Healthcare Workforce Clearinghouse:

Feasibility Study Report

Version 1.0 – Agency Approved

Prepared for
The Office of Statewide Health Planning & Development

August 15, 2008

Document Revision History

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1.0 Project Approval Transmittal

Information Technology Project Request

Feasibility Study Report

Executive Approval Transmittal

Department Name		
Office of Statewide Health Planning and Development		
Project Title (maximum of 75 characters)		
Healthcare Workforce Clearinghouse Project		
Project Acronym	**Department Priority**	**Agency Priority**
HWC Project	**High**	**High**
APPROVAL SIGNATURES		

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

I certify that the FSR was prepared in accordance with State Administrative Manual Sections 4920-4930.1 and 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.

Information Security Officer		**Date Signed**
Printed name:	Chuck Lano	
Chief Information Officer		**Date Signed**
Printed name:	Stephanie Clendenin	
Budget Officer		**Date Signed**
Printed name:	Karen Miskanis	
Department Director		**Date Signed**
Printed name:	David M. Carlisle, M.D., Ph.D.	
Agency Secretary		**Date Signed**
Printed name:	S. Kimberly Belshé	

2.0 IT Project Summary Package

This section contains the following information:

- Section A: Executive Summary
- Section B: Project Contacts
- Section C: Project Relevance to State and/or Department/Agency Plans
- Section D: Budget Information
- Section E: Vendor Project Budget
- Section F: Risk Assessment Information

INFORMATION TECHNOLOGY PROJECT SUMMARY PACKAGE
SECTION A: EXECUTIVE SUMMARY

1.	**Submittal Date**	July 13, 2008

		FSR	SPR	PSP Only	Other:
2.	**Type of Document**	✓			
	Project Number	**4140-22**			

			Estimated Project Dates	
3.	**Project Title**	Healthcare Workforce Clearinghouse Project	**Start**	**End**
	Project Acronym	HWC Project	July, 2009	June, 2012

4.	**Submitting Department**	Office of Statewide Health Planning and Development
5.	**Reporting Agency**	N/A

6.	Project Objectives

This FSR is for a new Information Technology (IT) system to implement the mandates of SB 139 (Chapter 522, Statutes of 2007), which mandates the Office of Statewide Health Planning and Development (OSHPD) to create and implement the Healthcare Workforce Clearinghouse.

The first part of the legislative mandate directs the OSHPD to establish the Clearinghouse to serve as the central source of healthcare workforce and educational data in the State. The Clearinghouse Solution shall be responsible for the collection, analysis and distribution of information on the educational and employment trends for healthcare occupations in the State. The activities of the Clearinghouse shall be funded by appropriations made from the California Health Data and Planning Fund in accordance with subdivision (h) of Section 127280.

The legislative mandate then directs the OSHPD to work with the Employment Development Department's Labor Market Information Division (EDD-LMID), State licensing boards and State higher education entities to collect, to the extent available, all of the following data:

- The current supply of healthcare workers, by specialty.
- The geographical distribution of healthcare workers, by specialty.
- The diversity of the healthcare workforce, by specialty, including, but not necessarily limited to, data on race, ethnicity and languages spoken.
- The current and forecasted demand for healthcare workers, by specialty.
- The educational capacity to produce trained, certified and licensed healthcare workers, by specialty and by geographical distribution, including, but not necessarily limited to, the number of educational slots, the number of enrollments, the attrition rate and wait time to enter the program of study.

Finally, as part of the On-Going Clearinghouse operations, the OSHPD is directed to prepare an annual report to the Legislature. This annual report includes the following:

- Identifies education and employment trends in the healthcare profession.
- Reports on the current supply and demand for healthcare workers in California and gaps in the educational pipeline producing workers in specific occupations and geographic areas.

Recommends State policy needed to address issues of workforce shortage and distribution.

7.	Proposed Solution

8.	Major Milestones	Estimated Completion Date
	Phase I - Project Initiation	November, 2009
	Phase I - System Development	September, 2011
	Phase II – Project Initiation	August, 2010
	Phase II – System Development	June, 2012
	Phase III – System Development	June, 2012
	Post Implementation	January, 2013
	Key Deliverables	**Estimated Delivery Date**
	Requirements Definition	November, 2009
	System Design	March, 2010
	System Development & Testing (Phase I)	June 2011
	System Documentation (Phase I)	June 2011
	System Development &Testing (Phase II)	June, 2012
	System Documentation (Phase II)	June, 2012
	System Development & Testing (Phase III)	June, 2012
	System Documentation (Phase III)	June, 2012
	PIER	January, 2013

Project #	**4140-22**
Doc. Type	FSR

Executive Contacts								
	First Name	**Last Name**	**Area Code**	**Phone #**	**Ext.**	**Area Code**	**Fax #**	**E-mail**
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Direct Contacts								
	First Name	**Last Name**	**Area Code**	**Phone #**	**Ext.**	**Area Code**	**Fax #**	**E-mail**
Doc. prepared by	Chris	Maneely	916	326-3884		916	327-1262	cmaneely@oshpd.state.ca.us
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INFORMATION TECHNOLOGY PROJECT SUMMARY
SECTION C: PROJECT RELEVANCE TO STATE AND/OR DEPARTMENTAL PLANS

1.	**What is the date of your current Operational Recovery Plan (ORP)?**	**Date**	7/1/2008
2.	**What is the date of your current Agency Information Management Strategy (AIMS)?**	**Date**	Dec. 2003
3.	**For the proposed project, provide the page reference in your current AIMS and/or strategic business plan.**	**Doc.**	AIMS
		Page #	5-6 & 13-14

Project #	**4140-22**
Doc. Type	FSR

		Yes	No
4.	**Is the project reportable to control agencies?**	✓	

	If YES, CHECK all that apply:
X	**a) The project involves a budget action.**
X	**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.**
	c) The project involves the acquisition of microcomputer commodities and the agency does not have an approved Workgroup Computing Policy.
X	**d) The estimated total development and acquisition cost exceeds the departmental cost threshold.**
	e) The project meets a condition previously imposed by Finance.

INFORMATION TECHNOLOGY PROJECT SUMMARY PACKAGE
SECTION D: BUDGET INFORMATION

Project #	**4140-22**
Doc. Type	FSR

Budget Augmentation Required?		
No		
Yes	✓	**If YES, indicate fiscal year(s) and associated amount:**

FY	2009-10	FY	2010-11	FY	2011-12	FY	2012-13	FY	2013-14	FY	2014-15
	$1,302,000		$2,311,000		$2,667,000		$1,439,000		$1,439,000		$1,439,000

PROJECT COSTS

1.	**Fiscal Year**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**TOTAL**
2.	**One-Time Cost**	$1,302,000	$2,311,000	$2,667,000	$0	$0	$0	$5,630,000
3.	**Continuing Costs**	$0	$325,000	$325,000	$1,439,000	$1,439,000	$1,439,000	$4,967,000
4.	**TOTAL PROJECT BUDGET**	$1,302,000	$2,311,000	$2,667,000	$1,439,000	$1,439,000	$1,439,000	$10,597,000

SOURCES OF FUNDING

5.	**General Fund**	$0	$0	$0	$0	$0	$0	$ 0.00
6.	**Redirection**	$0	$0	$0	$0	$0	$0	$ 0.00
7.	**Reimbursements**	$0	$0	$0	$0	$0	$0	$ 0.00
8.	**Federal Funds**	$0	$0	$0	$0	$0	$0	$ 0.00
9.	**Special Funds**	$0	$0	$0	$0	$0	$0	$ 0.00
10.	**Grant Funds**	$0	$0	$0	$0	$0	$0	$ 0.00
11.	**Other Funds (CHDPF)**	$1,302,000	$2,311,000	$2,667,000	$1,439,000	$1,439,000	$1,439,000	$10,597,000
12.	**PROJECT BUDGET**	$1,302,000	$2,311,000	$2,667,000	$1,439,000	$1,439,000	$1,439,000	$10,597,000

PROJECT FINANCIAL BENEFITS

13.	**Cost Savings/Avoidances**							
14.	**Revenue Increase**							

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

INFORMATION TECHNOLOGY PROJECT SUMMARY PACKAGE
SECTION E: VENDOR PROJECT BUDGET

Project #	**4140-22**
Doc. Type	FSR

Vendor Cost for FSR Development (if applicable)	**$95,025**
Vendor Name	Pacific Project Management, Inc.

VENDOR PROJECT BUDGET

1.	Fiscal Year	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	TOTAL
2.	Software Customization	$200,000	$800,000	$1,200,000	$350,000	$350,000	$350,000	$3,250,000.00
3.	Project Management							
4.	Project Oversight	$100,000	$100,000	$100,000	$0	$0	$0	$300,000.00
5.	IV&V Services	$100,000	$100,000	$100,000	$0	$0	$0	$300,000.00
6.	QA/QC	$0	$75,000	$75,000	$0	$0	$0	$150,000.00
7.	TOTAL VENDOR BUDGET	$200,000	$275,000	$275,000	$ 0	$ 0	$ 0	$750,000.00

----------(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

Project #	**4140-22**
Doc. Type	FSR

RISK ASSESSMENT

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

General Comment(s)
Risk planning is a standard and rigorous process required by the OSHPD's project management framework for all projects at the OSHPD. The OSHPD has the required technology infrastructure in place to build and support the Healthcare Workforce Clearinghouse System. The OSHPD has had extensive experience with developing, implementing and supporting web based healthcare collection and dissemination systems. The scope of the proposed system is small compared to the OSHPD's larger data collection system such as MIRCal and ALIRTS. In addition many of the major components of this system will take advantage of technologies already in place at OSHPD including the Enterprise Geographic Information System, the Data Warehouse, MIRCal and ALIRTS. Please refer to Section 7, Risk Management Plan for additional information.

3.0 BUSINESS CASE

This section of the FSR will support that the OSHPD:

- Is specifically named in legislation to implement and manage a central repository of healthcare workforce and educational data,
- Has healthcare workforce and education expertise in its Healthcare Workforce Development Division (HWDD),
- Understands the demand (or need) for a central repository of this healthcare workforce and educational data,
- Has extensive data warehouse expertise in its management of data as a collective asset through the use of a centralized repository for data, and
- Is the right group to implement and manage this central repository because of its healthcare workforce and educational understanding, its experience and most of all, its neutrality[1].

3.1 Business Program Background

After mandated nurse staff ratio's were established in California, the Senate Office of Research investigated the supply and demand of specific allied healthcare fields, Respiratory Therapists in particular. The intent of the investigation was to better understand the dynamics in the healthcare workforce landscape, so as to preemptively recommend policy solutions to the Senate and combat potential shortfalls in healthcare supply. They found, however, an inability to effectively research the dynamics due to multiple data store silos in State Government. Subsequently, Senator Scott introduced Senate Bill 139 establishing the California Healthcare Workforce Clearinghouse.

An adequate supply of healthcare workforce personnel is essential to providing access to quality healthcare in California. In particular, California's healthcare workforce must be highly skilled, specialized and flexible enough to provide service for a population as diverse as California's growth, age, race/ethnicity, income and geography.

SB 139 recognizes the importance in the comprehensive understanding by policy makers as to the flux in the healthcare workforce. A centralized healthcare workforce clearinghouse reporting system is necessary to inform policy solutions designed to meet increased and changing workforce demands. Currently, the State of California does not maintain a comprehensive healthcare workforce data repository. The Employment Development Department's – Labor Market Information Division (EDD-LMID) statistics do not fully articulate healthcare professional specialties enough to understand the current supply and demand picture. The State health licensing boards do not have a consistent mechanism for collecting data on licensed healthcare professionals, nor do many of them have the resources to integrate, analyze and report on the data. The OSHPD's experience with workforce assessment and development programs and

[1] In terms of a State Agency tasked to do this—based on feedback from March 6, 2008 Clearinghouse Advisory Team meeting at the OSHPD and an April 24, 2008 Focus Group meeting in Los Angeles.

health data collection, integration, analysis and reporting make it the appropriate department to develop and manage the Clearinghouse program.

The Office of Statewide Health Planning and Development (OSHPD) Healthcare Workforce and Education Clearinghouse Program (Clearinghouse) was established by Senate Bill 139 (Chapter 522, Statutes of 2007), which mandates the OSHPD to create and implement the Clearinghouse.

The first part of the legislative mandate directs the OSHPD to establish the Clearinghouse to serve as the central source of healthcare workforce and educational data in the State. The Clearinghouse Solution shall be responsible for the collection, analysis and distribution of information on the educational and employment trends for healthcare occupations in the State. The activities of the Clearinghouse shall be funded by appropriations made from the California Health Data and Planning Fund in accordance with subdivision (h) of Section 127280.

The legislative mandate then directs the OSHPD to work with the EDD-LMID, State licensing boards and State higher education entities to collect, to the extent available, all of the following data:

- The current supply of healthcare workers, by specialty.
- The geographical distribution of healthcare workers, by specialty.
- The diversity of the healthcare workforce, by specialty, including, but not necessarily limited to, data on race, ethnicity and languages spoken.
- The current and forecasted demand for healthcare workers, by specialty.
- The educational capacity to produce trained, certified and licensed healthcare workers, by specialty and by geographical distribution, including, but not necessarily limited to, the number of educational slots, the number of enrollments, the attrition rate and wait time to enter the program of study.

Finally, as part of the On-Going Clearinghouse operations, the OSHPD is directed to prepare an annual report to the Legislature. This annual report includes the following:

- Identifies education and employment trends in the healthcare profession.
- Reports on the current supply and demand for healthcare workers in California and gaps in the educational pipeline producing workers in specific occupations and geographic areas.
- Recommends State policy needed to address issues of workforce shortage and distribution.

The Clearinghouse is a new program. There is no existing business process in place, either manual or automated, to create and administer the Clearinghouse program. The OSHPD has selected its Healthcare Workforce Development Division (HWDD) to create and administer the Clearinghouse and fulfill the requirements of the legislation.

3.1.1 The OSHPD Organization

The OSHPD was created in 1978 to provide the State with an enhanced understanding of the structure and function of its healthcare delivery systems. Since that time, its role has expanded to include direct delivery of various services designed to promote healthcare accessibility within California. The OSHPD now leads the state in collecting health data and disseminating information about California's healthcare infrastructure, promoting an equitably distributed healthcare workforce and publishing valuable information about healthcare outcomes.

The OSHPD also monitors the construction, renovation and seismic safety of hospitals and skilled nursing facilities and provides loan insurance to facilitate the capital needs of California's not-for-profit healthcare facilities. These programmatic functions are (1) distributed across four divisions and one foundation, (2) advised by five boards and commissions and (3) supported by the OSHPD's Administrative Services Division.

Figure 3-1 below illustrates the OSHPD's organizational structure.

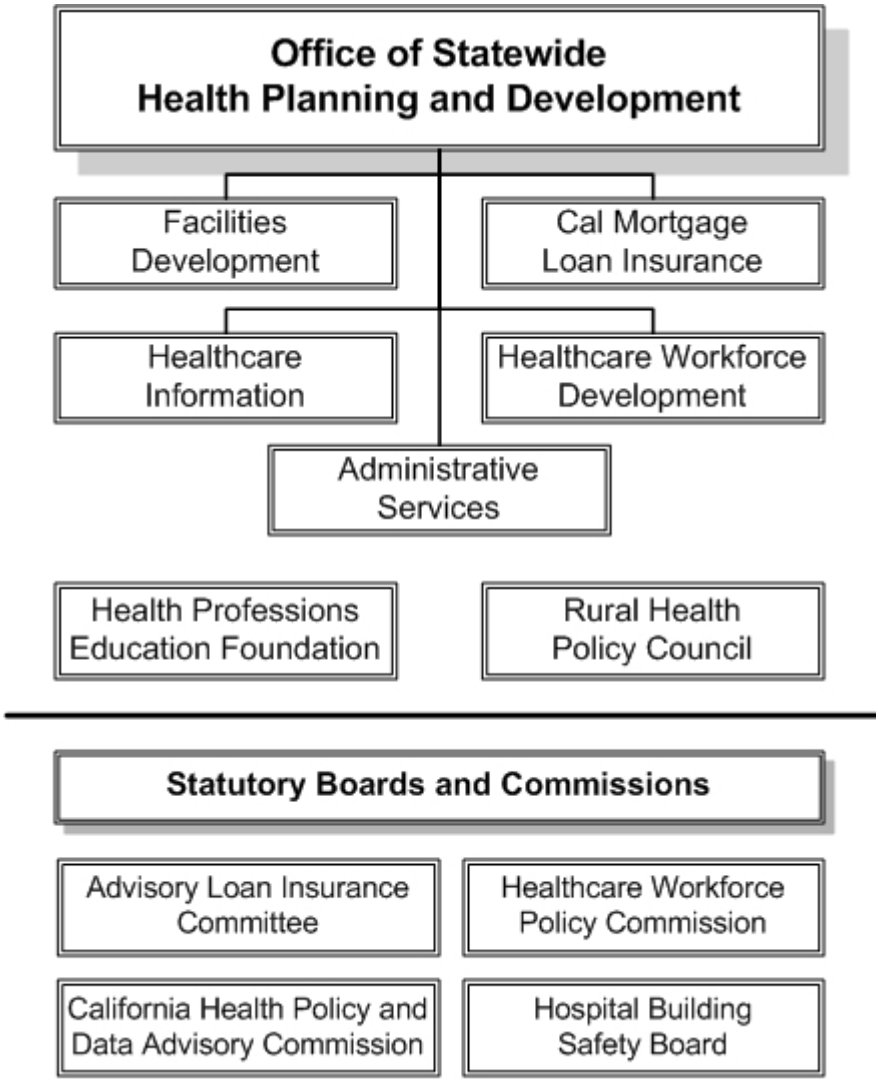

Figure 3-1 The OSHPD Organizational Structure

The OSHPD has successfully implemented a data warehousing, business intelligence and Geographic Information System (GIS) infrastructure. These investments have resulted in the ability to integrate valuable healthcare information across data sources and to make this information easily accessible. The OSHPD has the opportunity to leverage these investments to meet California's need for improved transparency of information to assess the State's healthcare workforce supply, demand and educational capacity and provide for informed decisions regarding policy and program efforts needed to respond to health professional shortages.

3.1.2 The HWDD Organization

The purpose of the HWDD is to support the vision of the OSHPD leadership function of assuring healthcare accessibility for California. Federal and State authorities provide guidance and criteria for the HWDD program operations. The HWDD supports healthcare accessibility through the promotion of a diverse and competent workforce while providing analysis of California's healthcare infrastructure and coordinating healthcare workforce issues. The division's programs, services and resources address, aid and define healthcare workforce issues throughout the State by:

- Encouraging demographically underrepresented groups to pursue healthcare careers.
- Identifying geographic areas of unmet need.
- Encouraging primary care physicians and non-physician practitioners to provide healthcare in health professional shortage areas in California.

The HWDD staff currently collect, analyze and publish data about California's healthcare workforce and health professional training, identify areas of the State in which there are shortages of health professionals and service capacity and coordinate with other State departments in addressing the unique health care issues facing California's rural areas. It is this current expertise in the healthcare workforce environment that makes the HWDD well qualified to create and administer the Clearinghouse program.

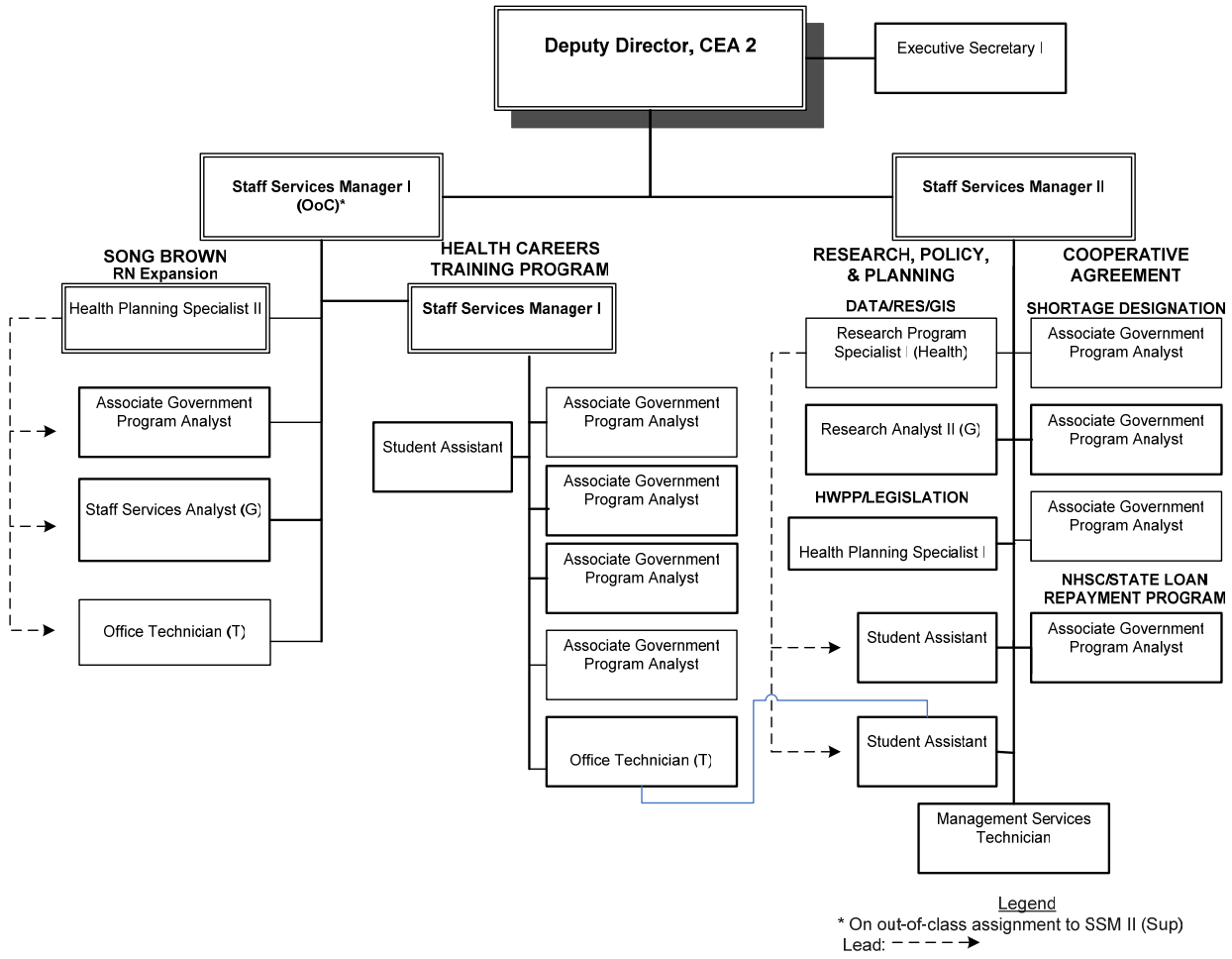

Figure 3-2: Office of Statewide Health Planning and Development—Healthcare Workforce Development Division

The HWDD manages a number of healthcare workforce programs already and also produces related publications and reports. The following subsections describe these programs and services.

Health Careers Training Program (HCTP)

The 1985-86 Governor's Budget authorized the OSHPD to begin a contracting program to facilitate the training of underrepresented individuals for health professions needed in underserved areas of the State. The HCTP is a health professions resource and increases access to a multi-culturally and linguistically competent healthcare workforce. To achieve these objectives, the HCTP:

- Develops public and private partnerships that encourage and address health careers training and employment needs for a workforce that reflects the diversity of the State's population.

- Provides financial support through Mini-Grants that focus on academic preparation and support, community service, health career conferences and workshops and case management for students.
- Assists educators and healthcare providers in developing and/or expanding occupational training for targeted health occupations.
- Collects and distributes resource information on health education programs, financial incentives and job opportunities.
- Increases awareness of health professions and health sciences through student outreach.

Healthcare Workforce Pilot Projects Program (HWPP)

The California Health and Safety Code, Section 128125-128195, established the HWPP and the California Code of Regulations, Section 92001-92702, provides the definitions and criteria for administering the HWPP.

The HWPP allows organizations to test, demonstrate and evaluate new or expanded roles for healthcare professionals, or new healthcare delivery alternatives before changes in licensing laws are made by the Legislature. Various organizations use the HWPP to study the potential expansion of a profession's scope of practice to:

- Facilitate better access to healthcare.
- Expand and encourage workforce development.
- Demonstrate, test and evaluate new or expanded roles for healthcare professionals or new healthcare delivery alternatives.
- Help inform the Legislature when considering changes to existing legislation in the Business and Professions code.

National Health Service Corps (NHSC) / California State Loan Repayment Program (CSLRP)

The NHSC/SLRP was congressionally authorized in 1987 under Section 3381 of the U.S. Public Health Services Act, 42 U.S.C 254q.1.

- The NHSC/SLRP increases the number of primary care physicians, dentists, dental hygienists; physician assistants, nurse practitioners, certified nurse midwives and mental health providers practicing in defined Health Professional Shortage Areas (HPSAs).

- The NHSC/SLRP authorizes repayment of educational loans to health professionals, who in turn must commit to practice in medically underserved areas in public or non-profit entities for a minimum of two years and maximum of four years.

