♦ Validate system requirements adhere to CDPH IT standards.	**IV&V Vendor (to be procured)**

6.5.6 Project Schedule

The project schedule summarizes the major tasks and start/end dates. Updating the schedule is an iterative process due to the dependencies of tasks and milestones.

A detailed project schedule will be finalized after the project implementation vendor has been selected.

The table below provides a high-level summary schedule.

TABLE 6-3:
HIGH-LEVEL PROJECT SCHEDULE

PROJECT PHASES, STEPS AND ACTIVITIES	START DATE	END DATE
1. Preparation of the project Feasibility Study Report (FSR) and work with OCIO and on FSR revisions and approval.	May 2008	January 2009 (pending)
2. Submission of Budget Change Proposal (BCP)	September 2008	September 2008
3. Finalization of the project Information Technology Procurement Plan (ITPP) and work with DGS on revisions and approval.	June 2008	August 2008
4. Approval of the FSR by OCIO.	July 2008	January 2009
5. Approval of BCP	September 2008	January 2009
6. Procure Services • Project Manager • IPOC and IV&V	July 2009	September 2009
7. Procure services for Systems Integrator	September 2009	January 2010
8. Preparation of Special Project Report and with OCIO on revisions and approval	January 2010	April 2010
9. Procure services for Hardware and Software purchases	January 2010	April 2010
10. Requirements Gathering and Analysis	April 2010	October 2010
11. Design and Build Activities	April 2010	January 2011
12. Testing Activities • System • Integration • UAT • Regression	June 2010	February 2011
13. Training Activities	June 2010	April 2011
14. Implementation Activities	June 2010	March 2011
15. System Implementation (Go-live)	March 2011	March 2011

PROJECT PHASES, STEPS AND ACTIVITIES	START DATE	END DATE
16. System Maintenance and Operation	March 2011	June 2011
17. Post Implementation Evaluation Report.	March 2012	March 2012

6.6 Project Monitoring

The PMC will track and report on project status on an ongoing basis, and will conduct regularly scheduled status meetings with the project implementation vendor and SIIS team members to discuss project progress, issue resolution, change requests and next steps.

The following standard reporting mechanisms will be used:

- Status reports
- Issue management (including logs)
- Risk management (Including logs)
- Project Management Reports

The nature of the project warrants the need for formal monitoring. A core component of the project plan will necessitate identifying deliverables, scheduling and assigning them to vendor or project staff members. Delivery dates will be compared with scheduled due dates to aid in tracking and control. The project plan will also mandate regular status updates, tracking, and change management.

The PMC will be responsible for monitoring the success of the system implementation within scheduling and fiscal constraints. The project will utilize the department's existing budgeting and procurement mechanisms. The PMC will maintain copies of all budgetary and procurement documents related to the project.

6.6.1 B Team Meetings

The PMC will hold bi-weekly status meetings to discuss schedule and deliverable status, upcoming events (e.g., interviews and working sessions), issue log review, and other relevant topics.

- Weekly meetings will be scheduled for the project team.
- Monthly Project Executive Management Meetings (Steering Committee) will be held.
- Weekly, the PMC will meet with the PD to review the project to discuss project status, upcoming events, outstanding issues and the schedule.

Status Reports

Weekly, the PMC will develop a Project Status Report to be reviewed and approved by the PD. This report will summarize the activities performed by project team members during the previous two weeks and will include updates on accomplishments, activities in progress, upcoming activities, issues and deliverable status. These reports will indicate whether scheduled activities or deliverables will meet their due dates or if those dates are at risk. Incidental issues will be included as attachments to the report. An issue tracking tool will be used to identify responsible parties and due dates for resolution of any issues. The weekly report will include status updates for these issues.

6.6.2 Project Director

The project will be directed by the CDPH PPMB-PMO PD, who will provide project direction and program oversight throughout the project, participating in discussions on the status of the project, as well as other events that may influence the implementation of the project. The PD will resolve issues that extend beyond the authority of the PMC, ITSB staff and SMEs, and will advise on overall project scope, resource allocation, and staffing or policy issues. The status meetings will be synchronized with major project milestones to ensure the sharing of project information in a timely manner.

6.7 User Acceptance Testing (UAT)

User acceptance testing will be organized by the project implementation vendor and performed collaboratively with the help of Immunization Branch SMEs, to confirm that the system functions as required. Upon completion of user acceptance testing, the project sponsor will sign-off confirming system acceptance and delivery.

6.8 Change Management

Change is an inevitable occurrence on any project. A change is defined as any alteration to the scope of the project including requirements, hardware, software, application, network, operations or environment that adds to, deletes from, or in any way modifies the scope of work. In order to effectively manage change for this Project, a Change Management Plan will define the process, procedures and outputs for all change-related project activities. The plan will identify the parties responsible for identifying, resolving, supporting, approving, and making project changes. The major goal of this change management strategy is to ensure changes are made using standardized methods and procedures that minimize negative impacts and maximize positive impacts to the requirements, design, development, implementation, and maintenance of the system.

The change management process will define the processes and procedures for: reporting an identified need for change; how the change request will be analyzed and documented; how the change will be acted upon for review, approval or denial; and, how the change will be incorporated into the PMCP. The plan is designed to:

- Minimize project risk,
- Provide documentation for all changes,

- Minimize disruption to the project due to rework,
- Measure project volatility,
- Provide open disclosure of changes,
- Communicate changes to stakeholders,
- Maximize system/application value, and
- Minimize unanticipated impacts to schedule and/or budget.

The implementation of a change management plan ensures that all changes are evaluated for potential scope, cost, and schedule impacts. The process allows decision-makers the opportunity to evaluate changes in a systematic manner that becomes a component of the overall project risk management strategy. Without a method for evaluating, prioritizing, and implementing changes, schedule delays, poorly defined requirements and/or cost overruns are potential results for any system development effort. Alternatively, a well-defined and properly utilized change management process reduces risk and increases the likelihood of project success.

The change management process for the project will provide a mechanism for the review and approval of changes or additions to the scope, requirements, or design of the various systems. This process will allow the Immunization Branch, ITSB, and the implementation vendor to jointly discuss, review, prioritize and approve changes to requirements and design through all phases of the project.

The change management process will track all proposed changes to the system software and hardware. All requested changes will be analyzed with respect to cost and benefit. Change requests that have received recommended approvals from the project manager will be presented to a Change Control Board (CCB) for approval. This process ensures that changes are documented and applied in a controlled manner with participation from relevant project personnel from initiation through closure.