Shortage Designation Program

The Shortage Designation Program (SDP) provides technical assistance to clinics and other primary care providers seeking recognition as a federally designated Health Professional Shortage Area (HPSA) for Primary Care, Dental Health and Mental Health disciplines or Medically Underserved Area/Medically Underserved Population (MUA/MUP). The SDP provides data analysis services and liaisons between the federal government and healthcare provider sites applying for HPSA or MUA/MUP status. Shortage designations:

- Enable clinics to be eligible for assignment of National Health Services Corp Personnel or apply for Rural Health Clinic Certification, Federally Qualified Health Center status (FQHC), FQHC Look-Alike, or New Start/Expansion program, depending on the designation.

- Promote the OSHPD's mission of “Equitable Healthcare Accessibility for California”.

The program is the State's liaison to the federal Shortage Designation Branch (SDB) of the Health Resources and Services Administration. The program was authorized by Congress as the Emergency Health Personnel Act of 1970 under the U.S. Public Health Service Act. The federal government funds the program.

Song-Brown Family Physician Training Program

The Song-Brown Healthcare Workforce Training Act (Song-Brown Program) was established in 1973 under the Health and Safety Code Section 128200-128241. Song-Brown in conjunction with the California Healthcare Workforce Policy Commission (CHWPC) awards funds for Family Practice (FP) residency, Family Nurse Practitioner (FNP), Physician Assistant (PA) and Registered Nurse (RN) education programs to increase the number of providers who serve the healthcare needs of the state's underserved populations. Funded programs must demonstrate success in meeting the following goals:

- Placement of FP physicians, PAs, FNPs and RNs in areas of unmet priority need,
- Attract and admit members of underrepresented minority groups to the program,
- Location of program clinical training sites in areas of unmet priority need

Research, Policy and Planning GIS/Data System

The HWDD Geographic Information Systems (GIS) provides analysis of healthcare resources and supplies data and research services to OSHPD, California Health and Human Services Agency (CHHSA), CHWPC and other state agencies. GIS technology assists customers in accomplishing their work plans through effective data analysis. HWDD performs the following functions:

- Reviews California's counties to assess provider-to-population ratios and poverty levels,
- Expands its ability to provide healthcare workforce data analysis,
- Tracks access to care, workforce shortage and workforce distribution trends through map analysis and graphic displays of quantitative information and
- Provides graphic substantiation data that strengthens legislative proposals and analysis and helps inform policy decisions.

Business Expertise Summary

As described in the aforementioned HWDD programs, services and publications, the HWDD has in depth knowledge and existing expertise in the healthcare workforce information environment. These attributes will enable the HWDD to successfully design, develop and administer the Clearinghouse Solution.

3.1.3 The Clearinghouse Vision

Once established the Clearinghouse Solution will be a central statewide repository of comprehensive healthcare workforce and educational information. It will fulfill the SB139 legislative mandates and will provide online access to the data repository for use by external entities such as: the data source stakeholders; education community; insurance organizations; Legislature; researchers; advocacy for professional associations and groups; foundations; federal/state/local government agencies; students and parents; healthcare practitioners; media (newspapers, television etc.); job placement organizations; community based organizations; marketers; advertisers and others.

Figure 3-3, illustrates the information flow into and out of the Clearinghouse program. It depicts the initial data source stakeholders and the external stakeholder data and information users.

Healthcare Workforce and Educational Information Flow to Clearinghouse Solution

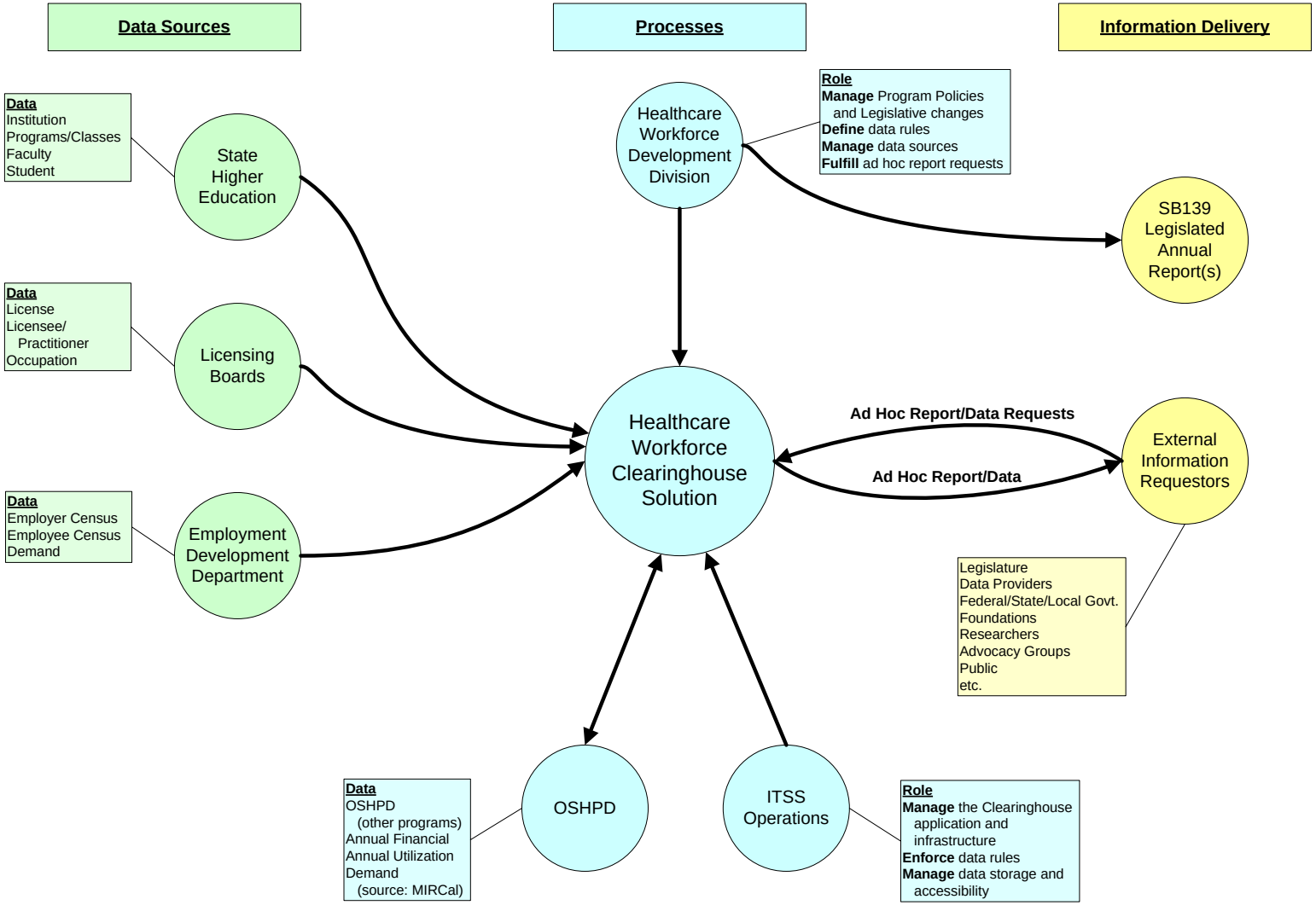

Figure 3-3 The Clearinghouse Information Flow

3.2 Business Problem/Opportunity

The Clearinghouse will assemble the current and relevant Healthcare Workforce data into one information warehouse. The Clearinghouse data warehouse will set adjacent to financial, patient and facility data that will complete the healthcare picture for policy makers, researchers and stakeholders in the State. Once available, key staff will be able to go to a single authoritative source for healthcare workforce information, giving them the best opportunity to investigate recent trends and develop appropriate healthcare policy. The Clearinghouse will offer the best available information about the nexus of three of the largest policy arenas in the State: Healthcare, Workforce and Education. Introducing policy lacking comprehensive quantitative information could result in significant detrimental economic and healthcare outcomes.

3.2.1 Business Analysis Methodology

The analysis of the business problems and opportunities, related business objectives and the related business functional and technical requirements was achieved using a workshop approach. Both the HWDD and Information Technology Services Section (ITSS) participated in a series of workshops designed to elicit a common overarching Clearinghouse project scope and approach and to reach a consensus on the business problems and opportunities and related business objectives and requirements. The following are overviews of each workshop conducted and a list of attendees for each workshop is included as Attachment 2 in the FSR.

1. **Initial Combined Workshop**

   This included both HWDD and ITSS project team members. The purpose of the workshop was to set the agreed project scope in the major process areas. This workshop covered the discussion points below.

   - Define the desired process and information flow

     i. Create a context/domain diagram, with the Clearinghouse Solution as the hub and documenting inputs and outputs and roles and responsibilities.

   - Define the required information source categories (which were defined in statute)

     i. This defined the Data Providers that the HWDD will be meeting with to obtain their participation. For example: EDD-LMID, State higher Education; and State Licensing Boards.

   - Define the required information source subcategories and high level information required.

2. HWDD Workshops

- **Clearinghouse – Problems, Opportunities and Objectives** this included the HWDD project team members. The purpose of the workshop was to discover the perceived business problems and opportunities and the goals/objectives that need to be fulfilled to solve the problems and realize the opportunities from a business perspective.

  This workshop was supported by a guide to map out the objectives of the workshop and included questions to prompt discussion to define the problems/opportunities and related objectives. The guide was emailed to the attendees several business days before the meeting so the attendees could prepare.

- **Clearinghouse – Objectives, Functional and Technical Requirements** this included the HWDD project team members. The purpose of the workshop was to discuss the objectives identified in the first workshop and to define the high level functional and technical requirements that will fulfill them from a business perspective.

  This workshop was supported by a guide to map out the objectives of the workshop. The guide was emailed to the attendees several business days before the meeting so the attendees could prepare.

3. ITSS Workshops

- **Clearinghouse – Problems, Opportunities and Objectives** this included the ITSS project team members. The purpose of the workshop was to discover the perceived business problems and opportunities and the goals/objectives that need to be fulfilled to solve the problems and realize the opportunities from a supporting information technology perspective.

  This workshop was supported by a guide to map out the objectives of the workshop and included questions to prompt discussion to define the problems/opportunities and related objectives. The guide was emailed to the attendees several business days before the meeting so the attendees could prepare.

- **Clearinghouse –Objectives, Functional and Technical Requirements** this included the ITSS project team members. The purpose of the workshop was to discuss the objectives identified in the first workshop and to define the high level functional and technical requirements that will fulfill them from a supporting information technology perspective.

  This workshop was supported by a guide to map out the objectives of the workshop. The guide was emailed to the attendees several business days before the meeting so the attendees could prepare.

4. Consensus and Requirements Validation Workshop

This included both HWDD and ITSS project team members. The purpose of the workshop was to gain consensus on any differences of vision between the HWDD and the ITSS discovered during the workshops and for both the HWDD and the ITSS to validate the high level functional and technical requirements.

3.2.2 Business Problems

An adequate supply of healthcare workforce personnel is essential to providing access to quality healthcare in California. In particular, California's healthcare workforce must be highly skilled, specialized and flexible enough to provide services for the State's diverse population in regards to growth, age, race/ethnicity, income and geography.

A central healthcare workforce clearinghouse does not currently exist, either through manual policies and procedures, or with the support of an automated system. The lack of comprehensive information poses three problems that limit the understanding of California's healthcare workforce needs.

Problem #1: There is no comprehensive understanding of California's healthcare workforce distribution due to lack of available data. Based on current data, there is an over-supply of some health professionals while others face shortages.

Problem #2: There is a concern that future demands will only exacerbate this lack of available data due to population growth, aging population, diversity and attrition.

Problem #3: There is no single source of workforce data that exists in the State to inform and support policy decisions.

3.3 Business Objectives

The following business objectives address the key problem statements defined above.

Objective #1: Use Existing OSHPD ITSS Methodologies and Expertise to Define, Create and Technically Manage the Clearinghouse Solution Cost Effectively

This will significantly reduce project risk and result in costs saving. OSHPD currently has no less than four major data collection programs (Patient Data, Health Facility Financial Data, Health Facility Utilization Data and Health Facility Licensing Data). The OSHPD has experience in managing data as an asset, in that it maintains a centralized repository for data. In doing so, it manages data more effectively through removing duplicate data management processes, building on collective IT infrastructure and data standards and providing an enterprise delivery mechanism for reporting and data analysis. In addition, the OSHPD Project Management Office (PMO) coordinates management of IT projects across the enterprise to increase value from its IT infrastructure. The PMO has developed methods and expertise which will manage the future development of the Clearinghouse Solution as a cost effective solution.

First, as described in Section 5—Proposed Solution, existing methodologies for data collection/validation as well as current data mart and data warehouse analysis and reporting methodologies will be used during the design of the Clearinghouse Solution. Leveraging existing design specifications during Design, Development and Implementation (DD&I) will result in less time to design a solution, which translates to cost savings.

Second, as described in Section 6—Project Management Plan, existing methodologies, policies, practices and tools will be employed during the initiation, planning, executing, controlling and closeout phases of the Clearinghouse Project to support successful management of the project. Following the OSHPD PMO required processes will ensure the project will be managed consistently with other PMO-managed projects, thus minimizing risk and ensuring success.

Finally, as described in Section 7—Risk Management Plan, existing methodologies, policies, practices and tools will be used during the Clearinghouse project to help manage project risk. Using a SharePoint-based Risk Management Log (previously developed by another project) to manage risk, will save time by eliminating the need to create a new tool to manage project risks. It is anticipated that 40-60 hours of the Program Director’s time will be saved.

Objective #2: Ensure Adequate Staffing of the Required Classifications and Expertise to Ensure the Success of the Clearinghouse Solution Management, Design, Development, Implementation and Maintenance and Operations

This will significantly reduce project risk and ensure that On-Going operations will be successful. The HWDD and ITSS worked together as early as the Bill Analysis phase to investigate the feasibility of the Clearinghouse Solution. Staff collaborated on the need for program and IT staff and the numbers and classifications are based on OSHPD experience developing, staffing and supporting data collection and dissemination programs. Currently the ITSS has no staff vacancies and maintains a high caliber IT staff across several core competency domains of expertise including data asset management, product management, GIS, business intelligence, SAS and application development.

Objective #3: Build a Rigorous Quality Control Process (QCP) into the Clearinghouse Program Policies and Procedures

This will encompass both the OSHPD definition of the data submission formats and business rules and the processing of the data from the Data Providers based on their defined data characteristics. The OSHPD will also establish the acceptable levels of data errors that will trigger complete submission rejection, or continued processing of the valid data.

Objective #4: Provide Easy To Use and Secure Data Submission and Correction Processes for the Data Providers

This will minimize the data submission and reporting burden on the Data Providers by providing a system that is easy to use and that enables easy submission and correction of data.

This includes the definition of the acceptable media for data submission. It is necessary to limit the possible data delivery methods and data formats for data submission, to exclude manual data entry, to create data standards and to control the costs associated with processing archaic and non-standard electronic media. As described in Section 5 – Proposed Solution, the data collection and validation process will be available in the first phase of the Clearinghouse Solution.

Objective #5: Provide Analysis Capability Across Multiple Years and Multiple Data Types

Beginning in FY 2009-10, the submitted data will be date stamped to specify an “effective date” for the data warehouse. This will help to mitigate the problem of differing age and effective dates of the data submitted by all the Data Providers. In this way “as of” date snapshots of the data can be extracted for reporting and analyses.

Objective #6: Manage the Participation of the Data Providers

The HWDD will proactively manage the relationships with the Data Providers for participation recruitment, data submissions, program and data requirement changes and Clearinghouse data access. The HWDD will establish periodic meetings with the Data Providers throughout the duration of the Clearinghouse program to ensure effective communications and adherence to data agreements.

Objective #7: Provide Comprehensive Workforce Information to Internal and External Clearinghouse Solution Users

The contents of the data warehouse must provide as complete as feasible healthcare workforce information and inform the end user of the content available.

This objective also includes the creation of a web-based Library and Catalog of Healthcare Workforce Information, to inform both the Data Providers and external stakeholders of what healthcare workforce information is already available and how it is accessible. This will prevent duplication of effort and support the Data Provider participation recruitment process.

Objective #8: Provide End Users with User Friendly Information Access and Required Output Formats

The OSHPD has experience in managing data as a collective asset across the organization. Specifically, it maintains a centralized repository of data that can be interrogated by authorized OSHPD users. This experience and infrastructure will be leveraged for the Clearinghouse Solution. In addition, the development and deployment of the EGIS project at the OSHPD has illustrated key value in product design that meets multiple needs and pulls from multiple OSHPD data sources. The OSHPD will build on the success of EGIS and the Healthcare Information Resource Center (HIRC) through the use of the Product Manager to ensure that end users are provided with a user friendly access point and a menu of output formats including, maps, charts, tables, databases and statistical files.

Data accessibility will be provided to selected data Providers via a project phasing to ensure effectiveness.

Objective #9: Develop the Clearinghouse Solution Application(s) and Infrastructure in an Easily Changeable Manner

This will enable easy incorporation of new or changed legislation or business rules and responsive changes to the infrastructure to accommodate growth.

For development of the data collection system, the OSHPD will apply its System Development Life Cycle (SDLC), enterprise technical architecture and project management standards. This will include developing system components using components of other OSHPD systems where possible and developing for ease of modification, update and replacement. Where possible, the system will include maintenance functionality that allows HWDD staff to manage changes in business rules without the need for IT staff intervention.

The OSHPD has developed a centralized repository for data, or Warehouse infrastructure, with multiple data-marts for individual content areas. In addition, a set of tools (including Business Objects, GIS and SAS) are placed on top of the warehouse which allows for the full suite of data discovery, analysis and delivery. This federated approach and core capacity across data tools means the centralized repository is flexible enough to provide data products quickly and easily. The Clearinghouse Solution will reap the benefit of this infrastructure development and be able to provide an application platform which is easily changeable.

3.4 Business Functional and Technical Requirements

This section presents the key business functional and technical requirements needed to achieve the business objectives defined in Section 3.3 Business Objectives. The following matrix is a compilation of requirements that satisfy one or more of the project objectives and may be modified and refined during the procurement document development phase.

Table 3-1: Objectives to Requirements Cross Reference

Objective	Related Requirements
Objective #1: Use Existing OSHPD ITSS Methodologies and Expertise to Define, Create and Technically Manage the Clearinghouse Solution Cost Effectively This will significantly reduce project risk and result in costs saving. OSHPD currently has no less than four major data collection programs (Patient Data, Health Facility Financial Data, Health Facility Utilization Data and Health Facility Licensing Data). The OSHPD has experience in managing data as an asset, in that it maintains a centralized repository for data. In doing so, it manages data more effectively through removing duplicate data management processes, building on collective IT infrastructure and data standards and providing an enterprise delivery mechanism for reporting and data analysis. In addition, the OSHPD Project Management Office (PMO) coordinates management of IT projects across the enterprise to increase value from its IT infrastructure. The PMO has developed methods and expertise which will manage the future development of the Clearinghouse Solution as a cost effective solution. First, as described in Section 5—Proposed Solution, existing methodologies for data collection/validation as well as current data mart and data warehouse analysis and reporting methodologies will be used during the	1.1 Use the existing ITSS approved and proven architecture. • HWDD to select preferred IT tools/processes for data validation, management and extraction in conjunction with ITSS. 1.2 Leverage the existing ITSS staff expertise, and involve ITSS staff in all aspects of the Clearinghouse project. 1.3 Only electronic data collection will be performed. 1.4 Leverage the existing Data Providers' data collection and reporting systems and incorporate their existing standards where possible. 1.5 The Clearinghouse Solution technical environment must be scalable to accommodate future growth. *Also supported by:* *3.9 Leverage existing OSHPD data collection and reporting systems processes and incorporate existing standards, where possible.*

Objective	Related Requirements
design of the Clearinghouse Solution. Leveraging existing design specifications during Design, Development and Implementation (DD&I) will result in less time to design a solution, which translates to cost savings. Second, as described in Section 6—Project Management Plan, existing methodologies, policies, practices and tools will be employed during the initiation, planning, executing, controlling and closeout phases of the Clearinghouse Project to support successful management of the project. Following the OSHPD PMO required processes will ensure the project will be managed consistently with other PMO-managed projects, thus minimizing risk and ensuring success. Finally, as described in Section 7—Risk Management Plan, existing methodologies, policies, practices and tools will be used during the Clearinghouse project to help manage project risk. Using a SharePoint-based Risk Management Log (previously developed by another project) to manage risk, will save time by eliminating the need to create a new tool to manage project risks. It is anticipated that 40-60 hours of the Program Director's time will be saved.	

Objective	Related Requirements
Objective #2: Ensure Adequate Staffing of the Required Classifications and Expertise to Ensure the Success of the Clearinghouse Solution Management, Design, Development, Implementation and Maintenance and Operations This will significantly reduce project risk and ensure that On-Going operations will be successful. The HWDD and ITSS worked together as early as the Bill Analysis phase to investigate the feasibility of the Clearinghouse Solution. Staff collaborated on the need for program and IT staff and the numbers and classifications are based on OSHPD experience developing, staffing and supporting data collection and dissemination programs. Currently the ITSS has no staff vacancies and maintains a high caliber IT staff across several core competency domains of expertise including data asset management, product management, GIS, business intelligence, SAS and application development.	2.1 Develop and maintain a Clearinghouse Program Business Management Plan (initially based on the FSR) to address the appropriate staffing levels of both HWDD and ITSS required to support the Clearinghouse Solution DD&I Project and on-going maintenance and operations. This will include: • Sufficient staff development and training 2.2 Provide Program leadership to include: • Stakeholder outreach • Program policy management

Objective	Related Requirements
Objective #3: Build a Rigorous Quality Control Process (QCP) into the Clearinghouse Program Policies and Procedures This will encompass both the OSHPD definition of the data submission formats and business rules and the processing of the data from the Data Providers based on their defined data characteristics. The OSHPD will also establish the acceptable levels of data errors that will trigger complete submission rejection, or continued processing of the valid data.	3.1 Develop and maintain a Clearinghouse Program Quality Management Plan to define the quality control policies and procedures and how quality control will be applied to the Clearinghouse program. 3.2 Develop automated support tools for the Quality Control processes that incorporate the auditing requirements as well. 3.3 Analyze other auditing processes that impact the various State Agency Data Providers (e.g. EDD-LMID) for potential incorporation into the Clearinghouse Quality Control process. 3.4 Define the business rules for the submitted data. 3.5 Define the validation rules for the submitted data. 3.6 Apply the validation rules to the submitted data. 3.7 Enable the Data Providers to correct their submitted data. 3.8 Establish error tolerance levels for the submitted data set acceptance. 3.9 Leverage existing OSHPD data collection and reporting systems processes and incorporate existing standards, where possible.

Objective	Related Requirements
Objective #4: Provide Easy To Use and Secure Data Submission and Correction Processes for the Data Providers This will minimize the data submission and reporting burden on the Data Providers by providing a system that is easy to use and that enables easy submission and correction of data. This includes the definition of the acceptable media for data submission. It is necessary to limit the possible data delivery methods and data formats for data submission, to exclude manual data entry, to create data standards and to control the costs associated with processing archaic and non-standard electronic media. As described in Section 5 – Proposed Solution, the data collection and validation process will be available in the first phase of the Clearinghouse Solution.	4.1 Minimize the data reporting burden on the Data Providers by providing a system that is easy to use and enables easy submission and correction of data. 4.2 Provide automated communications to Data Providers to include: • Data Due Reminders • Clearinghouse Update Notices • Data Status Notifications • Error Feedback 4.3 HWDD in conjunction with ITSS will define the acceptable media transmission formats that OSHPD is capable of accepting from the Data Providers. 4.4 Specify in regulations the acceptable media transmission formats <u>from</u> Data Providers, as determined by 4.3. 4.5 HWDD in conjunction with ITSS will determine the available data formats <u>used by</u> the Data Providers. 4.6 HWDD in conjunction with ITSS will define the data format specifications for converting the Data Provider data to the Clearinghouse Solution data requirements. 4.7 Determine if there are applicable National or Industry Standards for data format for the collection of healthcare workforce information that can be adopted for the Clearinghouse program community. 4.8 Specify in regulations the acceptable data formats <u>for</u> the Data Providers. 4.9 Allow the Data Providers to manage their Clearinghouse Solution user access accounts. *Also supported by:* *1.4 Leverage the existing Data Providers' data collection and reporting*

Objective	Related Requirements
	systems and incorporate their existing standards where possible. *3.9 Leverage existing OSHPD data collection and reporting systems processes and incorporate existing standards, where possible.*

Objective	Related Requirements
Objective #5: Provide Analysis Capability Across Multiple Years and Multiple Data Types Beginning in FY 2009-10, the submitted data will be date stamped to specify an "effective date" for the data warehouse. This will help to mitigate the problem of differing age and effective dates of the data submitted by all the Data Providers. In this way "as of" date snapshots of the data can be extracted for reporting and analyses.	5.1 The data structure must accommodate the analysis capability and reporting requirements. 5.2 Provide an automated toolset that enables the use of multiple data sources to fulfill analytical requirements. 5.3 Provide a function to manage the data and data changes. 5.4 Date stamp all submitted data to create an 'as of' date. *Also supported by:* *7.4 Establish the data links and inter-relationships.*

Objective	Related Requirements
Objective #6: Manage the Participation of the Data Providers The HWDD will proactively manage the relationships with the Data Providers for participation recruitment, data submissions, program and data requirement changes and Clearinghouse data access. The HWDD will establish periodic meetings with the Data Providers throughout the duration of the Clearinghouse program to ensure effective communications and adherence to data agreements.	6.1 Establish a Clearinghouse Communications Management Plan which includes a component on the management of Data Providers and their participation in the Clearinghouse program. 6.2 Establish a Clearinghouse Advisory Team and meet with them periodically throughout the program lifecycle to get their input and support in the direction and functionality of the Clearinghouse program. 6.3 Establish Regional Focus Groups to determine if the Clearinghouse program is meeting the needs of the Data Providers and Data Users and what enhancements and improvements are applicable.