CCB approved changes will be included in an updated and approved schedule and assigned to the responsible party for execution. Project documentation will be updated in accordance with the approved document management process.

6.9 Authorization Required

CDPH requires standard OCIO and DGS authorization for this project. Reporting criteria as required in the SIMM will be followed throughout the project.

The table below lists the external authorizations required for the project.

TABLE 6-4:
LIST OF REQUIRED AUTHORIZATIONS FOR PROJECT SOLUTION

DESCRIPTION	ORGANIZATION
Overall Project	CDPH
Technical and Financial Approach	DOF
Procurement Approach	DGS
FSR/SPR Approval	OCIO

7.0 Risk Management Plan

7.1 Introduction

This Risk Management Plan describes the methods that will be used to manage risks throughout the life of the project.

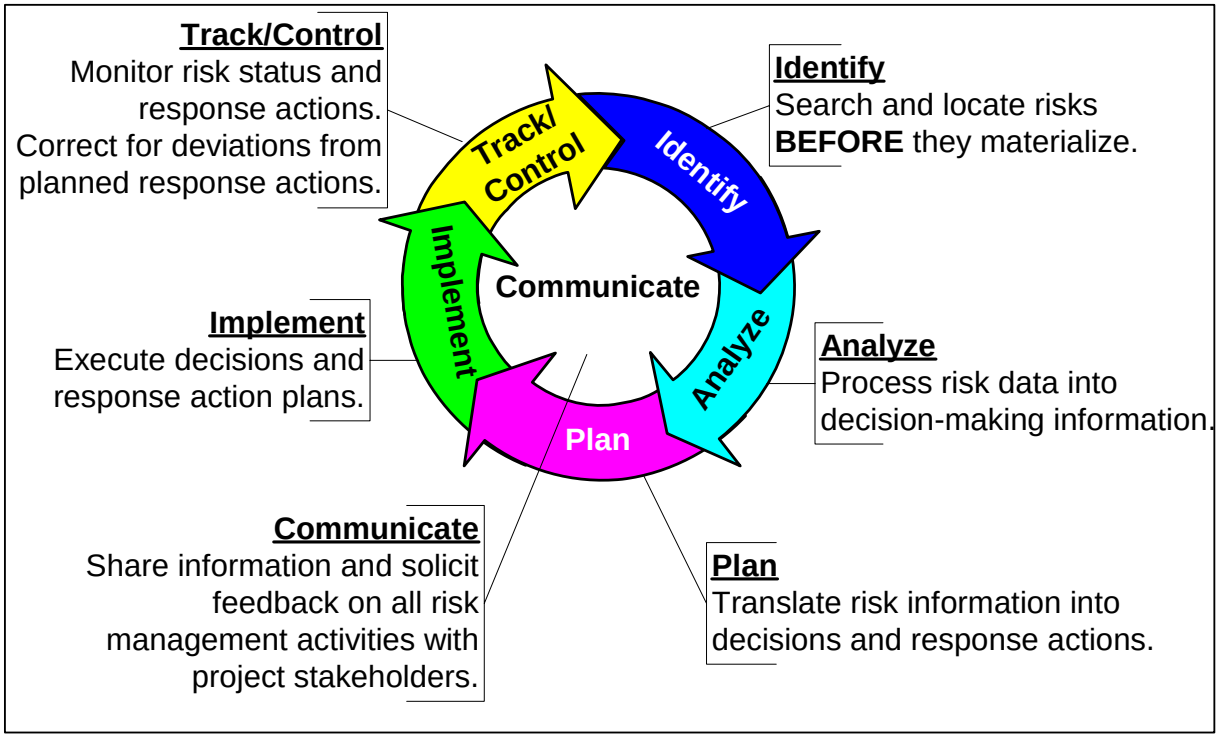
A risk is any potential occurrence that may interfere with the successful completion of the project. Risks may potentially affect project schedule, cost, and/or quality.

Risk management includes the following major components:

- Risk analysis – identifying and prioritizing risks.
- Risk action planning and tracking – developing a plan of action for each identified risk, and tracking progress against the plan.
- Risk escalation – providing appropriate visibility of risks to management.

The continuous cycle of risk management activity is depicted graphically below in Figure 7-1.

FIGURE 7-1:
RISK MANAGEMENT CYCLE



7.1.1 References Consulted

- Project Management Institute's Project Management Book of Knowledge (PMBOK), 3rd Edition, Chapter 11 (Project Risk Management)
- Department of Finance (DOF) Information Technology Project Oversight Framework, Section 5 (Risk Management and Escalation Procedures)
- DOF State Information Management Manual (SIMM), Section 200.3.11 (Risk Management Plan)

7.1.2 Goals and Objectives

The goal of this Risk Management Plan is to improve the probability of success of the SIIS project by providing a roadmap for:

- Ongoing assessment of project risks and
- The opportunity to make adjustments to avoid or lessen the impact of those problems before they occur.

The objectives of this Risk Management Plan are the continuous identification, assessment and documentation of:

- The risks faced by the project;
- The estimated probability of each risk;

- The consequences in terms of impact on project schedule, cost, and quality if the risk events should occur;
- The priority of each risk for response action and escalation;
- The owner of each risk;
- The plan of action for responding to each risk; and
- The thresholds and procedures for escalating risks.

7.1.3 Scope

This Risk Management Plan includes the risk management activities for the duration of the project.

7.1.4 Roles and Responsibilities

Table 7-1 below identifies the project stakeholders and their related risk management responsibilities.

TABLE 7-1:
ROLES AND RESPONSIBILITIES

TITLE	ROLE/RESPONSIBILITIES
Office of the State Chief Information Officer (OCIO)	Review monthly Independent Project Oversight Reports to assess project risk management practices. Provide feedback and direction as needed.
Steering Committee	Final approval of Risk Management Plan. Review escalated high and medium severity risks. Provide direction when needed. Determine if risks have become unacceptable for the project to continue.
Planning and Oversight Section	Provide general risk management assistance as requested. Review escalated high and medium severity risks. Provide feedback and suggestions as needed. Manage the IPO and IV&V efforts.
Project Director	Approve Risk Management Plan. Review escalated high, medium, and low severity risks. Provide direction and feedback as needed.
Risk Manager (PMC)	Overall responsibility for risk management. Develop the Risk Management Plan. Determine which risk candidates represent actual risks. Assign Risk Owners Follow up on risk response actions. Maintain the Risk Management Forms. Maintain the Risk List. Escalate risks.

TITLE	ROLE/RESPONSIBILITIES
Risk Owners (Project team members as assigned)	Assign risk attributes. Determine risk priority. Determine risk response strategy. Develop risk response action plan. Execute risk response actions. Track and report risk status and response activity.
Project Team Members	Identify risk candidates. Serve as Risk Owners as assigned.
Independent Project Oversight Consultant (IPOC)	Provide an ongoing independent review and analysis of project risk management practices. Independently identify and analyze project risks. Develop Independent Project Oversight Reports for submission to management and OCIO

7.2 Risk Analysis

Risk analysis includes the steps necessary to identify and prioritize risks.

7.2.1 Risk Identification

Risk identification is the process of discovering those risks which could impact project quality, cost, and/or schedule. The project team is encouraged to think broadly and draw from their past experiences to identify all potential risks that could impact the project. The project team members and the IPOC are responsible for identifying potential risks to the project during weekly project team meetings and will include a standing agenda item for raising new risk candidates to the attention of the Risk Manager. Project team members and the IPOC may also communicate risk candidates to the Risk Manager by email, telephone, or ad hoc meetings. Potentially serious risk candidates should be communicated as soon as practical rather than waiting for the next meeting.

The project will use the DOF Information Technology (IT) Oversight Framework, Appendix C: Categories and Examples of Risk as an aid in risk identification.

7.2.1.1 Sources of Risk

Project risks can come from many and varied sources. Project team members must be vigilant in recognizing and documenting potential risks so that they can be properly evaluated for project impact. Some common risk sources include:

- The technology used on the project;
- The legal and regulatory environment in which the project is executed;
- Relationships between the organizations involved in the project;
- Sufficiency and allocation of project resources;
- Unrealistic or conflicting stakeholder expectations;
- Mandated implementation date.

7.2.1.2 Risk Determination

The Risk Manager, with participation as needed by applicable project team members, determines which risk candidates constitute actual risks to the project. A risk is a potential event that would have an impact on the success of the project if the event were to occur. The following considerations support the determination of "Is it a risk?":

- Time frame: A risk is a potential future event. Risk events that have already occurred are not risks, but rather represent problems or issues to be managed outside of the risk management process. Events that may occur after the project is completed, but not during the project, are not risks to the project.
- Likelihood: What is the estimated probability of the risk event occurring? If there is little or no likelihood of the risk event occurring, the risk may not warrant inclusion in the risk management process. An event that is certain to occur is not a risk but rather a problem or issue.
- Impact: What is the estimated impact to the project schedule, cost, or quality if the risk event should occur? Risks with little or no impact may not warrant inclusion in the risk management process.

Risk candidates that are judged to meet the three criteria described above and are included in the project risk management process. The components of a risk - the time frame, likelihood, and impact, may change over time. A risk candidate that was previously dismissed as a project risk may be promoted to a project risk later based on changing risk components.

7.2.1.3 Risk Attributes

Risk attributes are described in the Table 7-2 below. Risk attributes are documented by the Risk Owner, as described in paragraph 7.3.2 Risk Tracking.

TABLE 7-2:
RISK ATTRIBUTES

RISK ATTRIBUTE	DESCRIPTION
Risk Title	A brief sentence or phrase that summarizes the risk.
Risk ID	A unique number used to identify the risk. The Risk ID is assigned sequentially as risks are identified.
Originator	The name and organization of the person who identified the risk.
Origination Date	The date that the risk was recognized as a project risk.
Risk Owner	The project team member responsible for responding to the risk and tracking risk status. The Risk Manager assigns the Risk Owner.

RISK ATTRIBUTE	DESCRIPTION
Risk Statement	A concise definition of the risk using the sentence structure Concern • Likelihood • Consequence for example: "Mandated unrealistic implementation date • will likely • lead to significant missing functionality in the system implementation."
Risk Context	The risk context elaborates on the risk statement, adding detail and background information as needed to provide a full understanding of the risk.

7.2.2 Risk Prioritization

Risks are prioritized by severity, with high severity risks given the highest priority for response action and escalation. Risk severity is determined by the probability, impact, and time frame of the risk.

7.2.2.1 Probability

Risks are assigned a probability rating based on the estimated likelihood of a risk event occurring.

TABLE 7-3:
RISK PROBABILITY

LIKELIHOOD OF RISK EVENT	PROBABILITY RATING
100%	- not a risk -
66% to 99%	High
33% to 66%	Medium
1% to 33%	Low
0%	- not a risk -

7.2.2.2 Impact

Risks are assigned an impact rating based on the estimated negative impact on project cost, schedule and/or quality.

TABLE 7-4:
RISK IMPACT

CRITERIA	Impact Rating
One or more of the following: - Project cost increase of 10% or more - Project schedule increase of 10% or more - Failure to meet required performance - Failure to provide required functionality	High

CRITERIA	Impact Rating
None of the above High criteria, one or more of the following: - Project cost increase of 5% to 10% - Project schedule increase of 5% to 10% - Significant discrepancies in desired performance - Significant discrepancies in desired functionality	Medium
None of the above High or Medium criteria, one or more of the following: - Project cost increase of less than 5% - Project schedule increase of less than 5% - Minor discrepancies in desired performance - Minor discrepancies in desired functionality	Low

7.2.2.3 Time Frame

Risks are assigned a time frame rating based on the time period within which action must be taken to successfully respond to the risk.

TABLE 7-5:
RISK TIME FRAME

TIME PERIOD TO RESPOND TO RISK	TIME FRAME RATING
Less than six months	Short
Six months to one year	Medium
More than one year	Long

7.2.2.4 Exposure

Risk exposure is determined from the probability and impact ratings, and is used along with the time frame rating to determine severity. The exposure rating for each risk is the intersection of that risk's impact and probability in the matrix below:

TABLE 7-6:
RISK EXPOSURE MATRIX

		PROBABILITY		
		High	Medium	Low
IMPACT	High	HIGH	HIGH	MEDIUM
	Medium	HIGH	MEDIUM	Low
	Low	MEDIUM	Low	Low

7.2.2.5 Severity

Risk severity is determined from the exposure and time frame ratings, and is used to prioritize the risk. Risks with "High" severity have the highest priority for risk response activity and escalation, followed by "Medium" and then "Low" severity risks. The severity rating for each risk is the intersection of that risk's exposure and time frame in the matrix below:

TABLE 7-7:
RISK SEVERITY MATRIX

TIME FRAME	EXPOSURE			
		High	Medium	Low
	Short	HIGH	HIGH	MEDIUM
	Medium	HIGH	MEDIUM	Low
	Long	MEDIUM	Low	Low

7.3 Risk Response Planning and Tracking

The Risk Owner is responsible for planning appropriate risk response action and for tracking the status of the risk and the response activity. The Risk Owner reports any changes in risk status at the monthly project team meeting.