Objective	Related Requirements
Objective #7: Provide Comprehensive Workforce Information to Internal and External Clearinghouse Solution Users The contents of the data warehouse must provide as complete as feasible healthcare workforce information and inform the end user of the content available. This objective also includes the creation of a web-based Library and Catalog of Healthcare Workforce Information, to inform both the Data Providers and external stakeholders of what healthcare workforce information is already available and how it is accessible. This will prevent duplication of effort and support the Data Provider participation recruitment process.	7.1 Inventory and manage the contents of existing Healthcare Workforce and Educational Information (annual reports, periodicals, etc.). 7.2 Create and manage an additional web page to provide the on-line Library and Catalog of existing Healthcare Workforce and Educational Information. 7.3 Establish access criteria and procedures for obtaining information from the Library and Catalog of existing Healthcare Workforce and Educational Information (both on-line and on-site). 7.4 Establish the data links and inter-relationships. 7.5 Provide approved access to the data to external information requestors. 7.6 Provide adequate online storage for the required data. 7.7 Provide efficient and timely retrieval of information. *Also supported by:* *3.9 Leverage existing OSHPD data collection and reporting systems processes and incorporate existing standards, where possible.*

Objective	Related Requirements
Objective #8: Provide End Users with User Friendly Information Access and Required Output Formats The OSHPD has experience in managing data as a collective asset across the organization. Specifically, it maintains a centralized repository of data that can be interrogated by authorized OSHPD users. This experience and infrastructure will be leveraged for the Clearinghouse Solution. In addition, the development and deployment of the EGIS project at the OSHPD has illustrated key value in product design that meets multiple needs and pulls from multiple OSHPD data sources. The OSHPD will build on the success of EGIS and the Healthcare Information Resource Center (HIRC) through the use of the Product Manager to ensure that end users are provided with a user friendly access point and a menu of output formats including, maps, charts, tables, databases and statistical files. Data accessibility will be provided to selected data Providers via a project phasing to ensure effectiveness.	8.1 Provide an automated web-based toolset for general end user reporting. 8.2 Provide reporting types that include: • Geographic • Charts • Graphs • Time series • Comparative • ADA alternatives 8.3 Provide easy use features that include: • Search capability • Exportable data formats • Data catalog *Also supported by:* *5.1 The data structure must accommodate the analysis capability and reporting requirements.*

Objective	Related Requirements
Objective #9: Develop the Clearinghouse Solution Application(s) and Infrastructure in an Easily Changeable Manner This will enable easy incorporation of new or changed legislation or business rules and responsive changes to the infrastructure to accommodate growth. For development of the data collection system, the OSHPD will apply its System Development Life Cycle (SDLC), enterprise technical architecture and project management standards. This will include developing system components using components of other OSHPD systems where possible and developing for ease of modification, update and replacement. Where possible, the system will include maintenance functionality that allows HWDD staff to manage changes in business rules without the need for IT staff intervention. The OSHPD has developed a centralized repository for data, or Warehouse infrastructure, with multiple data-marts for individual content areas. In addition, a set of tools (including Business Objects, GIS and SAS) are placed on top of the warehouse which allows for the full suite of data discovery, analysis and delivery. This federated approach and core capacity across data tools means the centralized repository is flexible enough to provide data products quickly and easily. The Clearinghouse Solution will reap the benefit of this infrastructure development and be able to provide an application platform which is easily changeable.	9.1 Enable easy incorporation of new and changed legislative requirements. 9.2 Enable easy addition or change to business rules. *Also supported by:* *1.1 Use the existing ITSS approved and proven architecture.* *1.5 The Clearinghouse Solution technical environment must be scalable to accommodate future growth.* *3.9 Leverage existing OSHPD data collection and reporting systems processes and incorporate existing standards, where possible.*

Global Technical Requirements

These are high level general technical requirements that apply to all SDLC phases of the Clearinghouse project.

Requirement Reference	Requirement Statement
GT1	The Clearinghouse project DD&I phases must comply with the OSHPD Data Management standards and policies.
GT2	The Clearinghouse project DD&I phases must comply with the OSHPD IT standards for SDLC and hardware and software.
GT3	The Clearinghouse production environment must not negatively affect the current OSHPD end user accessibility and response levels.
GT4	The Clearinghouse project must meet OSHPD Information Security Office (ISO) security and confidentiality requirements for data.
GT5	There must be comprehensive documentation for all phases of the Clearinghouse project SDLC.
GT6	The Clearinghouse program and solution must be designed to support the OSHPD Enterprise Mission.

4.0 BASELINE ANALYSIS

The purpose of this section is to provide a clear understanding of the current tools and methods of operation in place at the OSHPD that will support the Healthcare Workforce Clearinghouse program. This section provides a framework for exhibiting the full technical and work process standards in place at the OSHPD and provides a baseline to support the assessment of the proposed solution described in Section 5.

4.1 Current Method

Currently there is no process or system in place to meet the legislative requirement for a Healthcare Workforce Clearinghouse program. However, the OSHPD has a mature and long history of healthcare data collection, validation, and dissemination. In particular, the Medical Information Reporting for California (MIRCal) System is responsible for data collection and validation of all in-patient, ambulatory surgery and emergency department patient level data in California. The present volume of new records annually amounts to more than 15 million. Originally implemented in 2001 with in-patient records, OSHPD's success allowed the expansion of the system to include both ambulatory surgery and emergency department in 2003. The Figure below illustrates the MIRCal environment as it exists today.

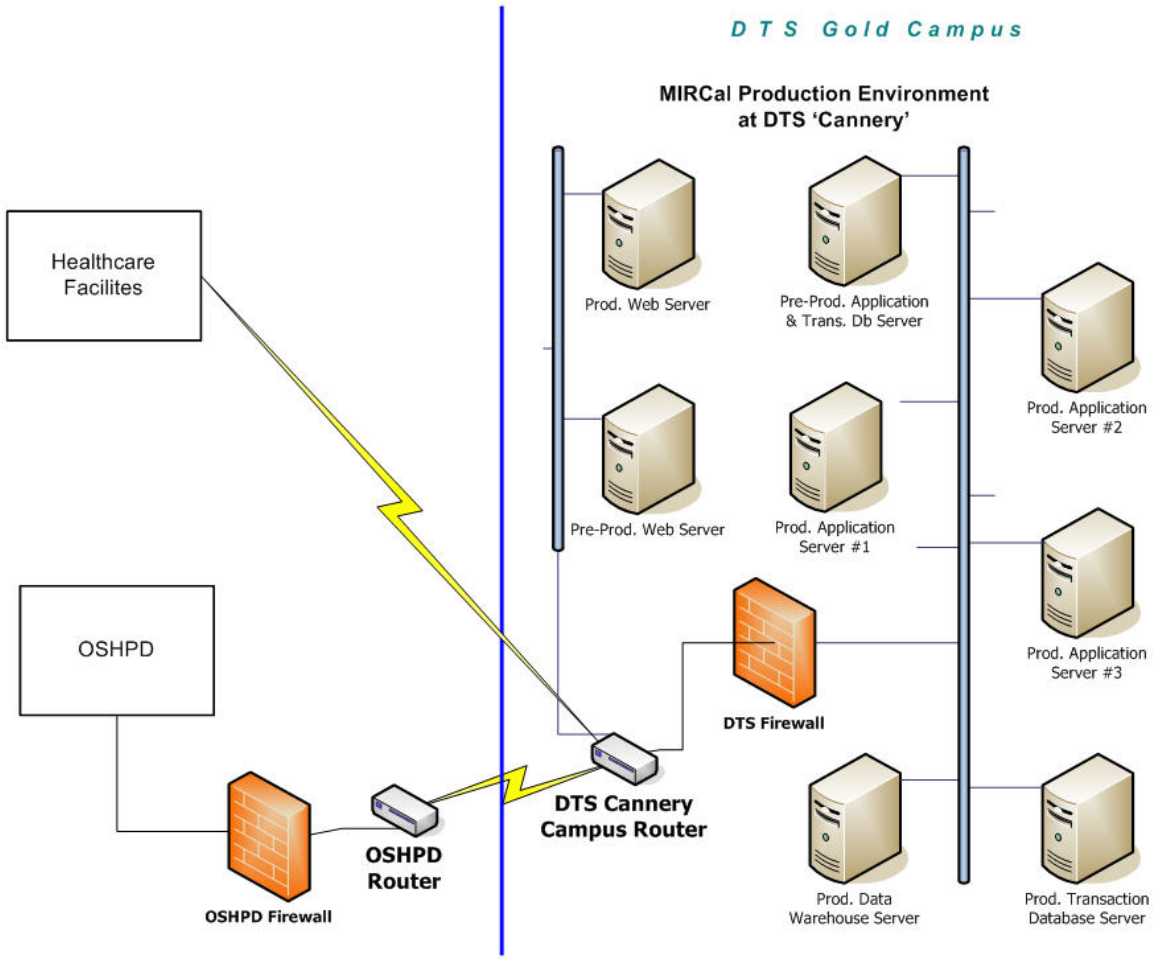

Figure 4-1: Current MIRCal Architecture

Recognizing the value in data management across the enterprise, the OSHPD developed a centralized data repository called the data warehouse. This data warehousing environment allows for seamless data reporting and analysis across multiple data collection systems. The OSHPD designed the data warehouse using a federated data mart approach. This approach allows for growth as new systems come on-line, harnessing the collective value of the entire enterprise. In-Patient was the first data mart (see PDD in the Figure below), followed by Emergency Department and Ambulatory Surgery (EDAS), Facility data and the Enterprise Geographic Information Systems (EGIS) data. With the implementation of the data warehouse, the OSHPD has significantly decreased time required to access healthcare data.

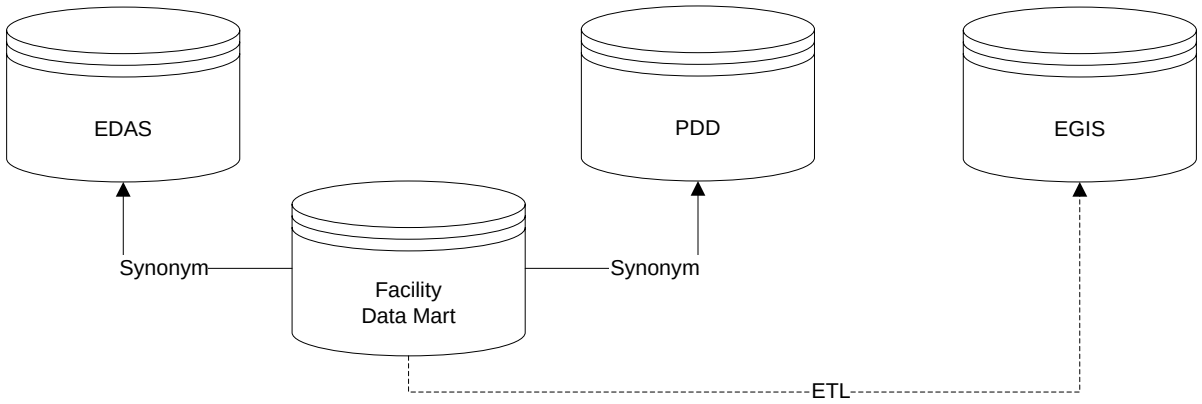

Figure 4-2: Current OSHPD Enterprise Data Warehouse Data Marts

4.2 Technical Environment

4.2.1 Expected Life of Proposed Solution

No fixed end date exists at which the proposed solution will be discontinued. The proposed solution will have to be flexible enough to accommodate unforeseen future changes including changes in program structure, as well as the addition of new programs or changes in the technology environment. Because of this the Clearinghouse Solution will be designed to allow for future expandability to prolong the life of the system.

4.2.2 State-level information processing policies

The Clearinghouse Solution will be designed to adhere to all state-level policies for information processing. A requirement of the Clearinghouse Solution will be that it will leverage existing IT infrastructure and tools where possible.

There will be no external interfaces with other systems. The Clearinghouse Solution will have integrated components for Data Collection and Validation, Data Warehouse and a Web-based Reporting environment. The Data Collection and Validation component will be modeled after the existing proven MIRCal application, which is currently in production and is being enhanced. The Clearinghouse data will be stored in a data mart which will be a component of the existing OSHPD enterprise data warehouse. The web-

based ad hoc reporting and data extraction environment will be supported by existing OSHPD tools, such as E-GIS and Business Objects, which will extract information directly from the data warehouse to support and control user requests.

The Clearinghouse Solution will reside within the existing Department of Technology Services (DTS) and the OSHPD enterprise technical infrastructure for network management, server management, communications, data security and Internet connectivity.

4.2.3 Financial constraints

As with all the OSHPD systems, the Clearinghouse program must operate within the annually allotted budget during design, development and implementation as well as during the operating life cycle of the Clearinghouse Solution.

4.2.4 Legal and public policy constraints

Requirements for the Clearinghouse program are defined in law (Senate Bill 139—Chapter 522, Statutes of 2007). If additional legislation is required to compel Data Providers to submit data to the Clearinghouse program, the OSHPD will work within all legal and public policy constraints as prescribed by law and enhanced by regulations. At this time, there is no legal impact or constraint caused by this project.

4.2.5 Agency Information Management Policies and Procedures

All Health and Human Services Agency Information Management policies and procedures, as well as those established by the OSHPD, will be adhered to in the design, development, implementation as well as operations and maintenance of the Healthcare Workforce Clearinghouse.

4.2.6 Changes in Hardware and Software

All changes to hardware and software to the Clearinghouse Solution will be managed through those processes developed and in place within the ITSS at the OSHPD. Specifically, these changes will be recommended, analyzed, reviewed, improved if rejected and if approved implemented via the change management process in place.

4.2.7 Staffing Availability

All staffing, either HWDD ‘program’ staff or ITSS ‘support’ staff will be defined and budgeted for in the Budget Change Proposal (BCP) process. The final level of staffing is described in the proposed solution selected in section 5.

4.3 Existing Infrastructure

The diagram on the following page is the latest and most complete schematic depicting the existing network infrastructure at the OSHPD.

Additional information about the existing OSHPD infrastructure and IT standards are included in Section 4.4—Technical Requirements.

OSHPD Current Network (March 2008)

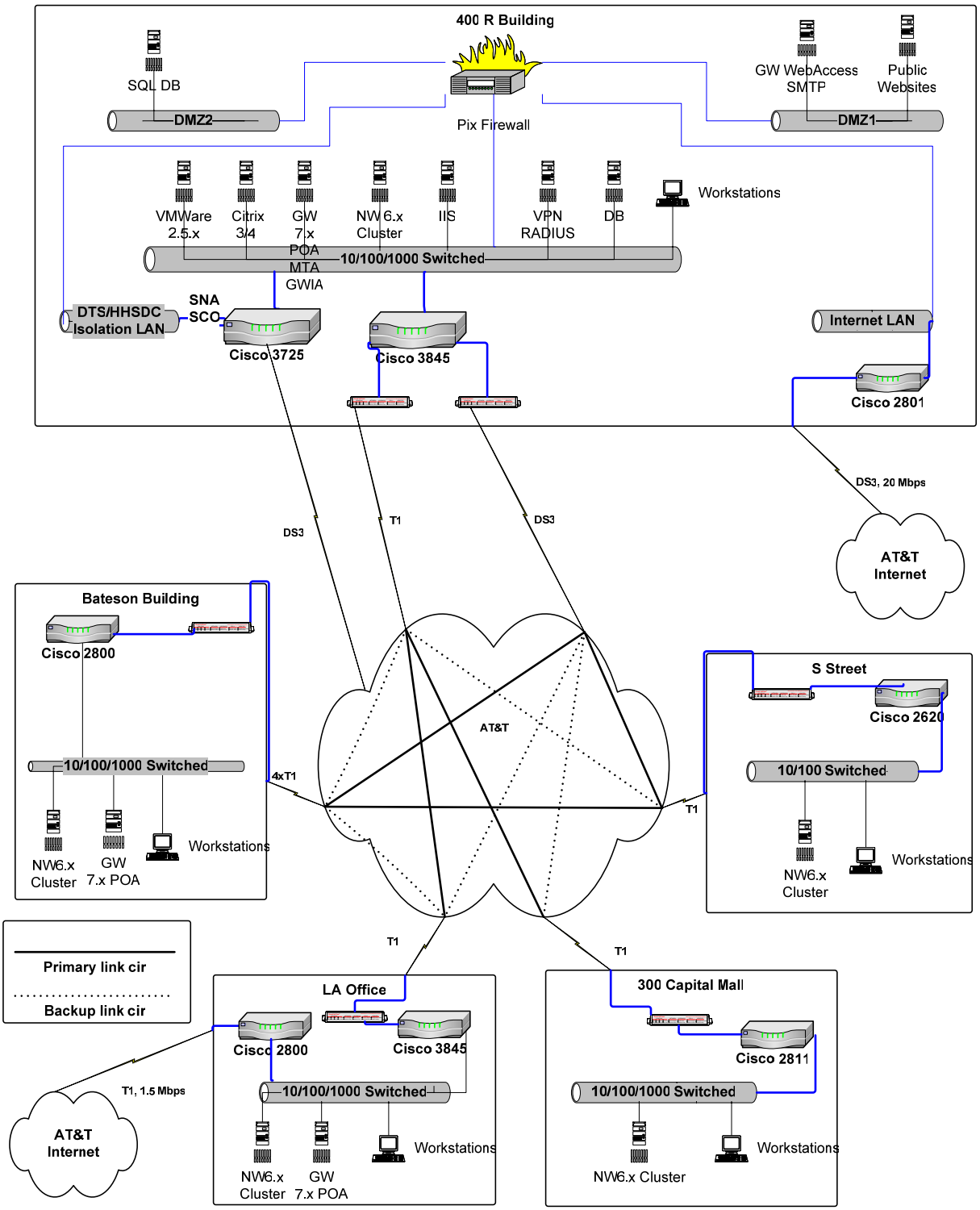

Figure 4-3: Current (March, 2008) OSHPD Network (Infrastructure)

4.3.1 Data Providers Readiness Assessment

During the past six months, the HWDD has, through the Clearinghouse Advisory Team and direct contact, begun outreach to Data Providers. In particular, the HWDD have established relationships with the three named entities in the Legislation (e.g. Education, Licensing Boards, and Employment) with the intent to:

- Understand and address their concerns with implementing the Clearinghouse,
- Develop an understanding of their current infrastructure, and
- Establish collaborative partnerships with the Data Providers programs areas.

This effort has resulted in a cooperative atmosphere between the Data Providers and the HWDD. Below is a brief digest of these sectors readiness to participate in the Clearinghouse.

Education

The California Post Secondary Education Commission (CPEC) is the data aggregation point for all post-secondary public institution data in the State. The CPEC has an excellent infrastructure, and collection and validation routines at the student, faculty and program (e.g. degree) level for these institutions. While some areas have higher capacity and therefore better data quality the CPEC has a well established data system and has demonstrated great willingness to deliver healthcare workforce education data to the Clearinghouse. In an effort to further develop this relationship the HWDD received a single data pull from the CPEC containing all post-secondary institutions with healthcare programs including the institution name, location, profession offered, degree/certificate, enrollment, student count, ethnicity, gender and school type. This data transfer was very successful and benefited both the CPEC and the HWDD.

Licensing Boards

The California Department of Consumer Affairs (DCA) is the umbrella department for most (not all) licensing boards for healthcare professions in the State. These boards are unique and generally independent from the DCA. Some of these boards have very limited data collection systems while others are significantly advanced. The Medical Board of California (CMB) and the Board of Registered Nursing (BRN) are the two with the most advanced systems. Both of these boards collect licensee level information about training, practice location and cultural competency, among other things. In addition, recent chaptered legislation AB 269 (Eng), requires the Dental Board of California to begin data collection on the aforementioned data variables collected by the MBC and BRN.

Employment

The EDD-LMID has excellent capacity for employment data. EDD-LMID collects a census from all employers on the location, size, number of employee's, specific (by Social Security Number) employee's working at a location and classes of employment (using the North American Industry Classification System). In addition, the EDD-LMID has the capacity to survey healthcare employers to assess future healthcare workforce demands.

4.4 Technical Requirements

The following tables detail existing technical standards in place at the OSHPD and represent technical requirements/constraints within which the proposed solution must operate. While exceptions may be possible, preference was afforded to solutions that fully comply with these standards/requirements. The tables provide the following information:

- System Size and Performance
- Operating Environment
- Data and Security
- Interface
- Infrastructure

Table 4-1: Size and Performance Requirements

Standard Area	***Minimum Technical Requirement***
Workstations	HP Compaq Business Desktop dc5700; Intel Pentium Dual Core E2160—1.8 GHz; 1 GB (2 x 512MB) RAM—DDR II - 667 MHz/PC2-5300; HP DVD RW (+R DL) drive—Serial ATA; 80GB 7200RPM SATA 3.0 GB/s DISK.
Concurrent Users	There is NO current IT Standard for ***Concurrent Users***. At this time, this is always defined by business requirements (functional) for each specific application.
Transaction Rate	There is NO current IT Standard for ***Transaction Rate***. At this time, this is always defined by business requirements (functional) for each specific application.
Required Up Time	There is NO current IT Standard for ***Required Up Time***. At this time, this is always defined by business requirements (functional) for each specific application.
Required Response Time	There is NO current IT Standard for ***Required Response Time***. At this time, this is always defined by business requirements (functional) for each specific application.

Table 4-2: Operating Environment Requirements

Standard Area	***Minimum Technical Requirement***
Client Operating System	Microsoft Windows XP, service pack 2 (sp2)
Network Operating System	Novell NCP (Netware Core Protocol) with Novell Client 4.91 sp3 for Windows 2.2
Application Server	HP ProLiant BL460c Server (Blade form factor); up to two, Quad-core Intel processors (various MHz), RAM and Disks configured for specific application.
Application Server Operating System	Microsoft Windows Server 2003, Release 2 (R2)
Application Language	Visual Basic .Net; C# .Net; ASP .Net; Java script
Data Base Management System (DBMS)	Oracle 10g; SQL 2005
Database platform	Server-based, Microsoft Windows 2003
Data Communications	ADO .Net
LAN Topology	Star Topology on an Ethernet 100-baseT
Transport Protocols	TCP/IP
Network Management	Microsoft System Center and Cisco NimBUS for Network Monitoring
Other (e.g. GIS Tools)	• ESRI ArcInfo, ArcEdit, ArcView, SDE, ArcGIS Server, Version 9.2, • Business Objects XI R2 • Informatica (ETL) Power Center 8 • SAS 9.1 • SharePoint
Desktop Application Software	• Microsoft Office 2003

Table 4-3: Data and Security Requirements

Data Area	*Minimum Technical Requirement*
Data Structure	There is NO current IT Standard for ***Data Structure***. At this time this is always defined by business requirements (technical) for each specific application.
Data Integrity	There is NO current IT Standard for ***Data Integrity***. At this time this is always defined by business requirements (technical) for each specific application.
Data Conversion	There is NO current IT Standard for ***Data Conversion***. At this time this is always defined by business requirements (technical) for each specific application.
Integration Issues	There is NO current IT Standard for ***Integration Issues***. At this time this is always defined by business requirements (technical) for each specific application.
Security Level	There is NO current IT Standard for ***Security Level***. At this time Security Levels are always defined by business requirements (technical) for each specific application. However, the general tendency is that adequate data access layers (user access levels) are designed into each application.
Field Level Security	There is NO current IT Standard for ***Field Level Security***. At this time this is always defined by business requirements (technical) for each specific application. However, the general tendency is that through user access levels (role-based security) field level security is built into each application.

Table 4-4: Interface Requirements

Interface Area	*Minimum Requirement*
User Interface	Application-based (client-server) or web browser-based (Microsoft Internet Explorer 6).
System Interfaces	Similar to that used at DTS and industry best practices, external user access to application (i.e., System Interface) is achieved via a web server placed external to the firewall in the DMZ.

Table 4-5: Infrastructure Requirements

Infrastructure	*Minimum Requirement*
Bandwidth	There is NO current IT Standard for ***Bandwidth***. At this time this is always defined by business requirements (technical) for each specific application. However, the OSHPD currently has 20Mbps allocated for Internet access.
Backup system	The current IT Standard for ***Backup System(s)*** is Veritas Backup Exec and HP Data Protector.
Firewall	The current IT Standard for ***Firewall*** is Cisco PIX/ASA.
Intrusion detection system	The current IT Standard for ***Intrusion Detection*** is Cisco IPS.
Security practice	This project will be governed by the controls established under one or more of the following OSHPD Information Security and IT Infrastructure Policies: • Security Patches and Security Upgrade Policy, • Server Configuration Policy, • Firewall Configuration Policy, • Server Hardening Policy and/or • Use of Computing Facilities Policy. As part of the OSHPD's On-Going Security Accreditation and Certification process, this project will undergo periodic security compliance reviews and as may be necessary, additional appropriate security policies may be drafted that are applicable to identified needs.
Operational recovery	The current IT Standard for ***Operational Recovery*** is to have a written plan and procedure to recover the necessary system(s) and/or application(s) for each System and Application running at the OSHPD.
Load balancing system	There is NO current IT Standard for a ***Load Balancing System***. At this time this is always defined by business requirements (technical) for each specific application. The tendency is to use the feature for load balancing built into the Microsoft Windows Server 2003, Release 2 (R2) or employ Windows Clustering vs. using an external 'appliance' such as Radware's Web Server Director (WSD).
Redundant connection to ISP	The current IT Standard for ***Redundant Connection to ISP*** is to have multiple T1 or DS3 connections. In this manner, should one connection fail there is always a second connection available.