7.3.1 Risk Response Planning

The Risk Owner, with approval of the Risk Manager, determines the appropriate risk response strategy and action plan.

7.3.1.1 Risk Response Strategy

The Risk Owner, with the approval of the Risk Manager, determines the appropriate risk response strategy from the options below:

- Research – Additional research will be taken prior to determining the appropriate strategy.
- Accept – If the project can continue and be successful with the anticipated impact of the risk, or if there is no practical way to avoid or mitigate the risk, the project may choose to accept the risk and expend no further resources managing it other than tracking the risk status.
- Avoid – Risk avoidance involves taking steps to reduce the probability of the risk.
- Mitigate – Risk mitigation involves taking steps to reduce the impact of the risk. These steps can include actions to be taken immediately, and/or contingency plans to be implemented if a risk event occurs.

When appropriate, a risk response strategy can include both avoidance and mitigation actions.

7.3.1.2 Action Planning

The Risk Owner, with the approval of the Risk Manager, determines the action plan to be taken to implement the selected strategy. Often a simple list of one or more action items, with responsibilities and due dates identified, will be an adequate plan. Some high severity risks may require more elaborate planning. For example a Microsoft Project workplan and resource budget might be needed in response to a complex, high impact risk that seriously threatens the success of the project.

7.3.2 Risk Tracking

The Risk Owner records the risk title, ID, originator, origination date, owner, statement, context, probability, impact, severity, strategy, and action items of each risk on a Risk Management Form (DOF IT Oversight Framework, Appendix E).

The Risk Manager summarizes the risks on the Risk List (DOF IT Oversight Framework, Appendix D).

The Risk Owner tracks the risk on a project electronic worksheet or similar data management tool, including the status of each of the action items, and reports any changes at the monthly project team meeting. The Risk Manager maintains the master copy of each Risk Management Form, and records new events and actions and the resulting changes to risk status.

7.4 Risk Escalation

The Project Manager escalates risks to the Project Director, the Planning and Oversight Section (POS), the steering committee, and the DOF OTROS depending on risk severity, as indicated in the risk escalation matrix below:

TABLE 7-8:
RISK ESCALATION MATRIX

		RISK SEVERITY		
		HIGH	MEDIUM	LOW
ESCALATION	OCIO	X		
	STEERING COMMITTEE; POS	X	X	
	PROJECT DIRECTOR	X	X	X

The method of risk escalation is as follows:

- High, medium, and low severity risks are reported to the Project Director in regular project status reports.
- High and medium severity risks are reported to the steering committee during steering committee meetings.
- High and medium severity risks are reported to the POS in monthly Project Management Reports.
- High severity risks are reported to the OCIO by the IPOC in monthly IPO Reports.

7.5 Risk List

The current project risk list is provided on the following page.

RISK ID	BRIEF DESCRIPTION OF RISK	IMPACT	PROBABILITY	TIME	SEVERITY	BRIEF SUMMARY OF RISK RESPONSE PLAN
1	Loss of tobacco tax revenue providing funds	High	Low	Low	Low	Acceptance and re-evaluation of project priority.
2	Inadequate participation or sponsorship from grantor	High	Low	Med	Med	Mitigation – outreach to Regional Registry operators.
3	Decreased sponsorship or priority in Agency, Department or Program	High	Low	Low	Low	Acceptance – Reprioritization of project outcomes and timelines based on the organizational direction.
4	Legal changes in SIIS, such as mandated participation	High	Low	Low	Low	Acceptance – re-evaluation of the project deliverables in light of changes.
5	Delays in services from Department of General Services	Med	High	High	High	Mitigation – early outreach to DGS and potential dedicated DGS resources to ensure timely procurements.
6	Unable to find vendor	High	Low	Low	Med	Mitigation – outreach to potential vendors or possible RFI to validate an adequate pool of procurement participants.
7	Protest from vendors not selected	Med	Low	Low	Low	Acceptance – project re-scheduling and a Special Project Report once the protest ends.
8	Inadequate Subject Matter Experts at Program or Regional Registries	High	Med	High	High	Mitigation – Identification of alternate SMEs who may be called upon if the primary SME is unavailable.
9	Inadequate participation or assistance from Regional Registries	Med	Low	Med	Med	Mitigation – Project outreach on the benefits of participation. Communication on potential savings in unnecessary Medi-Cal immunizations.
10	Limitations in Regional Registry technology or procedures (e.g., data storage, bandwidth, access and port policies)	Med	Med	Med	Med	Acceptance – evaluation of the impacts of the technical limitations.

RISK ID	BRIEF DESCRIPTION OF RISK	IMPACT	PROBABILITY	TIME	SEVERITY	BRIEF SUMMARY OF RISK RESPONSE PLAN
11	Breach of security in Regions or in aggregation solution	High	Low	Low	Med	Acceptance – evaluation of the impacts of the security limitations on the proposed solution.
12	Accelerated demands on SIIS or need for aggregated data (e.g., natural disaster)	High	Low	High	High	Mitigation – communication with CDPH stakeholders to monitor their needs. Identification of alternate aggregation techniques available if the proposed solution is not yet implemented.
13	Security ports turned “off” at regional level, not allowing transactions	High	High	High	High	Mitigation – early evaluation of security access and outreach to regional registry operator to identify alternative access points.
14	Solution data storage not adequately robust	High	Low	Low	Low	Mitigation – post implementation evaluation of the record growth rate with DTS and contractual ability to add capacity on an as needed basis.

8.0 Economic Analysis Worksheets

This section presents the economic analysis worksheets (EAW) along with assumptions used and an explanation of costs for deployment of the SIIS. The project will commence upon approval of this FSR and the associated BCP. Procurement activities will begin upon Program approval of the Project Management Plan and Schedule and last approximately three months. Implementation activities will start in June 2010 and end in November 2011. Three alternative solutions are presented in this EAW. The first is the preferred alternative, which is data aggregation and access provided by a Service Provider. The others are data aggregation and access provided by CDPH and data aggregation and access provided jointly by CDPH and DTS.

The assumptions used to prepare each economic analysis worksheet, and the explanation of costs, are presented in the following sections:

8.1 Assumptions

There are a number of assumptions that apply to all alternatives, and to some degree, existing system costs. These include:

- Staff costs are based on current staffing costs provided by Immunization Branch.
- Estimates for staff have been calculated to include salary and benefits.
- The DTS hosting costs are the same for all two alternatives since the services required are identical and the number of servers does not vary significantly among the alternatives.
- The Project Manager and independent project oversight contractor (IPOC) will start August 2009.
- Implementation activities will begin June 2010 and end in November 2011.

The following are explanations for each of the worksheets.

8.2 Existing System/Baseline Cost Worksheet

The following are explanations of costs for the “Existing System/Baseline Cost Worksheet.”

- ***Continuing Information Technology Costs—Staff (Salaries and Benefits)***
- ***Continuing Information Technology Costs: Hardware Lease/Maintenance***

  None
- ***Continuing Information Technology Costs: Software Lease/Maintenance***

None

- ***Continuing Information Contract Services***

  None identified.

- ***Continuing Information Technology Costs—Other***

  None identified.

- ***Continuing Program Costs—Staff***

  The Immunization Branch currently utilizes < 1 position to support the SIIS program. Total annual continuing staff costs to support the SIIS program are estimated at **$72,714**.

- ***Continuing Program Costs—Other***

  Other costs for the 11 registries are estimated to be **$5,918,250** annually**.**

8.3. Proposed Alternative Cost Worksheet: CDPH and DTS

The deployment schedule for the preferred alternative, a CDPH and DTS solution using the services of a systems integrator, will begin June 2010 and end in March 2011.

- ***One-Time IT Project Costs: Software Purchase/License***

  The total one-time software costs are estimated to be **$50,000**.

- ***One-Time IT Project Costs: Contract Services***

  Software Customization: Costs to configure the base software to meet SIIS requirements are projected to be **$73,200** in FY 2009 - 10 and **$590,832** in FY 2010 - 11.

  Project Management and Project Oversight Service: Vendors will provide the Project Management, IPO and IV&V services. The CDPH developed estimates for the Project Management, IPOC and IV&V vendors based on historical information for these services. The Project Management and IPOC vendors will participate in development of the procurement vehicle for the systems integrator. Project Management services are estimated at **$291,780** in FY 2009-10 and **$187,620** in FY 2010-11. IPO services are estimated at **$84,000** in FY 2009-10 and **$71,400** in FY 2010-11 and IV&V services are estimated at **$53,333** in FY 2009/10 and **$106,667** in FY 2010/11.

  Other Contract Services: Program contract staff are required to work with the systems integrator vendor during implementation.

  Total other contract services costs are estimated at **$98,769** in FY 2009-10 and, **$61,467** for FY 2010 – 11.

  The total other contract services cost is **$160,236.**

  The table below presents the costs for these services.

	FISCAL YEAR	
	2009 - 10	2010 - 11
Software Configuration	$73,200	$590,832
Project Manager	$291,780	$187,620
Project Oversight	$84,000	$71,400
IV&V	$53,333	$106,667
Other Contract Services	$98,769	$61,467
TOTALS	$601,082	$1,017,986

- ***One-Time IT Project Costs: Data Center Services***

  The DTS' hosting costs are estimated at **$57,570** in FY 2010/11.

- ***One-Time IT Project Costs: Other***
  - Miscellaneous expenditures in F 2009–10 are **$20,000**.
  - Training costs for Regional Registry and CDPH staff in FY 2009-10, are estimated at **$62,500**.

- ***Continuing IT Project Costs: Contract Services***

  Four contract staff (existing staff) are required to support the system once it is in production (maintaining the system, supporting user requests, making minor modifications, etc.). Annual costs are estimated at **$424,800**.

- ***Continuing IT Project Costs: Software Maintenance/Licenses***

  Annual maintenance fees for the purchased software is estimated to be **$75,000** annually.

- ***Continuing IT Project Costs: Data Center Services***

  The DTS will be hosting the SIIS servers. The estimated continuing data center services costs are **$111,461** annually in FY 2010-11 and following.

- ***Continuing Existing Costs***

  Continuing existing costs are derived from the current technology and program staff costs identified in the Existing System worksheets. One PY to support SIIS Program Activities associated with research and reporting has been identified.

8.4 Alternative #1: CDPH Only

- ***One-Time IT Project Costs: Hardware Purchase/License***

  The total one-time hardware costs are estimated to be **$95,523**.

- ***One-Time IT Project Costs: Software Purchase/License***

  The total one-time software costs are estimated to be **$50,000**.

- ***One-Time IT Project Costs: Contract Services***

Software Configuration: Costs to configure the base software to meet SIIS requirements are projected to be **$73,200** in FY 2009 - 10 and **$590,832** in FY 2010 - 11.

Project Management and Project Oversight Service: Vendors will provide the Project Management, IPO and IV&V services. The CDPH developed estimates for the Project Management, IPOC and IV&V vendors based on historical information for these services. The Project Management and IPOC vendors will participate in development of the procurement vehicle for the systems integrator. Project Management services are estimated at **$291,780** in FY 2009-10 and **$187,620** in FY 2010-11. IPO services are estimated at **$84,000** in FY 2009-10 and **$71,400** in FY 2010-11 and IV&V services are estimated at **$53,333** in FY 2009/10 and **$106,667** in FY 2010/11.

Other Contract Services: Program contract staff are required to work with the systems integrator vendor during implementation and costs are estimated at **$98,769** for FY 2009/10 and **$61,467** for FY 2010/11

The total other contract services cost is estimated at **$601,083** for FY 2009/10 and **$1,017,986** for FY 2010/11**.**

The total other contract services cost is estimated at **$1,619,068.**

The table below presents the costs for these services.

	Fiscal Year	
	2009 - 10	2010 - 11
Software Configuration	$73,200	$590,832
Project Manager	$291,780	$187,620
Project Oversight	$84,000	$71,400
IV&V	$53,333	$106,667
Other Contract Services	$98,769	$61,467
TOTALS	**$601,082**	**$1,017,986**

- ***One-Time IT Project Costs: Other***
  - Miscellaneous expenditures in F 2009–10 are **$20,000**.
  - Training costs for Regional Registry and CDPH staff in FY 2009-10, are estimated at **$62,500**.
- ***Continuing IT Project Costs: Contract Services***

  Existing staff (contract staff) are required to support the system once it is in production (maintaining the system, supporting user requests, making minor modifications, etc.). Annual contract staff costs are estimated at **$424,800**.
- ***Continuing IT Project Costs: Software Maintenance/Licenses***

  Annual maintenance fees for the purchased software are estimated to be **$75,000** annually.
- ***Continuing Existing Costs***

  Continuing existing costs are derived from the current technology and program staff costs identified in the Existing System worksheets.