Infrastructure	*Minimum Requirement*
UPS system	The current IT Standard for ***Uninterruptable Power Supply (UPS) Systems*** is the APC Symmetra PX 80kW Battery Frame (SYCF8BF) and Battery Module for Symmetra PX or Smart-UPS VT (SYBT4).

4.4.1 Application Development Methodology

This section discusses both the Project Management Methodology as well as the SDLC in place at the OSHPD, which the Clearinghouse Solution will follow. Beginning in early 2007, the OSHPD ITSS began to review these processes and determined that they needed to be updated. In fact, the OSHPD PMO, which was heavily involved in this process, diagrammed the PMO Project Phases side-by-side with the SDLC Phases, shown in the Figure[2] on the next page:

[2] The main web page for the OSHPD PMO can be accessed by any OSHPD user at the following link: http://dev-shrpoint01/sites/PMO/default.aspx The PMO 'Tools & Templates' page can only be accessed by OSHPD Project Teams, is accessible at the following link: http://dev-shrpoint01/sites/PMO/ProjectTeams/default.aspx

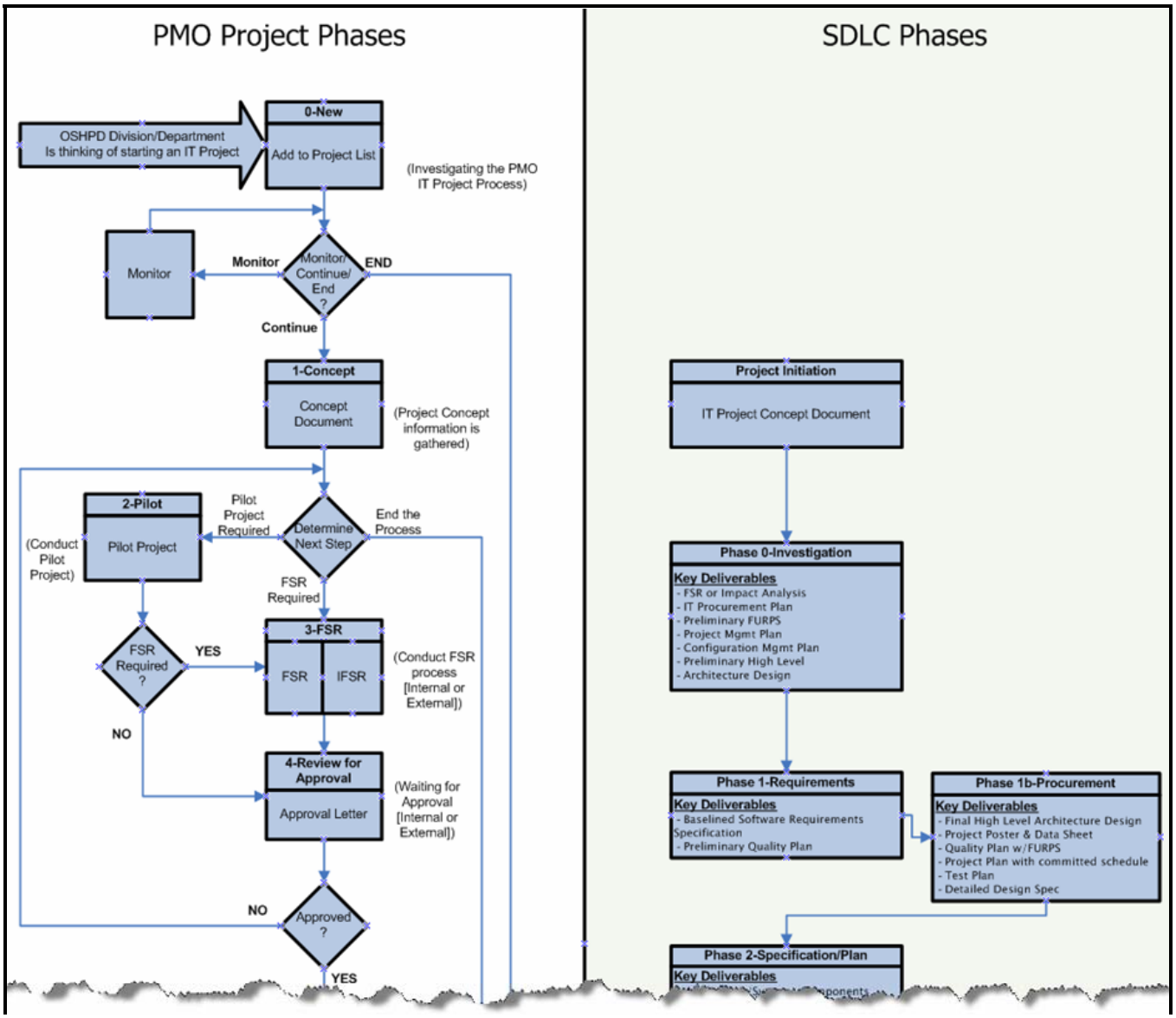

Figure 4-4: Side-by-Side Comparison of PMO and SDLC Phases (Upper half)

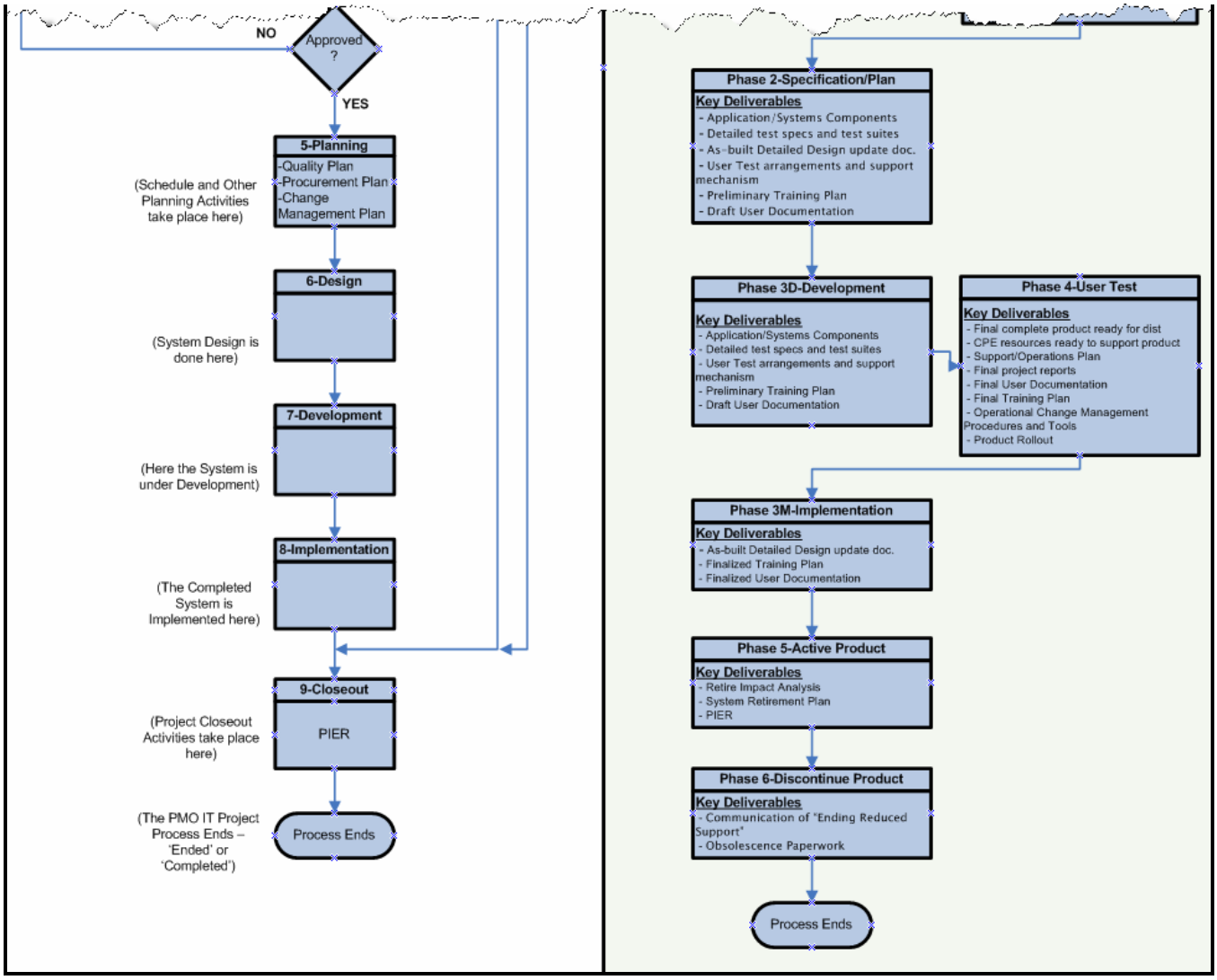

Figure 4-5: Side-by-Side Comparison of PMO and SDLC Phases (Lower half)

Project Management Methodology

The Project Management Methodology in place at the OSHPD is firmly rooted in the Project Management Body of Knowledge (PMBOK) as defined by the Project Management Institute (PMI). This methodology or *PM Framework* includes the following process groups:

- Initiating,
- Planning,
- Monitoring & Control,
- Executing and
- Closing.

This Project Management Methodology is described in more detail in Section 6.0 of the FSR and is available to internal OSHPD users at the following URL[3]:

http://dev-shrpoint01/sites/PMO/default.aspx

System Development Life Cycle (SDLC) Methodology

The OSHPD ITSS has implemented an SDLC methodology that uses the Microsoft Visual Studio Team System. According to the Microsoft web site[4], this is:

> *'…a collection of tightly-integrated software development tools that change the way software development teams work together. With Visual Studio Team System, organization can reduce software development complexity, facilitate collaboration among all team members, accelerate development time, improve predictability and reliability of the development process and customize and extend Visual Studio Team System with their own internal tools, process frameworks and supplemental partner products…'*

The ITSS at the OSHPD has also outlined a roadmap for the SDLC process[5]. This roadmap is provided in the Table beginning on the following page:

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[3] For more information about the OSHPD Project Management Office, please contact the PMO Director Deb Wong, PMP at 916-326-3953 or via email at DWong@oshpd.state.ca.us.

[4] Referenced Microsoft web site on April 18, 2008 at http://msdn2.microsoft.com/en-us/teamsystem/aa718803.aspx.

[5] OSHPD users with access to the SDLC SharePoint site, can access this roadmap at the following link: http://dev-shrpoint01/sites/sdlc/Shared%20Documents/Expanded%20ROADMAP%20OF%20THE%20OSHPD%20SDLC%204.23.07.doc

Table 4-6: SDLC process 'Roadmap'

Phase	Purpose	Key INPUT	Tools & Techniques (How)	Key Deliverables at Phase Exit
Project Initiation	Enter the OSHPD Product Life Cycle Communicate and document initial objectives	Business Need ETA (Enterprise Technical Architecture) OSHPD PM Framework	Project Scope Definition Stakeholder Identification Initial Cost Benefit Analysis	IT Project Concept Document
Phase 0 Investigation	Define the opportunity and investigate the proposed product. Define complete project plan for developing delivering and supporting the specified product.	IT Project Concept Document[6] ETA (Enterprise Technical Architecture) SAM Section 4800/5200[7] SIMM (Statewide Info Mgmt Mnl) OSHPD PM Framework [8] SW Version Control Plan ISO/DMO	Business Requirements Analysis Alternative Analysis Cost Benefit Analysis	FSR or Impact Analysis ITPP (IT Procurement Plan) Preliminary Functionality, Usability, Reliability, Performance, Supportability(FURPS) Competitive Procurement (yes/no) Project Mgmt Plan Configuration Mgmt Plan Preliminary High Level Architecture Design

[6] Internal OSHPD link: http://pmo/PMFramework/Initiation/Concept.htm

[7] Internal OSHPD link: http://www.dof.ca.gov/OTROS/StatewideIT/StatewideIT.asp

[8] Internal OSHPD link: http://pmo/PMFramework/index.htm

Phase	Purpose	Key INPUT	Tools & Techniques (How)	Key Deliverables at Phase Exit
Phase 1 Requirements	Define the product requirements and project strategies.	Approved FSR FSR/Impact Analysis Business Requirements Preliminary High Level Architecture Design	Requirements Elicitation Requirements Analysis Requirements Specification Requirements Validation	Baselined Software Requirements Specification Preliminary Quality Plan Prototype Development (yes/no)
Phase 2 Specification/ Plan	Refine and finalize the high level design. Develop detailed design. Commit to the product definition, project plan and schedule. Develop test plan.	OSHPD PM Framework Software Requirements Specification Preliminary High Level Architecture Design	Change Management	Final High Level Architecture Design Project Poster & Data Sheet Quality Plan w/FURPS Project Plan with committed schedule Test Plan Detailed Design Spec

Phase	Purpose	Key INPUT	Tools & Techniques (How)	Key Deliverables at Phase Exit
Phase 3 Development/ Implementation	Build, implement, & test (unit, integration, & system) the product in preparation for limited usage and testing in customer environment.	Software Requirements Specification Design & Coding Stds Detailed Design Spec Quality Plan Test Plan	Software Development Techniques Unit Testing Integration Testing Walkthroughs, inspections, desk-checking	Application/Systems Components Detailed test specs and test suites As-built Detailed Design update doc. User Test arrangements and support mechanism Preliminary Training Plan Draft User Documentation
Phase 4 User Test	Train Users involved in UAT, Conduct User Test and finalize product in preparation for manufacturing, delivery and support. Release to distribution.	Test Plan Detailed test specs and test suites As-built Detailed Design update doc. Preliminary Training Plan Draft User Documentation	Defect Management Test Management Functional testing Exploratory testing Performance/load/stress testing Security/access testing Usability testing Operational procedure documentation verification	Final complete product ready for distribution Resources ready to support product Support/Operations Plan Final project reports Final User Documentation Final Training Plan Operational Change Management Procedures and Tools Product Rollout

Phase	Purpose	Key INPUT	Tools & Techniques (How)	Key Deliverables at Phase Exit
Phase 5 Active Product	Actively promote, support and monitor the business performance of the current release of the product, until the product is to be discontinued. (change control during this time)	Final Training Plan Final User Documentation Operational Change Management Procedures and Tools	Support System Maintain System	Retire Impact Analysis System Retirement Plan Project Implementation Evaluation Report (PIER)
Phase 6 Discontinued Product	Provide reduced support for discontinued product.			Communication of “Ending Reduced Support” Obsolescence Paperwork

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5.0 PROPOSED SOLUTION

The process used to determine the proposed solution included the assessment of several different alternatives for meeting the SB139 legislatively mandated requirement for the OSHPD to establish a Healthcare Workforce Clearinghouse Solution. The options assessed included:

- An In-House Developed Solution;
- A Totally Customized, Externally Developed Solution; and
- A Commercial Off The Shelf/Modified Commercial Off The Shelf (COTS/MOTS) Solution.

After researching and analyzing these alternatives, it was determined that the In-House Developed Solution best meets the HWDD business requirements. Analysis of the defined functional requirements against features provided by the other alternatives determined that the proposed solution meets 100% of the defined requirements.

The sections below provide the detail of the market research into other state solutions, the proposed solution to implement an In-House developed solution and the other alternatives that were analyzed.

5.1 Solution Description

This In-House Developed Solution is designed to leverage existing OSHPD data collection and reporting systems processes and incorporate existing standards where possible. The basic components of this solution are:

- PHASE I: Data Collection and Validation Application—to be developed In-House with the support of some specialized consultants. This component will be housed at the State Data Center,
- PHASE II: Data Warehouse Design, Management and Reporting— to be developed In-House with the support of some specialized consultants. It will leverage the existing infrastructure the enterprise Data Warehouse housed at OSHPD, and
- PHASE III: More Data Providers will be incorporated into the Clearinghouse solution— to be developed In-House with the support of some specialized consultants.

Data Collection and Validation will be the front-end function of the Clearinghouse to provide a means for the Data Providers to submit their healthcare workforce and educational information to the Clearinghouse Solution. To ensure the format and content of the data being submitted is correct there will also be a validation and feedback function provided in this Clearinghouse Solution front-end. This system will also include a component to assist the OSHPD in tracking the status of Data Provider submissions and will be housed at the DTS Data Center.

The MIRCal System has been successfully developed and implemented by the OSHPD using the same solution components as those proposed for the Clearinghouse Solution, including: data collection; validation; feedback; and tracking functions. Because of this, these functions and processes that were built for the MIRCal System will be leveraged for the design, development and implementation of the Clearinghouse Solution.

The data collection and validation function for the Clearinghouse Solution is outlined in the figure on the next page:

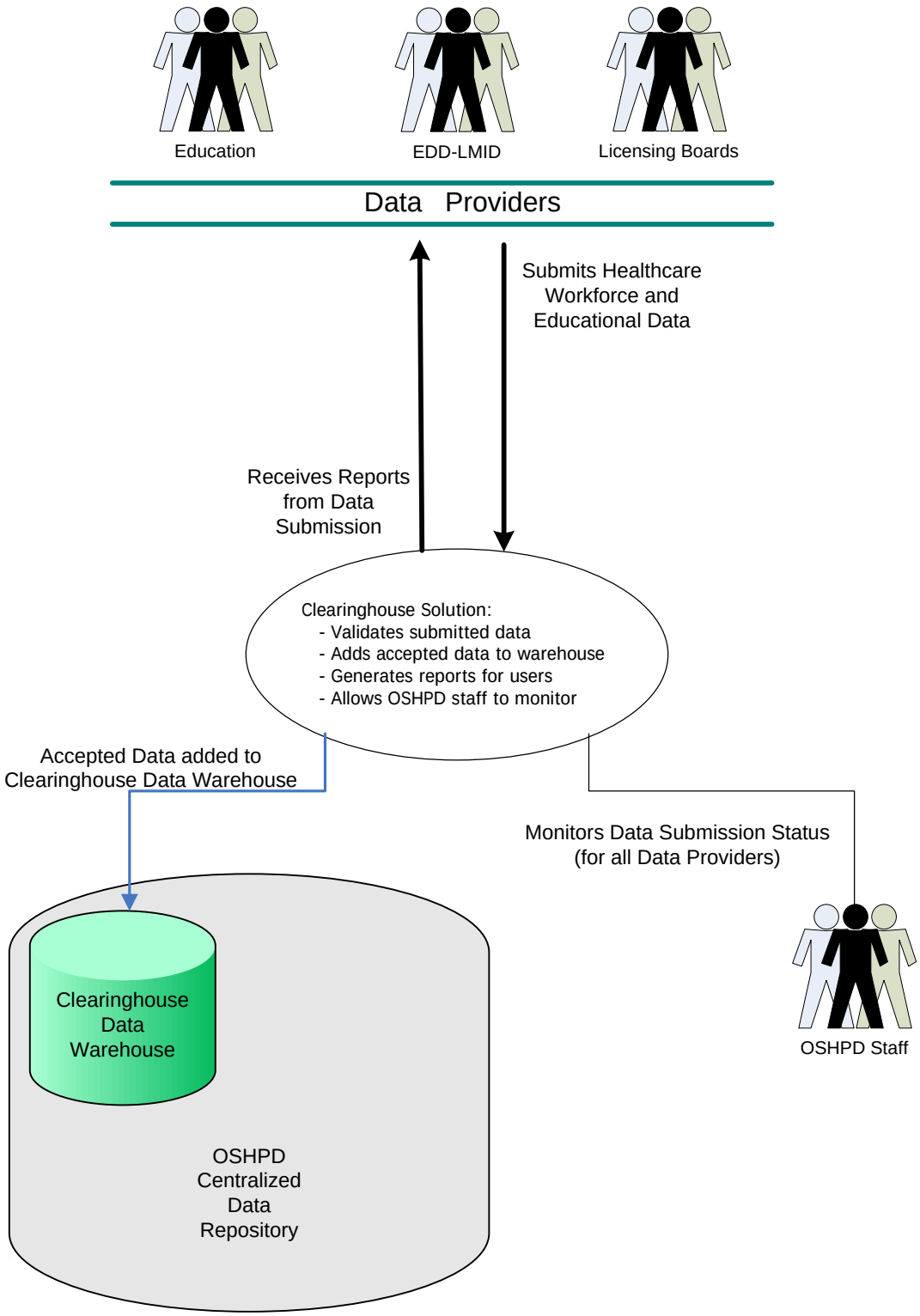

Figure 5-1: Data Collection and Validation System

The MIRCal System data collection and validation process and design will be adopted to build these same features into the Clearinghouse Solution for data collection and validation. This approach will significantly reduce the overall cost of the Clearinghouse Solution, as well as the time required for design, development and implementation.

Warehouse Management and Reporting will be the back-end function of the Clearinghouse Solution that will utilize existing OSHPD methodologies and the enterprise Data Warehouse. The OSHPD ITSS staff is now familiar with the data warehouse development and support, in that the OSHPD has experience in maintaining a centralized repository for data. Specifically, it manages data more effectively through removing duplicate data management processes, building on collective IT infrastructure and data standards and providing an enterprise delivery mechanism for reporting and data analysis.

The data warehouse reporting function will be available for internal Clearinghouse data users and external users, with appropriate data access levels and security measures in place. The data warehouse reporting function for the Clearinghouse Solution is outlined in the figure on the following page.

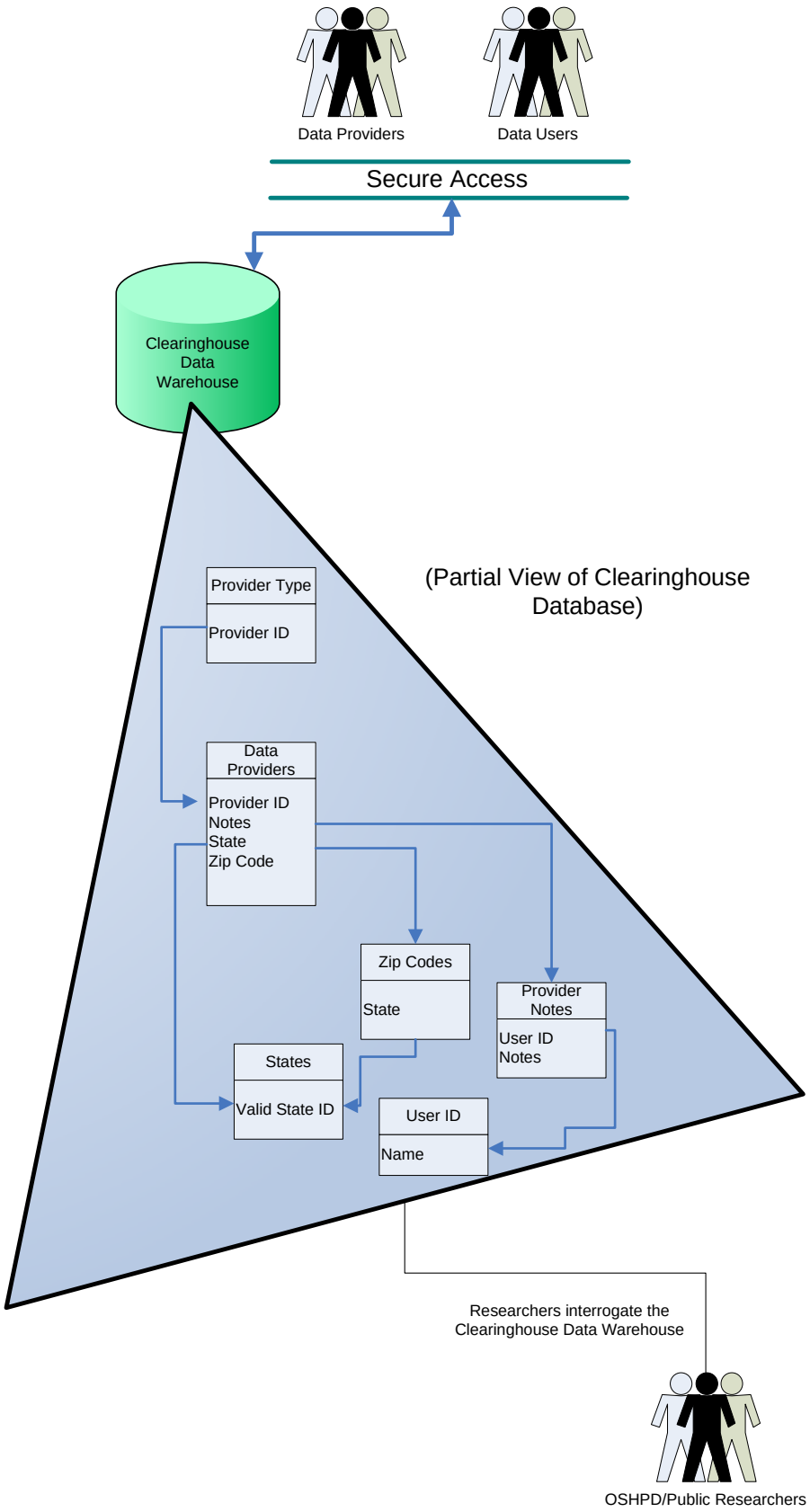

Figure 5-2: Data Warehouse Reporting Function

Analysis will be performed by the OSHPD on the data collected in cooperation with the EDD-LMID, state licensing boards and state higher education entities on all of the following data:

- The current supply of health care workers, by specialty;
- The geographical distribution of health care workers, by specialty;
- The diversity of the health care workforce, by specialty, including, but not necessarily limited to, data on race, ethnicity and languages spoken;
- The current and forecasted demand for health care workers, by specialty; and
- The educational capacity to produce trained, certified and licensed health care workers, by specialty and by geographical distribution, including, but not necessarily limited to, the number of educational slots, the number of enrollments, the attrition rate and wait time to enter the program of study.

It is included in the law[9] that:

> ***"128052 The Office of Statewide Health Planning and Development shall prepare an annual report to the Legislature that does all of the following:***
>
> ***(a) Identifies education and employment trends in the health care profession.***
>
> ***(b) Reports on the current supply and demand for health care workers in California and gaps in the educational pipeline producing workers in specific occupations and geographic areas.***
>
> ***(c) Recommends state policy needed to address issues of workforce shortage and distribution."***

Other State Healthcare Workforce Process Models will be taken into consideration when planning and designing the Clearinghouse Solution for the OSHPD. The project team contacted and surveyed[10] other States that have websites with healthcare workforce information and will solicit additional information about the design, development, implementation and on-going maintenance and support of that State's system. The gathered information will be reviewed and considered when designing the Clearinghouse Solution for the OSHPD.

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[9] Chapter 522, Statutes of 2007.

[10] See Attachment 3 for survey and survey results.

5.1.1 Hardware

All hardware used in the development and implementation of this proposed solution will adhere to the DTS and the OSHPD ITSS hardware standards currently in place. Specifically, the following OSHPD ITSS standards for hardware will be followed:

Servers

Table 5-1: Servers

Standard Area	*Minimum Technical Requirement*
Application Servers	HP ProLiant BL460c Server (Blade form factor); up to two (2), Quad-core Intel processors (various MHz), RAM and Disks configured for specific application.

Workstations

Table 5-2: Workstations

Standard Area	*Minimum Technical Requirement*
Workstations	HP Compaq Business Desktop dc5700; Intel Pentium Dual Core E2160—1.8 GHz; 1 GB (2 x 512MB) RAM—DDR II - 667 MHz/PC2-5300; HP DVD RW (+R DL) drive—Serial ATA; 80GB 7200RPM SATA 3.0 GB/s DISK.

5.1.2 Software

All software used in the development and implementation of this proposed solution will adhere to the DTS and the OSHPD ITSS software standards currently in place. Specifically, the following OSHPD ITSS standards for software will be followed:

Servers Operating System

Table 5-3: Servers Operating System

Standard Area	*Minimum Technical Requirement*
Application Server Operating System	Microsoft Windows Server 2003, Release 2 (R2)

Workstations Operating System

Table 5-4: Workstations Operating System

Standard Area	*Minimum Technical Requirement*
Workstation Operating System	Microsoft Windows XP, service pack 2 (sp2)

Other Software

This includes Network Operating System (O/S), Network Management Software, Database Management System (DBMS), Desktop Application Software, etc.

Table 5-5: Other Software

Standard Area	*Minimum Technical Requirement*
Network Operating System	Novell NCP (Netware Core Protocol) with Novell Client 4.91 sp3 for Windows 2.2
Network Management	Microsoft System Center and Cisco NimBUS for Network Monitoring
Data Base Management System (DBMS)	Oracle 10g; SQL 2005
Data Communications	ADO .Net
Transport Protocols	TCP/IP
Desktop Application Software	Microsoft Office Suite 2003, SharePoint
Application Programming Tools	Microsoft Visual Studio 2008
End User Tools	*ETL, Business Objects, E-GIS, SAS, Metadata Tools, Security, WebTrends (tracking software)*

5.1.3 Technical Platform

The Healthcare Workforce Clearinghouse Solution will be based on a n-tier technical platform in use at the DTS and the OSHPD today. In this configuration approach:

- Tier-1 is the presentation layer handled by the web server, the Internet and each user's web browser. This web server sits in front of the firewall to isolate the server from the rest of the servers—which also meets the DTS and the OSHPD ISO and ITSS security requirements.

- Tier-2 is managed by the application server(s). These servers process information that has been passed from the web servers once security authentication has taken place. In this configuration, validation and reporting of submitted data will take place.

- Tier-3 is managed by the database server. In this configuration, data that has passed validation will be stored for later analysis and reporting functions.

This technical platform architecture approach is depicted as follows:

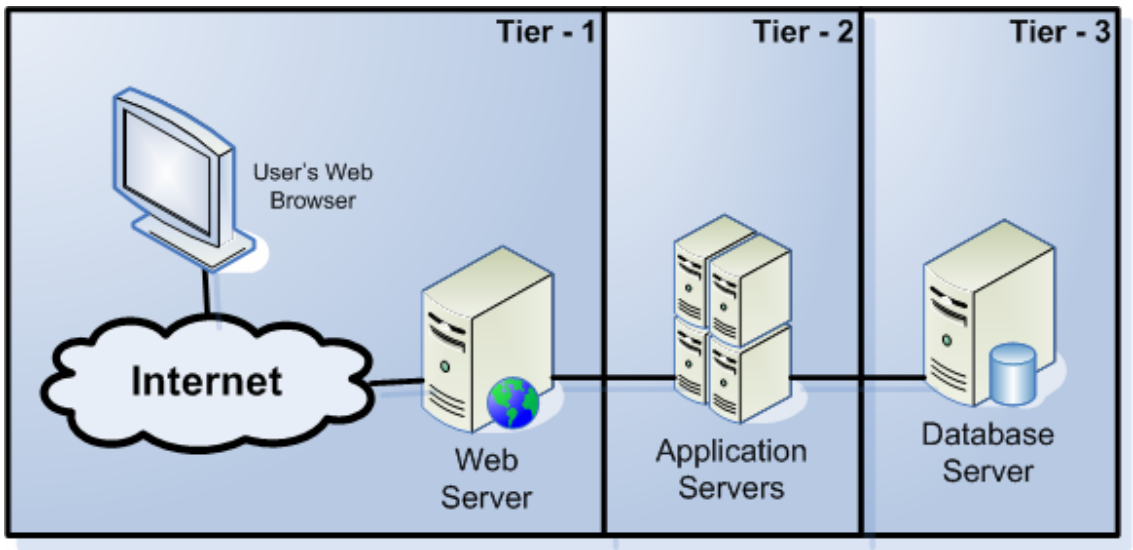

Figure 5-3: n-Tier Technical Platform

An example of how this technical platform is proposed in terms of actual servers and network configuration for the Healthcare Workforce Clearinghouse Solution is provided on the following page.

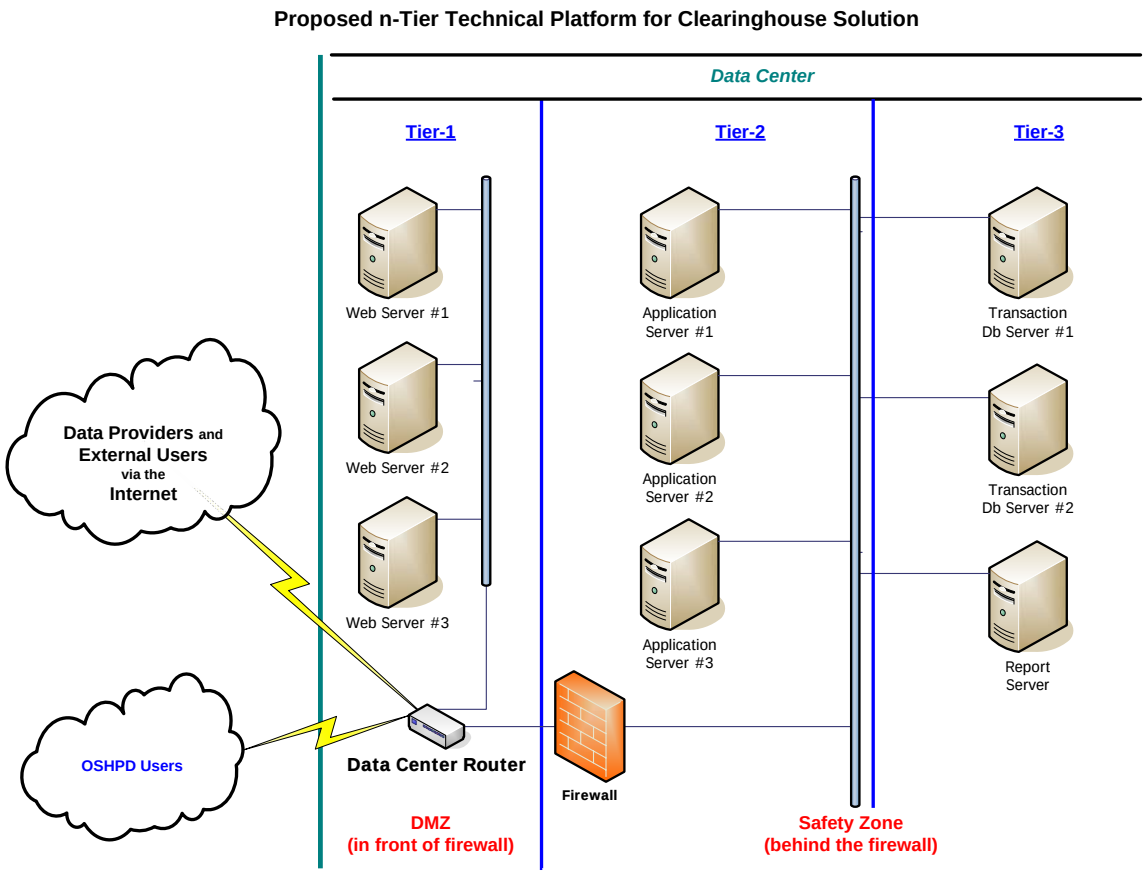

Figure 5-4: Clearinghouse Solution Using the n-Tier Technical Platform Approach

5.1.4 Development Approach

Data Collection and Validation System

The OSHPD's ITSS, with specialized contract staff, will be responsible for the design, development, testing, training and implementation (DD&I) phases of the Clearinghouse Data Collection and Validation System implementation. The specialized contract staff will be onsite at the OSHPD. The development approach will also include the contracted services of an oversight vendor with project oversight responsibilities to ensure that the solution is technically sound and meets the OSHPD's business and technical requirements. This oversight will include the services of an advisor, working with the OSHPD Information Security Officer, to oversee the security aspects of the system implementation such that the topology ensures data integrity, only authorized users can access data and that no data resides on the Web (all data should be behind the firewall). In-house staff will be directly involved in all phases of development as noted on the following page:

- The OSHPD ITSS technical staff will be directly responsible for the development of the Clearinghouse Solution throughout the SDLC. ITSS will have the responsibility to develop requirements specifications, design and implementation of the solution in the OSHPD's information systems infrastructure and for assumption of operation and maintenance of the system. The OSHPD ITSS technical staff will ensure the proposed Clearinghouse Solution is in compliance with the ITSS Enterprise Architecture Plan (*IT Enterprise Architecture Revised Bricks*[11] report).

- The HWDD program staff will also be directly involved with ITSS technical staff throughout the SDLC. Its responsibilities will include definition of the business and data rules, review of system specifications and requirements, participation in system design, testing, preparation of training materials and user documentation and implementation planning.

- An OSHPD Project Manager supported by the PMO will provide overall project management during all project phases.

- The OSHPD ISO will be involved in planning and testing for the security and operational recovery of the system during all phases of the project.

- The OSHPD ITSS staff will be required to follow the OSHPD's SDLC approach in these efforts, as fully described in Section 4.0 of the FSR.

Following a standard modular approach will help to mitigate risk and provide a structured method of configuration, development and deployment[12]. The Project Manager will be responsible for development of a detailed Work Breakdown Structure (WBS) at the beginning of the project and will be required to maintain it throughout the project lifecycle.

The figure on the following page graphically depicts the Clearinghouse Solution process flow for the Data Collection and Validation process.

[11] Internal OSHPD ITSS document describing infrastructure roadmap.

[12] A detailed Risk Management Plan is provided as Section 7.0 of this FSR.

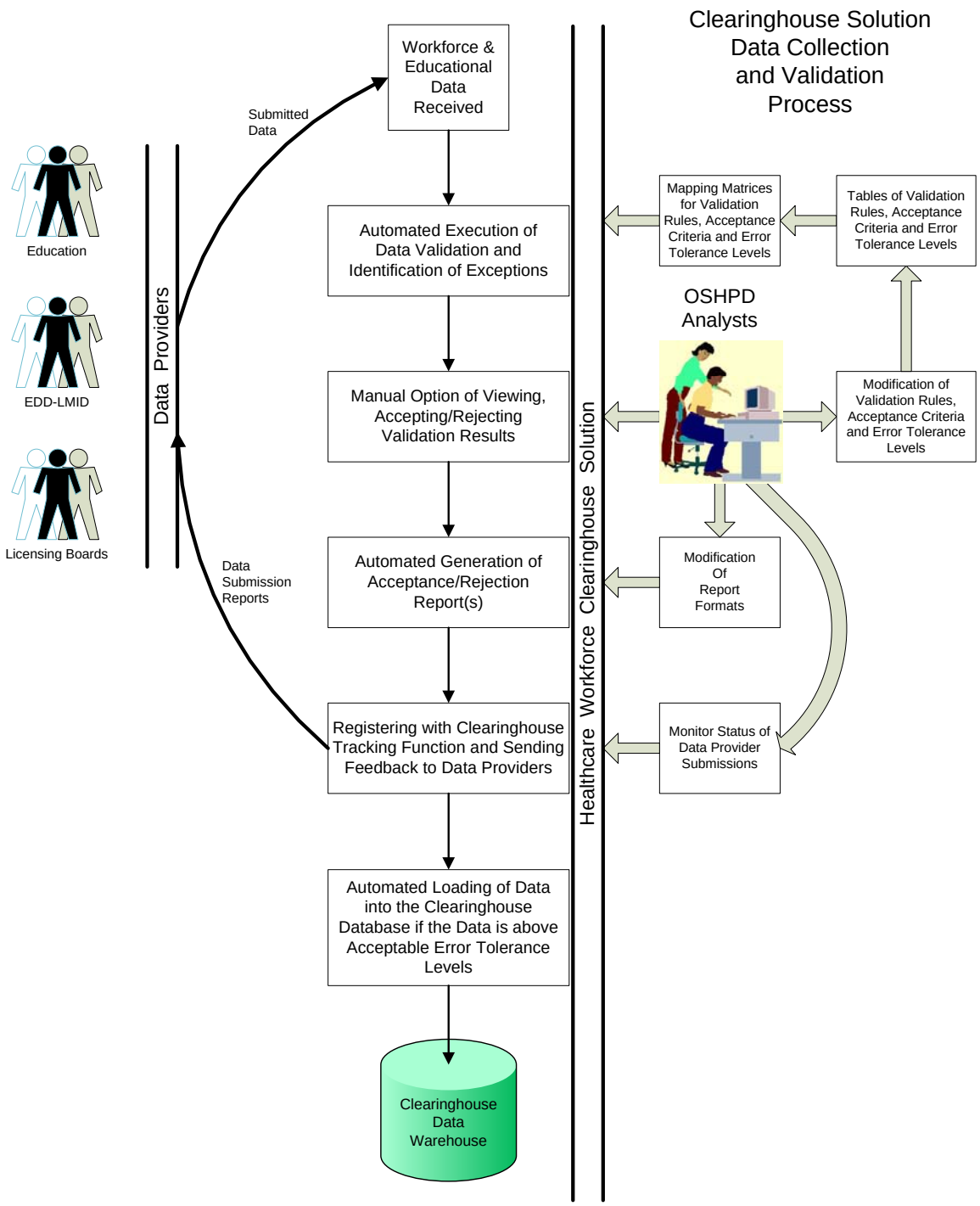

Figure 5-5 Clearinghouse Data Collection and Validation Process

Data Warehouse

The OSHPD will be responsible for the development the data warehouse design and also the extract transform and load processes to populate the data warehouse with the validated data from the Data Collection and Validation System. The OSHPD staff will also be responsible for data warehouse changes, enhancements and maintenance and operations.

Data Reporting and Analysis

The OSHPD will create the internal and the external web-based data reporting and analysis environments using the selected toolsets. The OSHPD staff will provide technical expertise and support to the internal and external end user communities. Access to the Clearinghouse data warehouse for data reporting and analysis is depicted in the figure below:

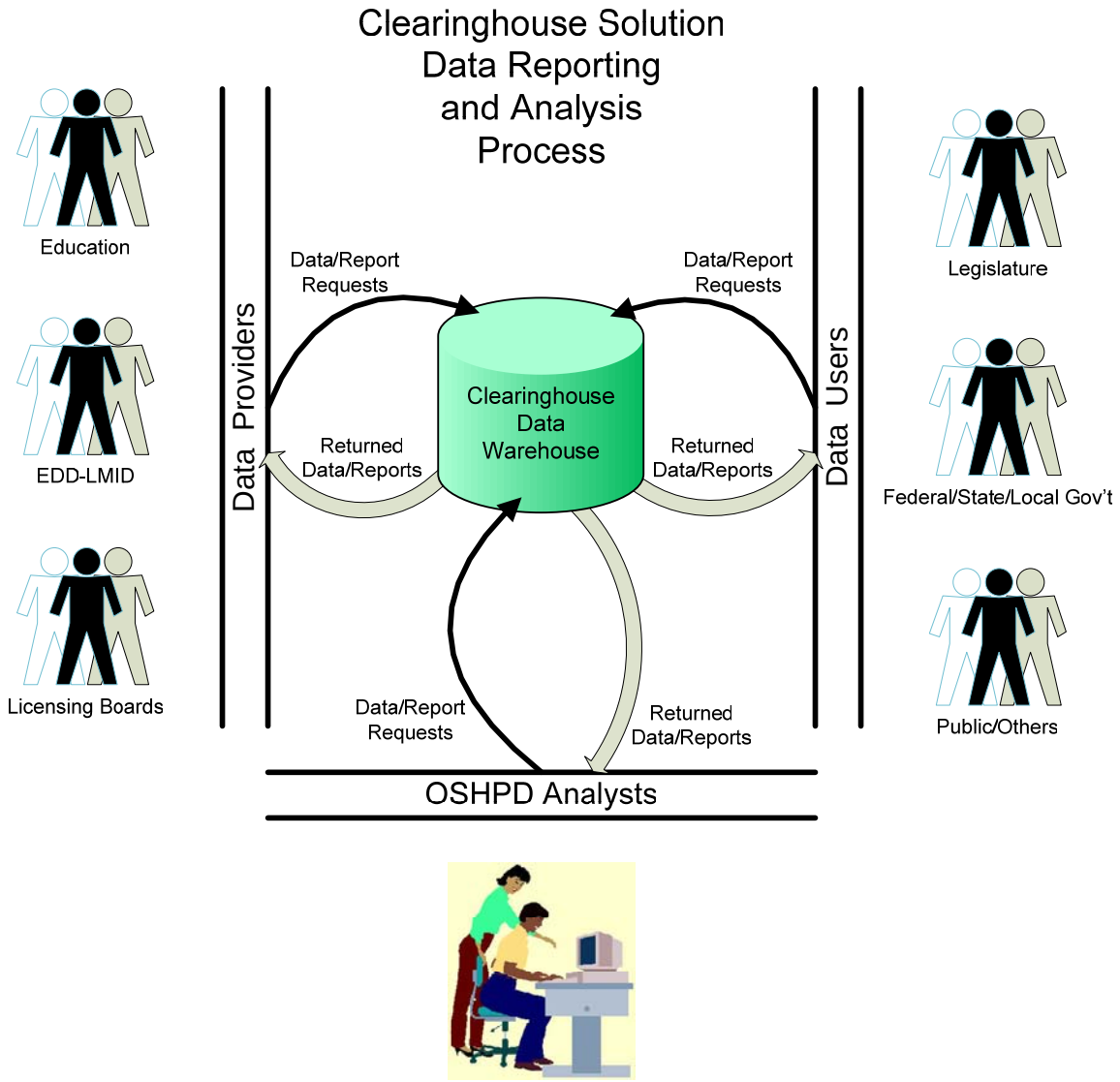

Figure 5-6 Clearinghouse Data Reporting and Analysis

Project-Phases

The Clearinghouse will eventually process and manage multiple data sources which will contain different categories of data. The Project-Phase I will include all the required data collection functionality of the Clearinghouse Solution, but will focus on a limited number of Data Providers. When the Project-Phase I is complete and the functionality has been successfully implemented with user acceptance, the Clearinghouse project will review Phase I "lessons learned" and use this experience to implement subsequent phases.

The results of this review will include "lessons learned", the Data Providers' pro/con feedback and identification of the Project Management and DD&I methodologies that worked as well as those that did not.

The results of this review will be used by Program and Project Management to refine the project approach and methodologies for the next phase of the project. This will reduce project risk and help to ensure that subsequent project phases progress smoothly and are immediately successful.

In Phase II, the Clearinghouse data will become a data mart within the OSHPD enterprise data warehouse, to support analysis and reporting based on diverse healthcare information sources, as well as just workforce specific requirements. The OSHPD staff is responsible for the Clearinghouse data mart design and management and its integration with the OSHPD enterprise data warehouse.

5.1.5 Procurement Approach

The procurement approach is documented in detail in a separate deliverable called the Healthcare Workforce Clearinghouse Information Technology Procurement Plan (ITPP). There will be California Multiple Award Schedules (CMAS) or Information Technology Master Server Agreements (ITMSA) RFO procurements for the following vendor services:

- Requirements and Design Specification Support,
- Project Management Support,
- Independent Verification and Validation,
- Project Oversight,
- Specialized, Contract Programming, and
- Data Warehouse and Business Intelligence Design Support.

5.1.6 Technical Interfaces

There are no internal or external other systems with which the proposed solution is required to interface. Therefore, there are no significant technical interface issues in establishing this proposed solution.

5.1.7 Testing Plan

The OSHPD has a well-defined testing methodology which will be used by all business and technical staff (both in-house and contracted staff). In addition, existing technical and program subject-matter experts will be involved and responsible for review of the project deliverables and acceptance testing. Testing procedures will include unit, system, integration and user acceptance testing.

A formal software version control process will be in place to control the baseline of the system software as testing progresses and the system becomes production-ready.

Unit Testing Phase

Formal unit test scripts will be used to execute tests and record the test results. Any problems encountered will also be forwarded through the system problem correction process, so that problems, their solutions and subsequent re-testing will be tracked.

System Testing Phase

The system testing phase will be subject to a formal System Test Plan, which will control all phases of the system test such as testing of the new Data Collection and Validation application functionality, testing of the Data Warehouse functionality, testing of the Reporting Facility functionality, end user testing for small, medium and large data submissions and reporting/data requests and load testing to reflect the expected number of end users. All test results will be formally documented and any problems will be documented and forwarded through the system problem correction process. After problems are corrected and successfully unit tested, system regression testing will be done to ensure the problem has been corrected in the system context.

Integration Testing Phase

This phase will be supported by a formal Integration Test Plan. This testing will be executed to ensure that all the components of the solution work together as required. All test results will be formally documented and any problems will be documented and forwarded through the system problem correction process. After problems are corrected and successfully unit tested, integration testing will be done to ensure the problem has been corrected in the application environment context.

User Acceptance Testing Phase

This is the final phase of testing. There will be a formal User Acceptance Test Plan which will describe the scope, test scripts and processes and expected results of the acceptance testing. All test results will be formally documented in a User Acceptance Test Report. This will be used as the user "sign off" document to indicate that the system is production ready.

The same processes used for system test problems will be used for user acceptance test problems. As problems are encountered and when they are corrected, the new software version(s) will be subject to unit test and system and integration regression testing.

5.1.8 Resource Requirements

The resource requirements have been defined as necessary to support the Proposed Solution. The costs for positions and in what fiscal year they are incurred are detailed in Section 8.0 of the FSR and include:

Table 5-6: HWDD positions

Position Title	***General Description***
Staff Services Manager III (Program Director)	Incumbents at this level functions as a full supervisor with responsibility for a moderate to large size technical staff in a highly specialized and complex operation. The incumbent will be responsible for a highly complex Staff Services function with multi-departmental or service-wide impact.
Research Analyst I (General)	Incumbents in this class provide entry level, basic technical research and statistical work.
Research Analyst II (General)	Incumbents in this class function at the full journey level. Under general direction, employees at this level perform a variety of tasks including the more independent, responsible, varied and complex technical research and statistical work in a variety of fields; they may provide consultative advice to various governmental entities and agencies, and may act as a leadperson. Work at this level is often characterized by independent development and employment of research methodology and techniques; and the designing and implementation of research projects. Usually involves investigation into areas where precedents are lacking or where only a sparse body of knowledge or experience in the area exist. Incumbents often have lead responsibilities, work on multidisciplinary teams or have primary responsibility for a major project or activity.and activities.