8.5 Alternative #2: Service Provider

- ***One-Time IT Project Costs: Software Purchase/License***

  The total one-time software costs are estimated to be **$70,000**.

- ***One-Time IT Project Costs: Contract Services***

  Software Configuration: Costs to configure the base software to meet SIIS requirements are projected to be **$73,200** in FY 2009 - 10 and **$590,832** in FY 2010 - 11.

  Project Management and Project Oversight Service: Vendors will provide the Project Management, IPO and IV&V services. The CDPH developed estimates for the Project Management, IPOC and IV&V vendors based on historical information for these services. The Project Management and IPOC vendors will participate in development of the procurement vehicle for the systems integrator. Project Management services are estimated at **$291,780** in FY 2009-10 and **$187,620** in FY 2010-11. IPO services are estimated at **$84,000** in FY 2009-10 and **$71,400** in FY 2010-11 and IV&V services are estimated at **$53,333** in FY 2009/10 and **$106,667** in FY 2010/11.

  Other Contract Services: Program contract staff are required to work with the systems integrator vendor during implementation and costs are estimated at **$98,769** for FY 2009/10 and **$61,467** for FY 2010/11.

  Total other contract services costs are estimated at **$601,083** in FY 2009-10 and, **$1,017,986** for FY 2010 – 11.

  The total other contract services cost is estimated at **$1,619,068.**

  The table below presents the costs for these services.

	FISCAL YEAR	
	2009 - 10	2010 - 11
Software Configuration	$73,200	$590,832
Project Manager	$291,780	$187,620
Project Oversight	$84,000	$71,400
IV&V	$53,333	$106,667
Other Contract Services	$98,769	$61,467
TOTALS	**$601,082**	**$1,017,986**

- ***One-Time IT Project Costs: Data Center Services***

  There are no Data Center Costs associated with this alternative.

- ***One-Time IT Project Costs: Other***

  - Miscellaneous expenditures in FY 2009–10 are **$20,000**.
  - Training costs for Regional Registry and CDPH staff in FY 2009-10, are estimated at **$62,500**.
  - Service Provider FY 2009/10 is estimated at **$51,130.**

- ***Continuing IT Project Costs: Software Maintenance/Licenses***

Total annual maintenance fees for the purchased software are estimated to be **$105,000** annually.

- ***Continuing IT Project Costs: Contract Services***

  The Service Provider will be hosting the SIIS servers. The continuing service provider services costs are estimated at **$224,060** for FY 2010/11. Four contract staff (existing staff) are required to support the system once it is in production (maintaining the system, supporting user requests, making minor modifications, etc.) with continuing costs estimated at **$672,180** for FY 2011/12. Total contract staff costs are estimated at **$896,240**.

- ***Continuing Existing Costs***

  Continuing existing costs are derived from the current technology and program staff costs identified in the Existing System worksheets.

EXISTING SYSTEM/BASELINE COST WORKSHEET

Department: Public Health — All costs to be shown in whole (unrounded) dollars. — Date Prepared:

Project: Statewide Immunization Information System

	FY 2009/10		FY 2010/11		FY 2011/12		TOTAL	
	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts
Continuing Information Technology Costs								
Staff (salaries & benefits)	0.0	0	0.0	0	0.0	0	**0.0**	**0**
Hardware Lease/Maintenance		0		0		0		**0**
Software Maintenance/Licenses		0		0		0		**0**
Contract Services		0		0		0		**0**
Data Center Services		0		0		0		**0**
Agency Facilities		0		0		0		**0**
Other		0		0		0		**0**
Total IT Costs	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**
Continuing Program Costs:								
Staff	0.7	72,714	0.7	72,714	0.7	72,714	**2.1**	**218,141**
Other	0.0	5,918,250	0.0	5,918,250	0.0	5,918,250		**17,754,751**
Total Program Costs	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**2.1**	**17,972,892**
TOTAL EXISTING SYSTEM COSTS	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**2.1**	**17,972,892**

PROPOSED ALTERNATIVE

Date Prepared:

Department: Public Health

All Costs Should be shown in whole (unrounded) dollars.

Project: Statewide Immunization Information System

	FY 2009/10		FY 2010/11		FY 2011/12		TOTAL	
	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts
One-Time IT Project Costs								
Staff (Salaries & Benefits)	0.3	45,162	0.2	30,108	0.0	0	0.5	75,270
Hardware Purchase		0		0		0		0
Software Purchase/License		50,000		0		0		50,000
Telecommunications		0		0		0		0
Contract Services								
Software Customization		73,200		590,832		0		664,032
Project Management		291,780		187,620		0		479,400
Project Oversight		84,000		71,400		0		155,400
IV&V Services		53,333		106,667		0		160,000
Other Contract Services		98,769		61,467		0		160,236
TOTAL Contract Services		601,082		1,017,986		0		1,619,068
Data Center Services				57,570		0		57,570
Agency Facilities		0		0		0		0
Other		82,500		0		0		82,500
Total One-time IT Costs	**0.3**	**836,314**	**0.2**	**1,105,664**	**0.0**	**0**	**0.5**	**1,941,978**
Continuing IT Project Costs								
Staff (Salaries & Benefits)	0.0	0	0.1	15,054	0.3	45,162	0.4	60,216
Hardware Lease/Maintenance		0		0		0		0
Software Maintenance/Licenses		0		25,000		75,000		100,000
Telecommunications		0		0		0		0
Contract Services		0		141,600		424,800		566,400
Data Center Services		0		37,154		111,461		148,614
Agency Facilities		0		0		0		0
Other		0		0		0		0
Total Continuing IT Costs	**0.0**	**0**	**0.1**	**218,808**	**0.3**	**656,423**	**0.4**	**875,230**
Total Project Costs	**0.3**	**836,314**	**0.3**	**1,324,471**	**0.3**	**656,423**	**0.9**	**2,817,208**
Continuing Existing Costs								
Information Technology Staff	0.0	0	0.0	0	0.0	0	0.0	0
Other IT Costs		0		0		0		0
Total Continuing Existing IT Costs	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**
Program Staff	0.7	72,714	0.7	72,714	0.7	72,714	2.1	218,141
Other Program Costs		5,918,250		5,918,250	0.0	5,918,250		17,754,751
Total Continuing Existing Program Costs	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**2.1**	**17,972,892**
Total Continuing Existing Costs	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**2.1**	**17,972,892**
TOTAL ALTERNATIVE COSTS	**1.0**	**6,827,278**	**1.0**	**7,315,435**	**1.0**	**6,647,387**	**3.0**	**20,790,100**
INCREASED REVENUES		0		0		0		**0**

ALTERNATIVE #1:

Date Prepared:

Department: Public Health

All Costs Should be shown in whole (unrounded) dollars.