Research Program Specialist II	Incumbents in this class provide expert consultative services on the feasibility, impact, or potential of a variety of State operations, projects or proposals to interested parties. They advise management, departmental staff, legislative bodies, governmental entities, commissions and agencies on findings related to the assigned area of research. Incumbents have responsibility for designing and directing major complex research projects and activities.
Associate Governmental Program Analyst (2 year Limed-Term)	This is the full journey level. Incumbents perform the more responsible, varied, and complex technical analytical staff services work and continually provide consultative services to management or others. The incumbent may act as team leaders or coordinate the efforts of representatives of various governmental agencies on larger projects

Table 5-7: ITTS positions

Position Title	***General Description***
Senior Information Systems Analyst (PMO Project Manager)	The incumbent has full management responsibility for a medium size EDP organization or directs a major data processing function or functions in a large, complex EDP organization requiring subordinate managers at the Data Processing Manager II level or may (1) direct and coordinate a highly complex project which impacts on multiple departments, or (2) direct a program involving the development and administration of service wide EDP plans, policies, procedures and standards, or (3) function as a project manager responsible for designing, configuring and developing the most technically advanced business solution/EDP projects.
Senior Information Systems Analyst	Under general direction, acts as project leader on the most complex information technology systems, works on the most complex information technology system problems and independently performs the most complex studies and activities on the most complex information technology systems and/or teleprocessing networks/systems.
Staff Programmer Analyst	Under general supervision, independently performs programming and analysis work and/or acts as leader of a team of programmers and/or participates with other programmer analysts on projects of a very complex nature or unusually broad scope.

Staff Information Systems Analyst	Under general direction, act as project leader on complex information technology systems and research associated problems. Independently performs studies and activities on complex information technology systems and/or teleprocessing network/systems. Act as technical lead providing information and guide to other ITSS support staff for software and hardware issues
Office Technician	Under direction from the Project Manager, prepares documents, tracks invoices, orders supplies, maintains document library and generally supports project staff.

The project workplans for these positions are included in Attachment 3. The staffing costs for these positions, by Fiscal Year, is provided in the EAW costs tables included in section 8.0 of the FSR.

5.1.9 Training Plan

User training will be done using a “train-the-trainers” approach and also by the development of web-based training (WBT) modules. The latter will be created for the Data Providers’ security administrators and data submitters and also the end users of the Clearinghouse data for reporting and data extraction. Supporting documentation will be produced by the HWDD and ITSS staff, in the form of user manuals, technical support manuals, technical architecture documentation and training materials for the Data Collection and Validation System, the Data Warehouse and the Reporting Facility.

5.1.10 On-going Maintenance

On-going maintenance for the Clearinghouse Solution will be the responsibility of the OSHPD Staff. This is both in terms of systems support and program support. Support and associated costs of the Clearinghouse Solution is detailed in Section 8 of this FSR.

System Support

System support includes support and maintenance of the hardware, software and network infrastructure necessary to support the Clearinghouse Solution. This includes the cost of hardware and software as well as the personnel costs to perform these support tasks.

Program Support

Program support includes support and maintenance of the Clearinghouse Solution in terms of application enhancements and ‘bug fixes’. This translates to the personnel costs to perform these tasks.

5.1.11 Information Security

The Clearinghouse Solution will provide security through *authentication* and *authorization*. Authentication ensures that users are who they claim to be. After a user's identity has been authenticated, that user is authorized to use network resources. Authorization is made possible by access control which uses permissions on any resource such as file systems and screens.

Besides *authentication* and *authorization*, the following security measures will be part of the Clearinghouse Solution:

- Physical Security,
- Personnel Security,
- Administrative Security and
- Security of Data Transmission between Data Providers and the OSHPD Clearinghouse Solution.

Authentication via Usernames and Passwords

Access to secure parts of the Clearinghouse Solution will require a username and password. Each user must have a unique username and password in order to log into the Clearinghouse Solution. Sharing of usernames and passwords will be prohibited. Users who will need secure access to the Clearinghouse Solution include:

- Individuals who submit data on behalf of a Data Provider.
- Individuals who need to see status of data submissions on behalf of a Data Provider.

Authorization and Access Control

Access control into the Clearinghouse Solution provides a multi-level access control to the major functions, including:

- User access to Data Collection and Validation
- User access to the Clearinghouse database.

User Roles

Users will have designated roles within the Clearinghouse Solution, which will be assigned by the appropriate HWDD Program staff or the Data Provider. Roles will be used to specify individual read, write and view access to specific screens within the Clearinghouse Solution. Users created for a specific Data Provider will be restricted to update information for only that Data Provider.

Secure Socket Layer

The web interface for the Clearinghouse Solution will use industry-standard 128-bit secure socket layer (SSL) certificates for encryption. The OSHPD will require the use of a 128-bit encryption browser when using the Clearinghouse Solution. As such, the Clearinghouse Solution will only support the use of Microsoft Internet Explorer version 5.0 or higher. Using 128-bit encryption offers a high degree of confidentiality and security when transmitting data over the Internet.

5.1.12 Confidentiality

Some Clearinghouse data contains individual identifiers (such as Student ID), which are considered confidential. Access to Clearinghouse data will be restricted to the OSHPD organization, Data Providers and approved Data Users.

To assure data confidentiality, the OSHPD has implemented extensive guidelines governing the dissemination of information. The OSHPD has defined two distinct categories of data: confidential and public. Confidential data, which contains individual identifiers, is released only upon appropriate justification and access approval. Public information is “de-identified”, i.e. individual identifiers are removed or masked (as in the case of birth date, which is converted to age). The Clearinghouse Solution will support the implementation of existing confidentiality rules by implementing confidential and public database views. Based on roles (as defined above) the OSHPD will control the data elements to which a user or process has access.

5.1.13 Impact on End Users

Data Providers

There will be significant impact on the Data Providers, as the Clearinghouse Solution is a new environment and they have not been required to submit data for the Clearinghouse before. The impact will be mitigated by ensuring that the Data Providers are included in all phases of the project and that sufficient training is provided.

External End Users

The Clearinghouse end user community will have Web access to the standard SB139 reports and also the ability to submit ad hoc report and data extraction requests. The Communication Plan, developed in collaboration with the Public Information Office (PIO), will include outreach and availability tasks to inform the end users of the data warehouse status, content and the methods for accessing, reporting and downloading the data.

HWDD Staff

The HWDD staff will be managing the new Clearinghouse program and will be tasked with managing the legislation language, the Data Provider relationships and participation, the Data Collection and Validation process, the business and data rules and the reporting process. This will have an impact on staff levels and will require the creation and management of the appropriate policies and procedures.

ITSS Staff

The ITSS staff will have to support the Data Collection and Validation system processing and enhancements, the Data Warehouse processing and enhancements the end user Reporting processing and enhancements. The Clearinghouse program is new, which will have an impact on staff levels and will require the creation and management of the appropriate policies and procedures.

5.1.14 Impact on Existing System

The Healthcare Workforce Clearinghouse is a new program legislated by SB139, consequently there is no existing system.

5.1.15 Consistency with Overall Strategies

The Clearinghouse Solution supports the OSHPD's stated purpose of providing access for the OSHPD and its stakeholders to timely and accurate data and information through the best information tools[13]: Specifically, the proposed solution will meet the following goals and objectives:

1. Provide access to useful data and information on health and healthcare services in California.

    - Develop and implement a strategy for electronic delivery of data and information as well as information technology services through a collaborative effort with internal and external stakeholders.

    - Manage all the OSHPD data as an enterprise asset in order to share and leverage it in as many ways possible to maximize its value to all the OSHPD's programs and its stakeholders.

    - Evaluate and structure the OSHPD business processes to support the efficient delivery of services, effectively respond to change and facilitate the transition to e-Government.

    - Develop and maintain strong partnerships to enable the OSHPD's effective use of technology and to ensure and expedite the successful implementation of its e-Government vision.

2. Develop and enhance the information and telecommunications infrastructure of the OSHPD.

    - Develop and implement a strategy for electronic delivery of data and information as well as information technology services through a collaborative effort with internal and external stakeholders.

[13] Agency Information Management Strategy, December 2003, pp.5-6, pp. 13-14.

- Manage all the OSHPD data as an enterprise asset in order to share and leverage it in as many ways possible to maximize its value to all the OSHPD's programs and its stakeholders.

- Implement a technical architecture that provides the framework for development of all e-Government applications.

- Transform the information systems organization to successfully implement the e-Government vision by initially focusing on planning and infrastructure building, then managing the transformation of its information technology environment to support the delivery of electronic services and information.

3. Use information technology to enhance the OSHPD's capability to serve its customers more responsively and cost effectively.

- Deliver services to customers online to the extent feasible.

- Provide the public with a single face to the OSHPD ("one-OSHPD").

- Build online services on re-engineered, streamlined business processes and delivered irrespective of organizational/functional boundaries.

- Coordinate and share information and data between programs.

4. Enhance internal operations by providing management and employees with timely access to information and support services to serve external stakeholders and the public.

- Enable programs to share business applications, processes and information without regard to organizational boundaries and responsibilities.

- Provide employees with timely access to accurate information to serve the public.

- Enable employees with the appropriate technology tools to perform their jobs anywhere and at any time.

- Provide all employees with convenient, efficient access to administrative information and services.

5. Manage and apply information technology efficiently and effectively to perform business functions and serve the public.

- Integrate applications and data.

- Engage in cooperative/joint technology efforts within and with other agencies to leverage resources.
- Implement rigorous project management and applications development methodologies to assure that projects meet business requirements, on time and within budget.

The proposed solution is also in accordance with the OSHPD Agency Information Management Strategy (AIMS) which supports open system architectures. Additionally, the Clearinghouse Solution positions the department for future ease of maintenance and operations, enhancements, integration with the OSHPD enterprise architecture and the strategic plan for a comprehensive healthcare enterprise data warehouse repository.

The Clearinghouse Solution also supports the recommendations disseminated in the California Health Policy and Data Advisory Commission (CHPDAC), SB1109 report, "Improving Health Care Information for the Benefit of All Californians". CHPDAC's report identifies the following OSHPD stakeholders:

- California Consumers – Use the OSHPD data to make informed decisions.
- Health Providers – Use the OSHPD data to improve quality of care.
- Purchasers – Use the OSHPD data to better determine value.
- Health Professionals and Researchers – Use the OSHPD data to advance evidence based medicine.
- Policy Makers – Use the OSHPD data to safeguard the public's health.

The Clearinghouse Solution will provide critical information to support these stakeholders' efforts.

5.1.16 Impact on Current Infrastructure

The Clearinghouse Solution will be housed at both the DTS and the OSHPD. This will create an impact on the current OSHPD infrastructure in terms of:

- Added network traffic,
- Additional servers, server enclosures and UPS units to be added to the OSHPD computer room,
- Additional network storage required for the Clearinghouse Solution,
- Increased demand for power and cooling for the OSHPD computer room and
- Additional backups required for the Clearinghouse Solution (as well as added procedures for operational recovery).

The costs of these items are being addressed in either the 'One-Time' or 'On-Going' Costs areas of the EAWs which are included in Section 8.0 of the FSR.

5.1.17 Impact on Data Center(s)

There is no significant impact on the State Data Centers. The proposed Clearinghouse Solution is similar is size, scope and functionality to the MIRCal System which is currently supported at the DTS Cannery Campus. Because of this, the OSHPD does not anticipate any significant impact to the State Data Centers. The existing data warehouse, that the Clearinghouse Solution will leverage, is housed at the OSHPD and is not expected to have a significant impact to the OSHPD.

5.1.18 Data Center Consolidation

The implementation of the Clearinghouse Solution will not be affected by the on-going and future efforts by the California State Department of Technology Services (DTS) to consolidate the State Data Centers.

5.1.19 Backup and Operational Recovery

The Clearinghouse Solution implemented by DTS will adhere to all DTS backup and operational recovery strategies. Backup and operational recovery functions for the enterprise Data Warehouse housed at the OSHPD will be performed by the OSHPD ITSS in accordance with ITSS standards, policies and practices.

5.1.20 Public Access

The general public will have web-based access to the standard Clearinghouse reports, such as the annual SB139 analyses. The reports will be available for online reading and also for downloading in a Portable Data File (PDF) file format.

Approved external users, such as the Legislature and researchers, will be assigned a userid and password for access to the Clearinghouse ad hoc reporting and data extraction tools.

5.1.21 Costs and Benefits

Costs

The proposed solution has an estimated One-Time cost of $5,630,000. All One-Time and On-Going costs for the proposed solution are detailed in Section 8 – Economic Analysis Worksheets.

Benefits

The proposed solution resolves the business problems and fulfills the business opportunities outlined in Section 3 Business Case of this FSR. In addition, the following benefits are worth noting and are in order of significance:

- The proposed solution provides for full compliance with the requirements of SB 139. It initially provides for all the statutory functionality and allows for system expansion to accommodate future data and functionality requirements with limited additional application software development.
- The proposed solution will save staff and stakeholder time for ad hoc query and reporting, as it will be a single source to access California healthcare workforce data and will not require staff or stakeholders to do multiple queries and extracts using different tools to build a query solution.
- The proposed solution will enable the OSHPD and its stakeholders to quantify and identify healthcare workforce supply and demand problems in a timely manner. This will provide an increased level of community protection and assistance to underserved areas.
- The proposed solution will become a widely available library of standard queries and reports. This will include the mandated SB139 annual reports and other analyses as they are developed.
- External stakeholders will be able to independently query the Clearinghouse Solution data warehouse as required, to retrieve healthcare workforce information on specific occupations, educational categories, licensure categories and regional requirements.
- The proposed solution will improve statewide information sharing across government and private industry by providing access to comprehensive healthcare workforce data in the Clearinghouse Solution data warehouse.
- The proposed solution is based on the OSHPD existing and proven, technologies and methodologies. The proposed system architecture provides for a structured or layered approach to the initial development and subsequent expansion of the Clearinghouse Solution. This approach allows for controlled development and testing processes minimizing the risk of failure of one component impacting another component.
- The proposed solution assists the OSHPD in managing its resources and workload. This will be achieved by providing automated workflow processes that will report information about data submission status, current and forecasted workload and staff and Data Provider assignments.
- The overall cost of developing, installing and operating the proposed solution is lower than other alternatives evaluated.

5.1.22 Sources of Funding

OSHPD has identified the California Health Data and Planning Fund (CHDPF), a non-General Fund funding source, to fund the costs of designing, developing, implementing and sustaining (maintenance and operation of) the Clearinghouse Solution. There are sufficient funds in CHDPF to support this project and sustain it.

5.2 Rationale for the Selection

The proposed solution fulfills all of the solution objectives and meets all of the functional and technical requirements described in this feasibility study report. In addition to the benefits outlined in the Costs and Benefits Section (8.0), the proposed solution:

- Is the alternative with the highest probability of success and lowest risk of failure, because the OSHPD has had recent implementation successes to leverage for this effort including the MIRCal Core and Expanded phases;
- Is another step toward improving OSHPD's ability to consolidate data across multiple data sources and internal organizations in order to provide comprehensive integrated data for analysis, reporting and sharing purposes; and,
- Positions the OSHPD to take advantage of known opportunities for efficiency gains and performance improvement.

The following table compares how the proposed solution and the other alternatives fulfill the business objectives documented in Section 3 Business Case.

Table 5-8: Rationale for Selection of Alternative Solutions

Objectives	***Proposed Solution***	***Alter. #1***	***Alter. #2***
1. Enhance Legislation to Ensure Compliance with SB139 Requirements	✓	✓	✓
2. Use Existing OSHPD ITSS Methodologies and Expertise to Define, Create and Technically Manage the Clearinghouse Cost Effectively	✓	*Partial*	*No*
3. Ensure Adequate Business and IT Staffing of the Required Classifications and Expertise to Ensure the Success of the Clearinghouse Management, Design, Development, Implementation and Maintenance and Operations	✓	✓	✓
4. Build a Rigorous Quality Control Process (QCP) into the Clearinghouse Program Policies and Procedures	✓	✓	✓

Objectives	***Proposed Solution***	***Alter. #1***	***Alter. #2***
5. Provide Easy To Use and Secure Data Submission and Correction Processes for the Data Providers	✓	✓	*No*
6. Provide Analysis Capability Across Multiple Years and Multiple Data Types	✓	✓	✓
7. Manage the Participation of the Data Providers	✓	✓	✓
8. Provide Comprehensive Workforce Information to Internal and External Clearinghouse Users	✓	✓	✓
9. Provide End Users with User Friendly Information Access and Required Output Formats	✓	✓	*No*
10. Develop the Clearinghouse Application(s) and Infrastructure in an Easily Changeable Manner	✓	✓	*No*

5.3 Other Alternatives Considered

Below are the other two viable alternatives that were considered by the OSHPD for a Clearinghouse Solution.

5.3.1 Alternative 1: A Totally Customized, Externally Developed Solution

This alternative has the same SDLC phases, technical architecture and system components as the Proposed Solution. However, the approach is to contract out all the Clearinghouse Solution components DD&I tasks to an external vendor(s).

Description

This full custom, externally developed Clearinghouse Solution is designed to leverage the expertise of an external vendor(s), while assuring that OSHPD staff is an integral part of the project team to ensure knowledge transfer. The basic components of this solution are:

- Data Collection and Validation Application—to be developed by external vendors
- Data Warehouse Design, Management and Reporting—to be developed by external vendors; and
- Business and Data Rules Analysis—to be performed by external vendors.

Costs

The estimated One-Time cost of this alternative solution #1 is **$5,750,000**. All One-Time and On-Going costs for the alternative solution #1 are detailed in Section 8 – Economic Analysis Worksheets

Benefits

The benefits of this alternative are:

- Alternative Solution #1 provides for full compliance with the requirements of SB 139. It initially provides for all the statutory functionality and is designed to allow for system expansion to accommodate future data and functionality requirements with limited additional application software development.
- Alternative Solution #1 will enable the OSHPD and its stakeholders to quantify and identify healthcare workforce supply and demand problems in a timely manner. This will provide an increased level of community protection and assistance to underserved areas.

- External stakeholders will be able to independently query the Clearinghouse Solution data warehouse as required, to retrieve healthcare workforce information on specific occupations, educational categories, licensure categories and regional requirements.

- Alternative Solution #1 will save staff and stakeholder time for ad hoc query and reporting, as it will be a single source to access California healthcare workforce data and will not require staff or stakeholders to do multiple queries and extracts using different tools to build a query solution.

- The Clearinghouse Solution will become a widely available library of standard queries and reports. This will include the mandated SB139 annual reports and other analyses as they are developed.

- The Clearinghouse Solution is based on the OSHPD existing and proven, technologies and methodologies. The architecture of Alternative Solution #1 provides for a structured or layered approach to the initial development and subsequent expansion of the Clearinghouse Solution. This approach allows for controlled development and testing processes minimizing the risk of failure of one component impacting another component.

- The Clearinghouse Solution assists the OSHPD in managing its resources and workload. This will be achieved by providing automated workflow processes that will report information about data submission status, current and forecasted workload and staff and Data Provider assignments.

- Improves statewide information sharing across government and private industry by providing access to comprehensive healthcare workforce data in the Clearinghouse Solution data warehouse.

Advantages of Alternative 1

The advantages of this alternative are:

- Fewer OSHPD ITSS staff and specialized contract programming resources will be required than the Proposed Solution. Specifics about staffing are identified in the Cost Sheets for Alternative #1.

- The DD&I vendor would be contracted to provide the ancillary services, such as training and communications management as well, which reduces the burden on OSHPD staff.

- The DD&I vendor selected to develop the Clearinghouse Solution would have experience in designing, developing and implementing similar clearing house solutions.

- The DD&I vendor would be contracted to provide 12 months of post implementation support, to ensure knowledge transfer and a smooth transition to OSHPD internal maintenance and operations support

- The OSHPD has PMO expertise that manages internal/external project implementation utilizing ITSS staff and/or vendor contracts.

Disadvantages of Alternative 1

The disadvantages of this alternative are:

- This alternative has the highest costs of all the alternatives considered.

- Due to the different Clearinghouse Solution components, unless a single DD&I vendor is selected to develop the entire, end-to-end Clearinghouse Solution, there would be multiple vendors involved, which would require an integration vendor to manage the combined efforts. Having multiple vendors involved requires a higher degree of project management, which leads to higher costs and increased project risk.

- The detailed knowledge of the Clearinghouse Solution architecture and component integration will leave with the DD&I vendor when the project has been completed.

- The OSHPD programming support staff will not be as familiar with the Clearinghouse Solution developed by a DD&I vendor as they would be if the solution was designed, developed and implemented by in-house staff.

- It may be necessary to contract with external vendors for future enhancements, such as new legislation or adding new data sources, because of lack of in house expertise in the Clearinghouse Solution, which will add to the program costs.

5.3.2 Alternative 2: A COTS/MOTS Solution

This alternative was to find a commercial off the shelf (COTS) or modified off the shelf (MOTS) software solution that is readily available from a software vendor that would satisfy the objectives and requirements for the Clearinghouse Solution as defined by the OSHPD.

Description

This alternative solution would be an existing, single software solution that provides the basic components of the Clearinghouse Solution. Either in its existing form (COTS) or through some level of modification by the software vendor (MOTS), the basic components of this solution would be:

- Data Collection and Validation Application;
- Data Warehouse Design, Management and Reporting; and
- Business and Data Rules Analysis.

An exhaustive search was conducted to determine potential software solutions and vendors that resulted in finding no such software exists on the market place today. To further aid in the market research for a COTS/MOTS solution, the OSHPD conducted an extensive survey of other states that have a similar healthcare workforce solution in place. This search was based on recommendations from the Clearinghouse Advisory Team and feedback from Regional Focus Group meeting attendees.

Of the states surveyed, it was determined that no state is using a COTS/MOTS solution to meet the needs of their healthcare workforce clearinghouse. A copy of the survey, the results of that survey are included as a spreadsheet in Attachment 4.

The states that were included in this survey were:

- Florida,
- Massachusetts,
- Maryland,
- Michigan,
- Minnesota,
- Nebraska,
- North Carolina,
- Oregon,
- South Dakota,
- Tennessee,
- Texas and
- Wyoming.

Costs, Benefits, Advantages and Disadvantages of Alternative 2

Our due diligence in researching this alternative concluded that no such COTS/MOTS solution exists. Because of this, it is not possible to detail the costs, list the benefits of, or outline the advantages/disadvantages of such an alternative.

6.0 PROJECT MANAGEMENT PLAN

Project Management is a key factor in ensuring the successful accomplishment of a defined project. Project Management is the discipline of planning, organizing and managing resources to bring about the successful completion of specific project goals and objectives.

This Project Management Plan (PMP) provides the approach to effectively manage the Healthcare Workforce Clearinghouse Program, while adhering to the practices defined by the OSHPD Project Management Office (PMO). The OSHPD's framework for project management on the Clearinghouse Program will include:

- Project Initiation
- Project Planning
- Project Execution
- Project Control and
- Project Closeout.

Figure 6-1 below provides the Project Management (PM) Framework as defined by the OSHPD's PMO and referenced in their SharePoint site, which can be found at:

http://dev-shrpoint01/sites/PMO/ProjectTeams/default.aspx.

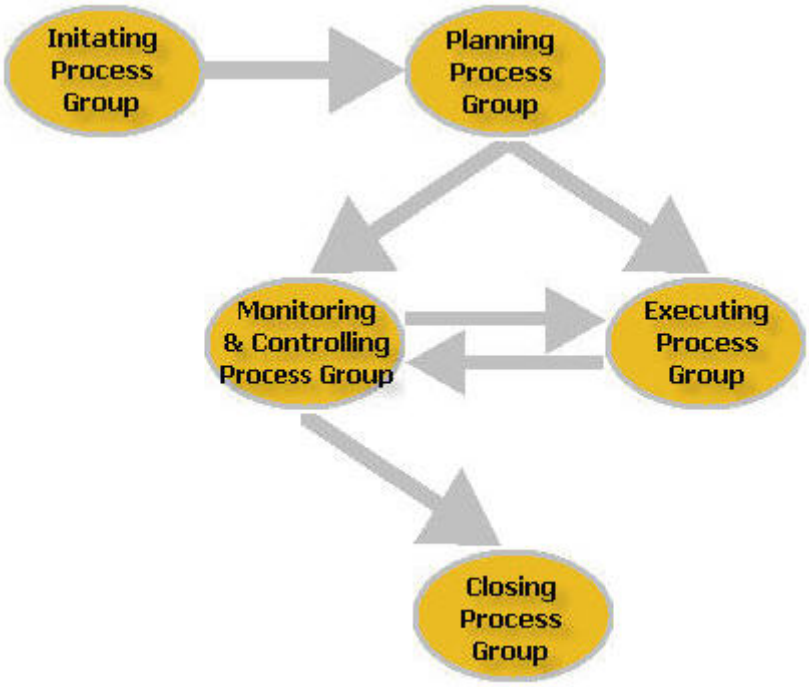

Figure 6-1: The OSHPD PMO PM Framework

6.1 Project Management Methodology

The OSHPD's Project Management Methodology is based on the guidelines in the Statewide Information Management Manual (SIMM) Section 200 and the Project Management Body of Knowledge (PMBOK), maintained by the Project Management Institute. The project management methodology includes the recommended project management and risk management practices of the State's Chief Information Officer (CIO) Information Technology Project Framework. Also included are industry best practices and lessons learned from prior OSHPD projects. The OSHPD project management approach incorporates the principles of these methodologies and includes the following activities:

- Maintaining a detailed integrated project schedule and identifying the critical path of activities for the phases, timeframes, responsible parties, dependencies, milestones and deliverables.
- Monitoring planned versus actual performance, schedule and budget.
- Utilizing the OSHPD standard issue and change management processes.
- Developing a risk management plan and performing frequent project risk assessments (as defined in Section 7.0 of this FSR).
- Defining a structured approach for reviewing and approving deliverables.
- Adhering to the State CIO reporting requirements.