Project: Statewide Immunization Information System

	FY 2009/10		FY 2010/11		FY 2011/12		TOTAL	
	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts
One-Time IT Project Costs								
Staff (Salaries & Benefits)	2.3	241,506	0.2	30,108	0.0	0	2.5	271,614
Hardware Purchase		95,523		0		0		95,523
Software Purchase/License		50,000		0		0		50,000
Telecommunications		0		0		0		0
Contract Services								
Software Customization		73,200		590,832		0		664,032
Project Management		291,780		187,620		0		479,400
Project Oversight		84,000		71,400		0		155,400
IV&V Services		53,333		106,667		0		160,000
Other Contract Services		98,769		61,467		0		160,236
TOTAL Contract Services		601,082		1,017,986		0		1,619,068
Data Center Services		0		0		0		0
Agency Facilities		0		0		0		0
Other		82,500		0		0		82,500
Total One-time IT Costs	**2.3**	**1,070,611**	**0.2**	**1,048,094**	**0.0**	**0**	**2.5**	**2,118,704**
Continuing IT Project Costs								
Staff (Salaries & Benefits)	0.0	0	0.7	80,502	2.0	241,506	2.7	322,008
Hardware Lease/Maintenance		0		0		0		0
Software Maintenance/Licenses		0		25,000		75,000		100,000
Telecommunications		0		0		0		0
Contract Services		0		141,600	0.0	424,800		566,400
Data Center Services		0		0		0		0
Agency Facilities		0		0		0		0
Other		0		0		0		0
Total Continuing IT Costs	**0.0**	**0**	**0.7**	**247,102**	**2.0**	**741,306**	**2.7**	**988,408**
Total Project Costs	**2.3**	**1,070,611**	**0.9**	**1,295,196**	**2.0**	**741,306**	**5.2**	**3,107,112**
Continuing Existing Costs								
Information Technology Staff	0.0	0	0.0	0	0.0	0	0.0	0
Other IT Costs		0		0		0		0
Total Continuing Existing IT Costs	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**
Program Staff	0.7	72,714	0.7	72,714	0.7	72,714	2.1	218,142
Other Program Costs		5,918,250		5,918,250		5,918,250		17,754,751
Total Continuing Existing Program Costs	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**2.1**	**17,972,892**
Total Continuing Existing Costs	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**2.1**	**17,972,892**
TOTAL ALTERNATIVE COSTS	**3.0**	**7,061,574**	**1.6**	**7,286,160**	**2.7**	**6,732,270**	**7.3**	**21,080,005**
INCREASED REVENUES		0		0		0		**0**

ALTERNATIVE #2:

Date Prepared:

Department: Public Health

All Costs Should be shown in whole (unrounded) dollars.

Project: Statewide Immunization Information System

	FY 2009/10		FY 2010/11		FY 2011/12		TOTAL	
	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts
One-Time IT Project Costs								
Staff (Salaries & Benefits)	0.3	45,162	0.2	30,108	0.0	0	0.5	75,270
Hardware Purchase		0		0		0		0
Software Purchase/License		70,000		0		0		70,000
Telecommunications		0		0		0		0
Contract Services								
Software Customization		73,200		590,832		0		664,032
Project Management		291,780		187,620		0		479,400
Project Oversight		84,000		71,400		0		155,400
IV&V Services		53,333		106,667		0		160,000
Other Contract Services		98,769		61,467		0		160,236
TOTAL Contract Services		601,082		1,017,986		0		1,619,068
Data Center Services		0		0		0		0
Agency Facilities		0		0		0		0
Other		133,630		0		0		133,630
Total One-time IT Costs	**0.3**	**849,874**	**0.2**	**1,048,094**	**0.0**	**0**	**0.5**	**1,897,968**
Continuing IT Project Costs								
Staff (Salaries & Benefits)	0.0	0	0.1	15,054	0.0	0	0.1	15,054
Hardware Lease/Maintenance		0		0		0		0
Software Maintenance/Licenses		0		35,000	`	105,000		140,000
Telecommunications		0		0		0		0
Contract Services		0		224,060	0.0	672,180		896,240
Data Center Services		0		0		0		0
Agency Facilities		0		0		0		0
Other		0		0		0		0
Total Continuing IT Costs	**0.0**	**0**	**0.1**	**274,114**	**0.0**	**777,180**	**0.1**	**1,051,294**
Total Project Costs	**0.3**	**849,874**	**0.3**	**1,322,208**	**0.0**	**777,180**	**0.6**	**2,949,262**
Continuing Existing Costs								
Information Technology Staff	0.0	0	0.0	0	0.0	0	0.0	0
Other IT Costs		0		0		0		0
Total Continuing Existing IT Costs	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**
Program Staff	0.7	72,714	0.7	72,714	0.7	72,714	2.1	218,142
Other Program Costs		5,918,250		5,918,250		5,918,250		17,754,751
Total Continuing Existing Program Costs	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**2.1**	**17,972,892**
Total Continuing Existing Costs	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**0.7**	**5,990,964**	**2.1**	**17,972,892**
TOTAL ALTERNATIVE COSTS	**1.0**	**6,840,838**	**1.0**	**7,313,172**	**0.7**	**6,768,144**	**2.7**	**20,922,154**
INCREASED REVENUES		0		0		0		**0**

ECONOMIC ANALYSIS SUMMARY Date Prepared:

Department: Public Health All costs to be shown in whole (unrounded) dollars.

Project: Statewide Immunization Information System

	FY 2009/10		FY 2010/11		FY 2011/12		TOTAL	
	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts
EXISTING SYSTEM								
Total IT Costs	0.0	0	0.0	0	0.0	0	0.0	0
Total Program Costs	0.7	5,990,964	0.7	5,990,964	0.7	5,990,964	2.1	17,972,892
Total Existing System Costs	0.7	5,990,964	0.7	5,990,964	0.7	5,990,964	2.1	17,972,892
PROPOSED ALTERNATIVE								
Total Project Costs	0.3	836,314	0.3	1,324,471	0.3	656,423	0.9	2,817,208
Total Cont. Exist. Costs	0.7	5,990,964	0.7	5,990,964	0.7	5,990,964	2.1	17,972,892
Total Alternative Costs	1.0	6,827,278	1.0	7,315,435	1.0	6,647,387	3.0	20,790,100
COST SAVINGS/AVOIDANCES	(0.3)	(836,314)	(0.3)	(1,324,472)	(0.3)	(656,423)	(0.9)	(2,817,208)
Increased Revenues		0		0		0		0
Net (Cost) or Benefit	(0.3)	(836,314)	(0.3)	(1,324,472)	(0.3)	(656,423)	(0.9)	(2,817,208)
Cum. Net (Cost) or Benefit	(0.3)	(836,314)	(0.6)	(2,160,786)	(0.9)	(2,817,208)		
ALTERNATIVE #1			**0**					
Total Project Costs	2.3	1,070,611	0.9	1,295,196	2.0	741,306	5.2	3,107,112
Total Cont. Exist. Costs	0.7	5,990,964	0.7	5,990,964	0.7	5,990,964	2.1	17,972,892
Total Alternative Costs	3.0	7,061,574	1.6	7,286,160	2.7	6,732,270	7.3	21,080,005
COST SAVINGS/AVOIDANCES	(2.3)	(1,070,611)	(0.9)	(1,295,196)	(2.0)	(741,306)	(5.2)	(3,107,113)
Increased Revenues		0		0		0		0
Net (Cost) or Benefit	(2.3)	(1,070,611)	(0.9)	(1,295,196)	(2.0)	(741,306)	(5.2)	(3,107,113)
Cum. Net (Cost) or Benefit	(2.3)	(1,070,611)	(3.2)	(2,365,807)	(5.2)	(3,107,113)		
ALTERNATIVE #2			**0.0**					
Total Project Costs	0.3	849,874	0.3	1,322,208	0.0	777,180	0.6	2,949,262
Total Cont. Exist. Costs	0.7	5,990,964	0.7	5,990,964	0.7	5,990,964	2.1	17,972,892
Total Alternative Costs	1.0	6,840,838	1.0	7,313,172	0.7	6,768,144	2.7	20,922,154
COST SAVINGS/AVOIDANCES	(0.3)	(849,874)	(0.3)	(1,322,208)	0.0	(777,180)	(0.6)	(2,949,263)
Increased Revenues		0		0		0		0
Net (Cost) or Benefit	(0.3)	(849,874)	(0.3)	(1,322,208)	0.0	(777,180)	(0.6)	(2,949,263)
Cum. Net (Cost) or Benefit	(0.3)	(849,874)	(0.6)	(2,172,082)	(0.6)	(2,949,263)		

PROJECT FUNDING PLAN

Department: Public Health

All Costs to be in whole (unrounded) dollars

Date Prepared:

Project: Statewide Immunization Information System

	FY 2009/10		FY 2010/11		FY 2011/12		TOTALS	
	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts
TOTAL PROJECT COSTS	**0.3**	**836,314**	**0.3**	**1,324,471**	**0.3**	**656,423**	**0.9**	**2,817,208**
RESOURCES TO BE REDIRECTED								
Staff	0.3	45,162	0.3	45,162			**0.6**	**90,324**
Funds:								
Existing System		0		0		0		**0**
Other Fund Sources		0		0		0		**0**
TOTAL REDIRECTED RESOURCES	**0.3**	**45,162**	**0.3**	**45,162**	**0.0**	**0**	**0.6**	**90,324**
ADDITIONAL PROJECT FUNDING NEEDED								
One-Time Project Costs	0.0	791,153	0.0	1,017,986	0.0	0	**0.0**	**1,809,139**
Continuing Project Costs	0.0	0	0.0	611,261	0.3	656,423	**0.3**	**1,267,684**
TOTAL ADDITIONAL PROJECT FUNDS NEEDED BY FISCAL YEAR	**0.0**	**791,153**	**0.0**	**1,629,247**	**0.3**	**656,423**	**0.3**	**3,076,823**
TOTAL PROJECT FUNDING	**0.3**	**836,315**	**0.3**	**1,674,409**	**0.3**	**656,423**	**0.9**	**3,167,147**
Difference: Funding - Costs	0.0	1	(0.0)	349,938	0.0	0	**(0.0)**	**349,939**

Total Estimated Cost Savings	0.0	0	0.0	0	0.0	0	**0.0**	**0**

ADJUSTMENTS, SAVINGS AND REVENUES WORKSHEET
(DOF Use Only)

Department: Public Health

Date Prepared:

Project: Statewide Immunization Information System

Annual Project Adjustments	FY 2009/10 PYs	FY 2009/10 Amts	FY 2010/11 PYs	FY 2010/11 Amts	FY 2011/12 PYs	FY 2011/12 Amts	Net Adjustments PYs	Net Adjustments Amts
One-time Costs								
Previous Year's Baseline	0.0	0	0.0	791,153	0.0	1,017,986		
(A) Annual Augmentation /(Reduction)	**0.0**	**791,153**	**0.0**	**226,833**	**0.0**	**(1,017,986)**		
(B) Total One-Time Budget Actions	0.0	791,153	0.0	1,017,986	0.0	0	**0.0**	**1,809,139**
Continuing Costs								
Previous Year's Baseline	0.0	0	0.0	0	0.0	611,261		
(C) Annual Augmentation /(Reduction)	**0.0**	**0**	**0.0**	**611,261**	**0.3**	**45,162**		
(D) Total Continuing Budget Actions	0.0	0	0.0	611,261	0.3	656,423	**0.3**	**1,267,684**
Total Annual Project Budget Augmentation /(Reduction) [A + C]	**0.0**	**791,153**	**0.0**	**838,094**	**0.3**	**(972,824)**		

[A, C] Excludes Redirected Resources

0.3	**3,076,823**

Annual Savings/Revenue Adjustments

Cost Savings	0.0	0	0.0	0	0.0	0		
Increased Program Revenues		0		0		0		