The Clearinghouse Program will also benefit from the project management lessons learned from the OSHPD's other recent successful projects, including the MIRCal and E-GIS Projects, as these projects continue to define the foundation on which the Clearinghouse Program will use.

6.2 Project Organization

The OSHPD will use a fully qualified Project Manager for management of the Clearinghouse Project. A Program Director (from the program area—HWDD) will direct the program business team and work in partnership with the Project Manager to ensure a successful project implementation. The OSHPD has found that a strong partnership between the program and project management is very effective. It combines the project management experience provided by the PMO resource along with the program experience provided by program area resource. Working together, combining the expertise of both resources, greatly increases the chance for success on the Clearinghouse Program.

The Clearinghouse Program will also include participants within the OSHPD's Healthcare Workforce Development Division (HWDD), Information Technology Services Section (ITSS) and the OSHPD's Information Security Office (ISO) management and staff.

A project communications plan will be developed to address how all entities will coordinate with each other and external stakeholders throughout the course of the

project. A description of each participant's responsibilities is included in Section 6.3 Roles and Responsibilities. The Figure below provides a view of the project organization.

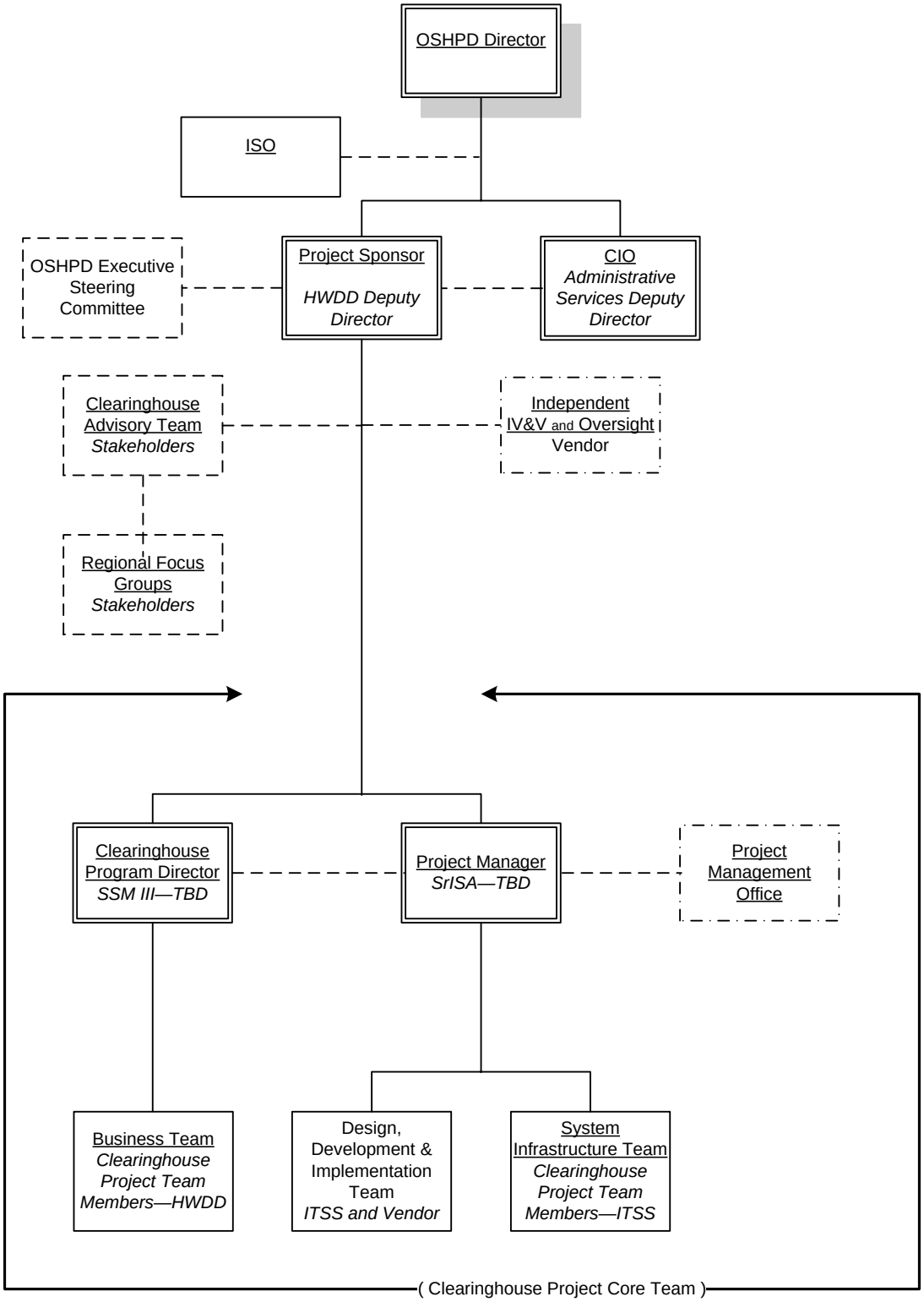

Figure 6-3: Project Organization

6.3 Roles and Responsibilities

In order to provide all project participants with a clear understanding of the authority and responsibilities for successful accomplishment of the Clearinghouse project, the OSHPD has defined the roles and responsibilities of key participants in the Clearinghouse project. Table 6-1 below identifies each key participant and their responsibilities on this project:

Table 6-1: Project Team Roles and Responsibilities

Role	Responsibilities	Title
Director	✓ Project advocate. ✓ Oversees organization funding. ✓ Provides policy direction to the programs. ✓ Key business decision-maker of OSHPD.	OSHPD Director
Information Security Officer	✓ Ensures System meets OSHPD Security and Data Confidentiality requirements. ✓ Advises project on security matters.	ISO Manager
Project Sponsor	✓ Project advocate. ✓ Oversees project funding. ✓ Provides policy direction to the project. ✓ Key business decision-maker of the project. ✓ Resolves significant issues identified by the Program Director and the Project Manager. ✓ Approves the final scope of the project and Risk Management Plan. ✓ Provides project resources. ✓ Reviews and approves escalated project changes. ✓ Fosters relationship with Clearinghouse Advisory Committee ✓ Leads policy and legislative recommendations from Clearinghouse Advisory Committee ✓ Facilitates coordination and cooperation of different department programs. ✓ Performs prioritization and decision making across HWDD projects.	HWDD Deputy Director

Role	Responsibilities	Title
Chief Information Officer	✓ Ensures Information Technology service level agreements are met ✓ Provides advice and support to Project Sponsor. ✓ Oversees key information technology and administrative services resources. ✓ Helps to resolve issues identified by the Program Director and the Project Manager.	Administrative Services Deputy Director
Clearinghouse Advisory Team	✓ Provides advice and options for project strategic/organizational objectives. ✓ Helps resolve interdepartmental issues and encourage support for the project. ✓ Assists in providing guidance on cross-functional issues to the project team. ✓ Assists in identifying Regional Focus Group participants. ✓ Helps formulate and implement legislative policy needs	Key Stakeholders from State and Local Government Entities, Consumer Groups, Community-Based Organizations, Professional Associations and Advocacy Groups
Regional Focus Groups	✓ Represents Clearinghouse Data Providers and Data Users. ✓ Provides support for the project. ✓ Supports implementation needs analysis ✓ Supports the development of goals for information delivery. ✓ Provides high level requirements for clearinghouse from an end user perspective	Stakeholders (Data Providers and Data Users)
OSHPD Executive Steering Committee	✓ Provide guidance to the project on strategic and organizational OSHPD objectives. ✓ Resolves interdepartmental issues. ✓ Provides resources to the project. ✓ Provides guidance on cross-functional issues to the Project Team. ✓ Provides advice and options for project risks and issues. ✓ Provides legal guidance, as necessary.	Director Project Sponsor OSHPD CIO OSHPD ISO Legal Representative Budget Officer

Role	Responsibilities	Title
Clearinghouse Program Director	✓ Provides leadership for the Clearinghouse program with the support of the Project Manager. ✓ Coordinates Data Providers ✓ Coordinates policy uses of data in clearinghouse ✓ Facilitates communication about the project to the Project Sponsor and Project Team. ✓ Implements program policy direction as defined by the Project Sponsor. ✓ Provides support to the Key business decision-maker of the project. ✓ Resolves issues identified by the business team and stakeholders—escalates issues to be resolved by Project Sponsor when needed. ✓ Contributes, along with the Project Manager, to the Risk Management Plan. ✓ Manages program resources. ✓ Reviews, approves and escalates business changes that impact the project scope, schedule or budget..	Staff Services Manager III
Project Manager	✓ Responsible for all phases of the IT project. ✓ Provides leadership for the Clearinghouse IT project with the support of the Project Manager. ✓ Manages project resources ✓ Directs, coordinates and oversees all project activities. ✓ Coordinates project direction with the Project Sponsor. ✓ Initiates the Information Technology Project Plan, develops and maintains Integrated Project Plan. ✓ Develops, monitors and updates the Project Management Plan. ✓ With the Project Manager performs prioritization and decision making on Clearinghouse Project. ✓ Tracks, monitors and reports on project	Senior Information Systems Analyst

Role	Responsibilities	Title
	status including schedule, scope, budget and risk. ✓ Enforces Corrective Action Plans, if appropriate: - Reports project metrics to the OSHPD Project Management Office. - Manages requirements traceability throughout the system development life-cycle. - Coordinates project work efforts of the Clearinghouse Project Team. - Facilitates the change management process. - Facilitates the risk and issue management process. - Resolves project issues. - Communicates project status to internal and external stakeholders. - Oversees project schedule, scope, budget and risk. - Reviews and approves project work plan and deliverables. - Facilitates Clearinghouse Advisory Team meetings. - Oversees the Post Implementation Evaluation Review (PIER).	

Role	Responsibilities	Title
Project Management Office	✓ Provides guidance on OSHPD's Project Management Methodology. ✓ Provides project management standards and templates to the project. ✓ Collects project metrics and manages the OSHPD project portfolio. ✓ Analyzes project metrics for monitoring purposes. ✓ Serves as liaison with OCIO and Department of General Services. ✓ Coordinates project oversight activities.	Project Management Office Manager (or designee)
Independent Oversight Consultant	✓ Evaluates the project to ensure that it is following a structured and defined approach. ✓ Prepares periodic project assessments and develops monthly OCIO progress reports in coordination with Clearinghouse project management. ✓ Performs risk assessment and provides findings (if any) to OCIO.	Oversight Vendor
Independent Verification and Validation Consultant	✓ Serves as an independent expert that provides technical assistance to the Clearinghouse Project Manager in all project activities. ✓ Reviews deliverables to ensure that they are aligned with defined standards, OSHPD's needs and contractual requirements. ✓ Oversee security aspects of the system implementation in concert with the OSHPD ISO. ✓ Performs requirements traceability. ✓ Performs risk assessment and provides findings (if any) to Clearinghouse Project Manager.	IV&V Vendor

Role	Responsibilities	Title
Business Team	✓ Defines business rules and data rules analysis. ✓ Develops business documentation. ✓ Works with the Program Director to communicate business policy, processes and functional needs. ✓ Assists the technical team to define data elements, relationships and definitions. ✓ Participates in system design and development walkthrough sessions. ✓ Develops test scenarios and acceptance criteria for User Acceptance Testing (UAT). ✓ Participates in UAT. ✓ Works with the technical team vendor to develop user manuals, address user questions and issues (e.g., help desk), develop training manuals and conduct training sessions. ✓ Establish and maintain business relationships with Data Providers and Data Users.	Clearinghouse Project Team Members from within HWDD

Role	Responsibilities	Title
Design, Development and Implementation Team	✓ Leads the joint application design and working sessions with the project team. ✓ Defines data elements, relationships and definitions. ✓ Conducts data model walkthrough sessions. ✓ Conducts system design and development walkthrough sessions. ✓ Conducts prototyping sessions with internal and external stakeholders. ✓ Designs and develops the Clearinghouse environment, as defined by the functional requirements and business needs. ✓ Conducts unit and system integration tests. ✓ Works with Business Team in the development of UAT test scripts. ✓ Facilitates UAT. ✓ Works with the Business Team to develop user manuals, address user questions and issues (e.g., help desk), develop training manuals and conduct training sessions. ✓ Confirms data conversion approach. ✓ Develops data conversion tools. ✓ Coordinates data cleanup. ✓ Implements the final Clearinghouse Solution.	Design, Development and Implementation Team
System Infrastructure Team	✓ Oversees maintenance and updates to the security components of the application and system. ✓ Participates in testing security components. ✓ Develops and validates security requirements. ✓ Determines technology architecture required for system interfaces. ✓ Designs, tests and documents system interfaces. ✓ Coordinates and oversee the establishment and operation of the Project's technological environment	Clearinghouse Project Team Members from within ITSS

Role	Responsibilities	Title
	including servers, workstations, network connectivity, development software and database environments. ✓ Coordinates the implementation of the Clearinghouse Solution technical architecture.	

6.4 Project Management Qualifications

The Project Manager will be responsible for ensuring that the Clearinghouse Project adheres to the Project Management Plan. This Project Manager will be identified consistent with State CIO rules on project managers and either be a certified Project Manager or have the experience, knowledge and abilities justifying project management for a medium to large complex project. In this capacity they will be the primary interface between the PMO and the Clearinghouse Program Director, offering guidance and assistance as needed on the project.

6.5 Project Priorities

All projects have three core components that must be managed:

- Schedule,
- Scope and
- Resources.

Each of these is interrelated. That is, a change in any one factor will almost certainly impact the others. Prior to beginning the Clearinghouse project, it is important to determine the relative importance and flexibility of each. For the Clearinghouse project, this is documented in the matrix below:

Table 6-2: Clearinghouse Project Tradeoff Matrix

Schedule	Scope	Resources
Improved (*Can be adjusted)*	**Improved** (*Can be adjusted)*	**Accepted** *(Are somewhat flexible)*

6.6 Project Plan

Project planning defines the project activities to be performed, products to be delivered and how the activities will be accomplished. Project planning helps define each major task, estimate the time and resources required and provide a framework for management review and control. The project planning activities and goals include defining:

- Scope of the effort,
- Project assumptions and constraints,
- Project approach (e.g., phasing),
- Project team roles and responsibilities and
- Project schedule.

This section provides an overview of each of these areas.

6.6.1 Project Scope

The Clearinghouse Program seeks to implement an on-line system to collect, validate, track, store, report on and make available to the public, healthcare workforce and educational data in the form of a central repository, including, to the extent available, all of the following:

- The current supply of health care workers, by specialty.
- The geographical distribution of health care workers, by specialty.
- The diversity of the health care workforce, by specialty, including, but not necessarily limited to, data on race, ethnicity and languages spoken.
- The current and forecasted demand for health care workers, by specialty.
- The educational capacity to produce trained, certified and licensed health care workers, by specialty and by geographical distribution, including, but not necessarily limited to, the number of educational slots, the number of enrollments, the attrition rate and wait time to enter the program of study.

OSHPD is required to prepare an annual report to the Legislature that does all of the following:

- Identifies education and employment trends for various healthcare professions
- Reports on the current supply and demand for healthcare workers in California and gaps in the educational pipeline producing workers in specific occupations and geographic areas and
- Recommends state policy needed to address issues of workforce shortage and distribution.

The Clearinghouse Solution will provide the functionality required to manage the collection of this data from Data Providers, including edit checks to assist in improving

the data quality. In addition, the Clearinghouse Solution will track the status of the data collection/validation process. The Clearinghouse Solution will also provide the ability to easily deliver the cross sector collected information for multiple uses.

6.6.2 Project Assumptions

The major project assumptions include:

- The project will not be funded from the California General Fund.
- New funding will be required.
- The HWDD will continue to solidify partnerships with Data Providers statewide.
- If additional legislation is required to *encourage* Data Providers to participate in the Clearinghouse program, the Clearinghouse Project Sponsor will take on the responsibility of leading this effort.
- The OSHPD program and technical staff will contribute towards the requirements definition, design, testing, implementation and maintenance of the system.
- Additional OSHPD resources required to support this project will be identified and requested in the BCP process.
- The OSHPD PMO will provide project management guidance and support.
- Technology to be used will conform to industry and the OSHPD standards.
- The proposed solution will leverage the OSHPD's existing IT infrastructure where possible.
- Problems and issues will be addressed on a timely basis.
- Effective risk management processes will be utilized to mitigate risks and ensure a successful project.
- Vendor contracts and procurements will be accomplished within planned timelines.
- Security provisions will be integrated into the solution.

6.6.3 Project Content

In order to reduce project risk and stay within resources constraints, the Clearinghouse project will be implemented using a phased approach. The Advisory Team and Regional Focus groups will help determine the data to be included in the first phase of the Clearinghouse Solution. This phase will help OSHPD develop repeatable processes which can be employed to other Data Providers for growing out the Clearinghouse. This phase will include data that:

- Is easily assembled across providers,
- Meets the intent of the legislation and
- Provides insight into the policy arenas of health workforce planning.

This initial phase will include:

- Project Initiation,
- Requirements Definition,
- System Design,
- System Development,
- Testing,
- Training,
- Implementation Preparation (internal preparation and outreach),
- System Implementation, and
- Phase review.

The project will not be stopped or deterred by less than 100% participation by Data Providers. The remaining Data Providers will be included in a later phase, which may also include seeking additional legislation necessary to motivate their participation.

For additional information on each of these phases, including work to be accomplished, expected beginning and end dates and deliverables, please see Table 6-4 Clearinghouse Phases, Schedule and Deliverables. Ongoing maintenance and support after the Clearinghouse Solution is deployed will be provided by ITSS technical staff.

6.6.4 Project Schedule Dates

The proposed Clearinghouse Project Schedule is outlined in Table 6-4: Clearinghouse Project Phases, Schedule and Deliverables. Additionally, the Clearinghouse project implementation schedule may be constrained by Data Provider participation. The OSHPD will need to consider the impact of any changes in dates in order to minimize disruption to current HWDD business processes.

Table 6-3: Clearinghouse Project Phases, Schedule and Deliverables

Task Name	*Start*	*Finish*	*Deliverables/Milestone*
Phase I – Project Initiation			
Project Planning	Jul. 2009	Sep. 2009	✓ Project Schedule ✓ Project Management Plan ✓ Risk Management Plan ✓ Requirements Definition Document ✓ File Format Specifications ✓ Letter Templates
Requirements Definition	Jul. 2009	Nov. 2009	
Phase I – System Development			
System Design	Dec. 2009	Mar. 2010	✓ System Design Document ✓ System Test Plan ✓ System Test Results ✓ System Documentation
System Development & Testing	Apr. 2010	Jun. 2011	
System Documentation	May. 2010	Jun. 2011	

Task Name	***Start***	***Finish***	***Deliverables/Milestone***
Phase I – Implementation			
Training & Outreach	Mar. 2011	Sep. 2011	✓ Update Data Format & Content Guide ✓ Training Plan ✓ Finalized training materials ✓ User Guide ✓ Rollout Plan ✓ FAQs ✓ User Documentation
Phase II – Project Initiation			
Requirements Definition	Apr. 2010	Aug. 2010	✓ Requirements Definition Document ✓ File Format Specifications ✓ Logical Data Model
Phase II – System Development			
System Design	Sep. 2010	Dec. 2010	✓ System Design Document ✓ System Test Plan ✓ System Test Results ✓ Data Warehouse ✓ System Documentation
System Development & Testing	Jan 2011	Jun. 2012	
System Documentation	Feb. 2011	Jun. 2012	

Task Name	*Start*	*Finish*	*Deliverables/Milestone*
Phase III – System Development			
System Development & Testing	Jul. 2011	Jun. 2012	✓ System Test Plan ✓ System Test Results ✓ Updated System Documentation
System Documentation	Mar. 2012	Jun. 2012	
Post Implementation			
Project Closeout	Oct. 2012	Dec. 2012	✓ Project Record Archive Plan
Post Implementation Evaluation	Nov. 2012	Jan. 2013	✓ Project Lessons Learned ✓ PIER

The Figure below outlines the project timeline for the design, development and implementation of the Clearinghouse Solution. This timeline identifies the fiscal years and the phasing planned for this project.

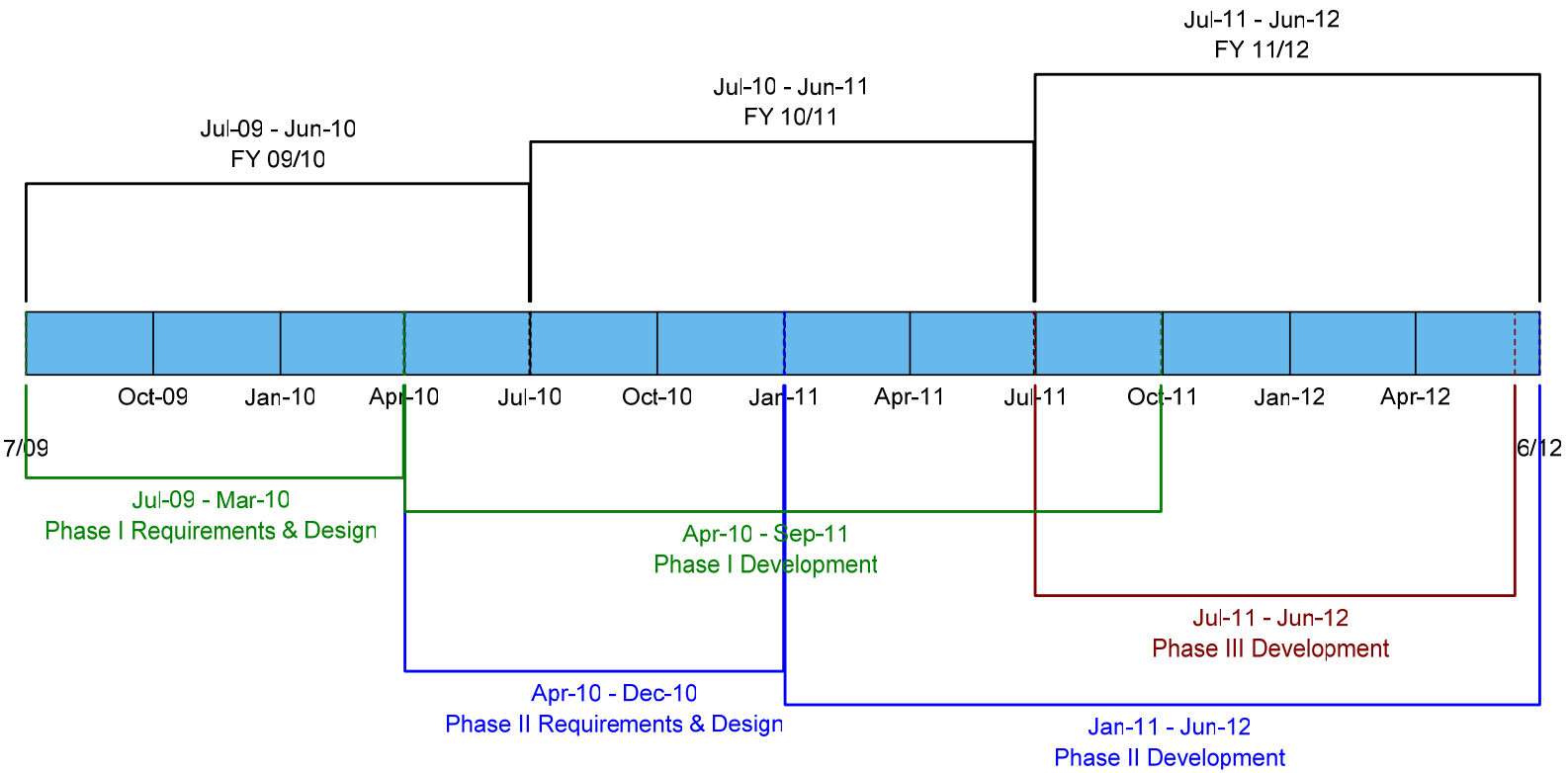

Figure 6-1: Clearinghouse Project Timeline for Design, Development & Implementation

6.7 Project Monitoring

The Clearinghouse Project Manager will continually monitor project progress during the life of the project and keep the Project Sponsor informed of project status and issues. Key components of this monitoring will include:

- **Weekly Project Team Meetings**. These weekly meetings are designed to enhance project communications between the team members and will include discussions regarding the project schedule, deliverable status, upcoming meetings, risks and issues.

- **Weekly Project Status Reports**. These will be distributed to the core project team members. They will report on project activities from the previous week, activities planned for the next week, current project schedule and deliverable status, open issues and risks.

- **Monthly Project Management Meetings**. These meetings are designed to keep the OSHPD management informed about the project and will include discussions regarding the project schedule, deliverable status, upcoming meetings, issues, risks, as well as updates on Data Provider participation and relationships.

- **Monthly Project Status Reports**. These will be distributed to the OSHPD management and the Project Sponsor(s). They will report on project activities performed by the project team members including: accomplishments during the month, activities in progress, upcoming activities for next month, issues, risks, schedule and deliverable status as well as Data Provider participation.

- **Monthly Project Dashboard Updates**. These will include updates on the schedule, budget and risks and will be sent to the Project Management Office.

- **Monthly Independent Project Oversight Report (if required)**. These reports will be produced by an independent oversight consultant and will report on the project from an IPOC perspective as well as list oversight activities that took place during the month.

6.8 Project Quality

Quality is defined as the delivery of a work product or deliverable that satisfies the requirements and objectives of the project that is correct and complete. In order to ensure that the product meets specified business and technical objectives and requirements, the OSHPD will use the following approach to minimize the risk of receiving a work product or deliverable of poor quality:

- The Project Manager and oversight consultant will review all major milestone deliverables to ensure that the State CIO policies and OSHPD standards and methodologies are met.

- The oversight consultant will play a major role in assuring the quality of the new system. Oversight responsibilities will include:

    - Quality Assurance reviews of the project plans and deliverables, including: schedules, requirements specifications, systems architecture and design specifications, test plans, test results, training plans, etc.,

    - Validation of requirements at various levels, including user, system software, hardware and security,

    - Requirements traceability at various stages of the project,

    - Independent design analysis on critical issues,

    - Independent testing of software as needed and

    - Development of project metrics to monitor project quality.

6.9 Change Management

Change is an inevitable occurrence during any project and responsible project management plans for change. A change is defined as any alteration to the scope of the project including requirements, hardware, software, application, network, operations or environment which adds to, deletes from, or in any way modifies the scope of work. In order to effectively manage change for the Clearinghouse project, the OSHPD will use a Change Management Plan to define the process, procedures and outputs for all change-related project activities. The plan will also identify the parties responsible for identifying, resolving, supporting and making project changes. The major goal of this change management strategy is to ensure changes are made using standardized methods and procedures which minimize negative impacts and maximize positive impacts to the requirements, design, development, implementation and maintenance of the system. The Change Management process provides the capability to identify, document, manage and resolve all project related changes. 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 which 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 Control Process to be followed on the Clearinghouse Program will provide a mechanism for the review and approval of changes or additions to the scope, requirements and design of the system. This process will allow the project management team to jointly discuss, review, prioritize and approve changes to requirements and design through all phases of the project from initiation through testing, implementation and maintenance.

The Change Control Process will track and handle all proposed changes to the system software and hardware. All requested changes 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. The CCB will be comprised of members from both the ITSS and HWDD areas.

6.10 Authorization Required

The Clearinghouse project is a direct result of legislative authorization, specifically Senate Bill 139. Reporting criteria from the State Administrative Manual (SAM) and the Statewide Information Management Manual (SIMM) will be adhered to throughout the project. Thereafter, the OSHPD will report annually to the Legislature.

7.0 RISK MANAGEMENT PLAN

Project risks are factors that can jeopardize the successful accomplishment of project goals. Risk management is the systematic process of identifying, analyzing, tracking, mitigating and responding to project risks.

The OSHPD's risk management processes will comply with the California Office of the State Chief Information Officer's (CIO's) *Information Technology Project Management Methodology* (http://www.cio.ca.gov/ITpolicy/pdf/PM0.0_Project_Management_Methodology_Cover.pdf). The OSHPD's approach is based on best practices for early detection, thorough analysis, appropriate and swift response, as well as continuous project lifecycle monitoring.

See Attachment 5 for the Workforce Clearinghouse Risk Management Plan.

7.1 Current Known Risks to the Clearinghouse Project

In accordance with the Risk Management Plan, the Workforce Clearinghouse Project Team has performed a risk assessment and identified the risks listed in the following Risk Management Worksheet.

Table 7-1: Known Risks of the Clearinghouse Project

Risk Description	Probability	Severity	Preventive/ Contingency Measures
Data Providers not willing to share data, or prohibited by law from sharing needed data	Medium	Medium	• Inventory Data Providers for participation. • Prioritize Data Providers with barriers. • Develop strategies for cooperation.
Aligning program with legislative intent.	Low	Low	• Develop a Stakeholder Advisory Committee, including Senate Office of Research, key Data Providers, and data users. • Establish Regional Focus Groups. • Include challenges and successes in annual report to the Legislature.
The number of Data Providers adds a layer of complexity, which could negatively impact the schedule.	Medium	Low	• Phased approach to Data collection participation. • Stakeholder relationship management..
Project implementation costs more than expected.	Low	Medium	• Up-front project involvement from all associated OSHPD units. • Cost monitoring through effective project management. • Develop a Change Management Plan that includes a Change Control Board to control scope creep and manage scope changes.
Information Technology staff are faced with a highly visible project with statewide implications.	Medium	Medium	• Approach to project management includes a Program Director from program area and Project Manager from Information Technology. • Employ Service Level Agreements.

Risk Description	Probability	Severity	Preventive/ Contingency Measures
Data Provider and State Concerns about Data Privacy, Access and Security	Medium	Medium	• Build strong security measure into system (MIRCal Model) • Clear communication to stakeholders. • Involve OSHPD Information Security Officer early in the project

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8.0 ECONOMIC ANALYSIS WORKSHEETS SECTION

The purpose of this section is to document the cost and resource analysis that Pacific Project Management, Inc. and the OSHPD conducted during the feasibility study process for the Healthcare Workforce Clearinghouse Project. This information provides a record of the research and estimation of the costs of the following:

- The Existing System (there is no current system or process),
- The Proposed Solution and
- The Other Alternative Solutions.

Information on these follows, as does and comparative economic analysis of the alternatives and a funding plan for the proposed solution.

In this section, we have presented the costs for implementing the proposed solution plus one (1) full year beyond implementation in order to reflect estimated on-going maintenance and operations costs. This will then establish the baseline for on-going support and maintenance of the proposed solution.

8.1 Existing System Cost Worksheet

Typically, this worksheet documents the current and projected operations/maintenance costs of the current method of operation to provide a costs baseline and reflects the costs of maintaining that existing system and program processes if the proposed solution is not implemented. In this case, there is no existing system or processes in place, as the SB139 legislation is defining the start of a new program and supporting processes to be put into operation.

8.2 Proposed Solution Cost Worksheet

The cost worksheet for the proposed solution documents the projected One-Time costs (such as development and/or acquisition costs), continuing costs (costs for maintenance and operation), as well as the impact to program costs of the proposed solution.

One-Time and On-Going costs for contracting positions, DTS and State staff are identified in the table on the next page, and described in more detail in the sub-sections that follow that table.

Table 8-1: Proposed Solution Contracting and Staffing One-Time and On-Going Costs

	FY 09/10	FY 10/11	FY 11/12	ONGOING
Contracts Phase I				
Requirements & Design	$200,000			
IPOC (OCIO IAA)	$100,000	$100,000	$100,000	
IV&V (OCIO IAA)	$100,000	$100,000	$100,000	
QA/QC (Quality/Test)		$75,000	$75,000	
Contract Programmers		$300,000	$300,000	
Contracts Phase I Subtotal	**$400,000**	**$575,000**	**$575,000**	
Contracts Phase II and III				
Requirement & Design		$50,000	$150,000	
Data Warehouse Business Intelligence		$300,000	$450,000	
Contract Programmer		$150,000	$300,000	
Contracts Phase II and III Subtotal		**$500,000**	**$900,000**	
Contracts On-Going				
Requirement & Design				$60,000
Data Warehouse Business Intelligence				$230,000
Contract Programmer				$60,000
Contracts On-Going Subtotal				**$350,000**
Contracts Grand Total	**$400,000**	**$1,075,000**	**$1,475,000**	**$350,000**
Data Center (DTS)				
DTS		$325,000	$325,000	$325,000
One-time		$31,000		
Telecommunication	$25,000	$25,000	$25,000	$25,000
Dev/Test Hardware/Software	$100,000	$33,000	$33,000	$33,000
Data Center (DTS) Grand Total	**$125,000**	**$414,000**	**$383,000**	**$383,000**
Staff Costs (Including OE&E)				
Senior ISA (Project Manager)	$ 121,000	$ 113,000	$ 113,000	$ 113,000
Staff ISA (Project Management Support)	$ 117,000	$ 109,000	$ 104,000	$ 104,000
Senior ISA (Technical Lead)	$ 121,000	$ 113,000	$ 113,000	$ 113,000
Senior ISA (Network Specialist)	$ 65,500	$ 57,000	$ 57,000	$ 57,000
Staff Programmer (Database Administration)	$ 112,000	$ 104,000	$ 104,000	$ 104,000
Staff Programmer (2yr LT)		$ 112,000	$ 104,000	
Staff Programmer	$ 112,000	$ 104,000	$ 104,000	$ 104,000
Staff ISA (Help desk)	$ 61,500	$ 53,000	$ 53,000	$ 53,000
Office Technician	$ 67,000	$ 57,000	$ 57,000	$ 58,000
Staff Costs (Including OE&E) Grand Total	**$ 777,000**	**$ 822,000**	**$ 809,000**	**$ 706,000**
Total Project Costs	**$1,302,000**	**$2,311,000**	**$2,667,000**	**$1,439,000**

8.2.1 Specialized Contract Resource Costs

The specialized contract resources described below have specialized/advanced programming skills that State programming staff typically do not have. Because of this, these services will be addressed through separate contracts, and consist of:

- ✓ Contract Programmers—specialized skills for this category might include .Net specialist, SQL server specialist, etc.
- ✓ Data Warehouse Business Intelligence—specialized skills for this category might include ORACLE, Informatica, GIS & Flash specialist, etc.
- ✓ Project Oversight and IV & V—These services will be provided by the State CIO via an interagency agreement with OSHPD.

Costs for all specialized contract resources were calculated based on estimated hours for specific tasks multiplied by hourly rates averaged from recent vendor proposals to OSHPD in response to related services identified in RFOs.

8.3 Alternative System Cost Worksheets

The alternative system costs worksheets represent the alternative solution that was considered but not selected to meet the needs of the new program. There is a separate cost sheet for each of the alternative solutions considered. Each of these worksheets document the projected One-Time costs (such as development and/or acquisition costs), continuing costs (costs for maintenance and operation), as well as the impact to program costs of each alternative that satisfactorily met the objectives, functional requirements and cost effectiveness, but to a lesser degree than the proposed solution.

When researching and analyzing possible alternatives for the Clearinghouse Solution, it was determined that the alternative for a COTS/MOTS solution is not available, so it was not possible to produce cost information for that alternative's worksheet.

8.4 Economic Analysis Summary

This summary is automatically calculated to compare the estimated costs of the proposed solution to the other considered alternatives (and the existing system when it exists).

8.5 Project Funding Plan

This worksheet documents the estimated resources needed for designing and developing the proposed solution and the necessary budget actions anticipated to support the implementation and on-going support of the proposed solution. This worksheet also includes existing staff which has been re-directed for a portion of this project. In addition, the OSHPD has identified the California Health Data and Planning Fund (CHDPF), a non-General Fund funding source, as the funding source for the costs of designing, developing, implementing and sustaining (maintenance and operation of) the Clearinghouse Solution.

Table 8-2: Existing System Cost Worksheet

EXISTING SYSTEM/BASELINE COST WORKSHEET

Department: OSHPD-HWDD

All costs to be shown in whole (unrounded) dollars.

Date Prepared: 06/30/08

Project: Healthcare Workforce Clearinghouse

	FY 2009/10		FY 2010/ 11		FY 2011/ 12		FY 2012/ 13		FY 2013/ 14		FY 2014/ 15		TOTAL	
	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts
Continuing Information Technology Costs														
Staff (salaries & benefits)	1.0	96,000	1.0	96,000	1.0	96,000	1.0	96,000	1.0	96,000	1.0	96,000	**6.0**	**576,000**
Hardware Lease/Maintenance		0		0		0		0		0		0		**0**
Software Maintenance/Licenses		0		0		0		0		0		0		**0**
Contract Services		0		0		0		0		0		0		**0**
Data Center Services		0		0		0		0		0		0		**0**
Agency Facilities		0		0		0		0		0		0		**0**
Other (OE & E)		14,000		14,000		14,000		14,000		14,000		14,000		**84,000**
Total IT Costs	**1.0**	**110,000**	**1.0**	**110,000**	**1.0**	**110,000**	**1.0**	**110,000**	**1.0**	**110,000**	**1.0**	**110,000**	**6.0**	**660,000**
Continuing Program Costs:														
Staff	4.0	353,199	3.5	318,199	3.0	281,199	3.0	281,199	3.0	281,199	3.0	281,199	**19.5**	**1,796,194**
Other (OE & E)		74,800		69,800		55,800		55,800		55,800		55,800		**367,800**
Total Program Costs	**4.0**	**427,999**	**3.5**	**387,999**	**3.0**	**336,999**	**3.0**	**336,999**	**3.0**	**336,999**	**3.0**	**336,999**	**19.5**	**2,163,994**
TOTAL EXISTING SYSTEM COSTS	**5.0**	**537,999**	**4.5**	**497,999**	**4.0**	**446,999**	**4.0**	**446,999**	**4.0**	**446,999**	**4.0**	**446,999**	**25.5**	**2,823,994**

Table 8-3: Proposed Solution Cost Worksheet

PROPOSED ALTERNATIVE:

Department:
Project:

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

Date Prepared: **7/13/2008**

	FY 2009/10		FY 2010/ 11		FY 2011/ 12		FY 2012/ 13		FY 2013/ 14		FY 2014/ 15		TOTAL	
	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts
One-Time IT Project Costs														
Staff (Salaries & Benefits)	7.0	777,000	8.0	822,000	8.0	809,000			0.0	0	0.0	0	23.0	2,408,000
Hardware Purchase		75,000		22,000		22,000				0		0		119,000
Software Purchase/License		25,000		11,000		11,000		0		0		0		47,000
Telecommunications		25,000		25,000		25,000		0		0		0		75,000
Contract Services														
Software Customization		200,000		800,000		1,200,000		0		0		0		2,200,000
								0		0		0		0
Project Oversight (IAA OCIO)		100,000		100,000		100,000		0		0		0		300,000
IV&V Services (IAA OCIO)		100,000		100,000		100,000		0		0		0		300,000
Other Contract Services (QA/QC)		0		75,000		75,000		0		0		0		150,000
TOTAL Contract Services		400,000		1,075,000		1,475,000		0		0		0		2,950,000
Data Center Services		0		31,000		0		0		0		0		31,000
Agency Facilities		0		0		0		0		0		0		0
Other										0		0		0
Total One-time IT Costs	**7.0**	**1,302,000**	**8.0**	**1,986,000**	**8.0**	**2,342,000**	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**	**23.0**	**5,630,000**
Continuing IT Project Costs														
Staff (Salaries & Benefits)							7.0	706,000	7.0	706,000	7.0	706,000	21.0	2,118,000
Hardware Lease/Maintenance		0		0		0		22,000		22,000		22,000		66,000
Software Maintenance/Licenses		0		0		0		11,000		11,000		11,000		33,000
Telecommunications		0		0		0		25,000		25,000		25,000		75,000
Contract Services		0		0		0		350,000		350,000		350,000		1,050,000
Data Center Services		0		325,000		325,000		325,000		325,000		325,000		1,625,000
Agency Facilities		0		0		0		0		0		0		0
Other		0		0		0								0
Total Continuing IT Costs	**0.0**	**0**	**0.0**	**325,000**	**0.0**	**325,000**	**7.0**	**1,439,000**	**7.0**	**1,439,000**	**7.0**	**1,439,000**	**21.0**	**4,967,000**
Total Project Costs	**7.0**	**1,302,000**	**8.0**	**2,311,000**	**8.0**	**2,667,000**	**7.0**	**1,439,000**	**7.0**	**1,439,000**	**8.0**	**1,439,000**	**45.0**	**10,597,000**
Continuing Existing Costs														
Information Technology Staff	1.0	93,000	1.0	93,000	1.0	93,000	1.0	93,000	1.0	93,000	1.0	93,000	6.0	558,000
Other IT Costs (OE & E)		14,000		14,000		14,000		14,000		14,000		14,000		84,000
Total Continuing Existing IT Costs	**1.0**	**107,000**	**1.0**	**107,000**	**1.0**	**107,000**	**1.0**	**107,000**	**1.0**	**107,000**	**1.0**	**107,000**	**6.0**	**642,000**
Program Staff	6.0	486,199	7.5	616,199	8.0	639,199	8.0	639,199	8.0	639,199	8.0	639,199	45.5	3,659,194
Other Program Costs (OE & E)		140,800		145,800		150,800		143,800		143,800		143,800		868,800
Total Continuing Existing Program Costs	**6.0**	**626,999**	**7.5**	**761,999**	**8.0**	**789,999**	**8.0**	**782,999**	**8.0**	**782,999**	**8.0**	**782,999**	**45.5**	**4,527,994**
Total Continuing Existing Costs	**7.0**	**733,999**	**8.5**	**868,999**	**9.0**	**896,999**	**9.0**	**889,999**	**9.0**	**889,999**	**9.0**	**889,999**	**51.5**	**5,169,994**
TOTAL ALTERNATIVE COSTS	**14.0**	**2,035,999**	**16.5**	**3,179,999**	**17.0**	**3,563,999**	**16.0**	**2,328,999**	**16.0**	**2,328,999**	**17.0**	**2,328,999**	**96.5**	**15,766,994**

INCREASED REVENUES	0	0	0	0	0	0	**0**

Table 8-4: Alternative #1 Cost Worksheet

ALTERNATIVE #1: Vendor Develops Entire System

Date Prepared: 06/30/08

Department: OSHPD-HWDD
Project: Healthcare Workforce Clearinghouse

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

	FY 2009/10		FY 2010/ 11		FY 2011/ 12		FY 2012/ 13		FY 2013/ 14		FY 2014/ 15		TOTAL	
	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts
One-Time IT Project Costs														
Staff (Salaries & Benefits)	4.0	399,199	5.0	506,199	5.0	506,199	5.0	506,199	0.0	0	0.0	0	19.0	1,917,796
Hardware Purchase		0		0		0		0		0		0		0
Software Purchase/License		0		0		0		0		0		0		0
Telecommunications		0		0		0		0		0		0		0
Contract Services														
Software Customization		0		3,448,500		4,047,500		4,047,500		0		0		11,543,500
Project Management		150,000		150,000		150,000		150,000		0		0		600,000
Project Oversight		100,000		100,000		100,000		100,000		0		0		400,000
IV&V Services		100,000		100,000		100,000		100,000		0		0		400,000
Other Contract Services		0		0		0		0		0		0		0
TOTAL Contract Services		350,000		3,798,500		4,397,500		4,397,500		0		0		12,943,500
Data Center Services		0		0		0		0		0		0		0
Agency Facilities		0		0		0		0		0		0		0
Other		0		0		0		0		0		0		0
Total One-time IT Costs	**4.0**	**749,199**	**5.0**	**4,304,699**	**5.0**	**4,903,699**	**5.0**	**4,903,699**	**0.0**	**0**	**0.0**	**0**	**19.0**	**14,861,296**
Continuing IT Project Costs														
Staff (Salaries & Benefits)	0.0	0	0.0	0	0.0	0	0.0	0	5.0	506,199	5.0	506,199	10.0	1,012,398
Hardware Lease/Maintenance		0		0		0		0		22,000		22,000		44,000
Software Maintenance/Licenses		0		0		0		0		11,000		11,000		22,000
Telecommunications		0		0		0		0		25,000		25,000		50,000
Contract Services		0		0		0		0		2,192,623				2,192,623
Data Center Services		0		0		325,000		325,000		325,000		325,000		1,300,000
Agency Facilities		0		0		0		0		0		0		0
Other		0		0		0		0		0		0		0
Total Continuing IT Costs	**0.0**	**0**	**0.0**	**0**	**0.0**	**325,000**	**0.0**	**325,000**	**5.0**	**3,081,822**	**5.0**	**889,199**	**10.0**	**4,621,021**
Total Project Costs	**4.0**	**749,199**	**5.0**	**4,304,699**	**5.0**	**5,228,699**	**5.0**	**5,228,699**	**5.0**	**3,081,822**	**5.0**	**889,199**	**29.0**	**19,482,317**
Continuing Existing Costs														
Information Technology Staff	1.0	93,000	1.0	93,000	1.0	93,000	1.0	93,000	1.0	93,000	0.0	0	5.0	465,000
Other IT Costs (OE & E)		14,000		14,000		14,000		14,000		14,000		0		70,000
Total Continuing Existing IT Costs	**1.0**	**107,000**	**1.0**	**107,000**	**1.0**	**107,000**	**1.0**	**107,000**	**1.0**	**107,000**	**0.0**	**0**	**5.0**	**535,000**
Program Staff	6.0	486,199	7.5	616,199	8.0	639,199	8.0	639,199	8.0	639,199	0.0	0	37.5	3,019,995
Other Program Costs (OE & E)		140,800		145,800		150,800		143,800		143,800		0		725,000
Total Continuing Existing Program Costs	**6.0**	**626,999**	**7.5**	**761,999**	**8.0**	**789,999**	**8.0**	**782,999**	**8.0**	**782,999**	**0.0**	**0**	**37.5**	**3,744,995**
Total Continuing Existing Costs	**7.0**	**733,999**	**8.5**	**868,999**	**9.0**	**896,999**	**9.0**	**889,999**	**9.0**	**889,999**	**0.0**	**0**	**42.5**	**4,279,995**
TOTAL ALTERNATIVE COSTS	**11.0**	**1,483,198**	**13.5**	**5,173,698**	**14.0**	**6,125,698**	**14.0**	**6,118,698**	**14.0**	**3,971,821**	**5.0**	**889,199**	**71.5**	**23,762,312**
INCREASED REVENUES		0		0		0		0		0		0		**0**

Table 8-5: Economic Analysis Summary

ECONOMIC ANALYSIS SUMMARY

Department:
Project:

All costs to be shown in whole (unrounded) dollars.

Date Prepared:

	FY 2009/10		FY 2010/ 11		FY 2011/ 12		FY 2012/ 13		FY 2013/ 14		FY 2014/ 15		TOTAL	
	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts
EXISTING SYSTEM														
Total IT Costs	1.0	110,000	1.0	110,000	1.0	110,000	1.0	110,000	1.0	110,000	1.0	110,000	6.0	660,000
Total Program Costs	4.0	427,999	3.5	387,999	3.0	336,999	3.0	336,999	3.0	336,999	3.0	336,999	19.5	2,163,994
Total Existing System Costs	5.0	537,999	4.5	497,999	4.0	446,999	4.0	446,999	4.0	446,999	4.0	446,999	25.5	2,823,994
PROPOSED ALTERNATIVE														
Total Project Costs	6.0	1,335,000	7.0	2,352,000	7.0	2,713,000	6.0	1,335,000	6.0	1,335,000	8.0	1,335,000	40.0	10,405,000
Total Cont. Exist. Costs	7.0	733,999	8.5	868,999	9.0	896,999	9.0	889,999	9.0	889,999	9.0	889,999	51.5	5,169,994
Total Alternative Costs	13.0	2,068,999	15.5	3,220,999	16.0	3,609,999	15.0	2,224,999	15.0	2,224,999	17.0	2,224,999	91.5	15,574,994
COST SAVINGS/AVOIDANCES	(8.0)	(1,531,000)	(11.0)	(2,723,000)	(12.0)	(3,163,000)	(11.0)	(1,778,000)	(11.0)	(1,778,000)	(13.0)	(1,778,000)	(66.0)	(12,751,000)
Increased Revenues		0		0		0		0		0		0		0
Net (Cost) or Benefit	(8.0)	(1,531,000)	(11.0)	(2,723,000)	(12.0)	(3,163,000)	(11.0)	(1,778,000)	(11.0)	(1,778,000)	(13.0)	(1,778,000)	(66.0)	(12,751,000)
Cum. Net (Cost) or Benefit	(8.0)	(1,531,000)	(19.0)	(4,254,000)	(31.0)	(7,417,000)	(42.0)	(9,195,000)	(53.0)	(10,973,000)	(66.0)	(12,751,000)		
ALTERNATIVE #1														
Total Project Costs	4.0	749,199	5.0	4,304,699	5.0	5,228,699	5.0	5,228,699	5.0	3,081,822	5.0	889,199	29.0	19,482,317
Total Cont. Exist. Costs	7.0	733,999	8.5	868,999	9.0	896,999	9.0	889,999	9.0	889,999	0.0	0	42.5	4,279,995
Total Alternative Costs	11.0	1,483,198	13.5	5,173,698	14.0	6,125,698	14.0	6,118,698	14.0	3,971,821	5.0	889,199	71.5	23,762,312
COST SAVINGS/AVOIDANCES	(6.0)	(945,199)	(9.0)	(4,675,699)	(10.0)	(5,678,699)	(10.0)	(5,671,699)	(10.0)	(3,524,822)	(1.0)	(442,200)	(46.0)	(20,938,318)
Increased Revenues		0		0		0		0		0		0		0
Net (Cost) or Benefit	(6.0)	(945,199)	(9.0)	(4,675,699)	(10.0)	(5,678,699)	(10.0)	(5,671,699)	(10.0)	(3,524,822)	(1.0)	(442,200)	(46.0)	(20,938,318)
Cum. Net (Cost) or Benefit	(6.0)	(945,199)	(15.0)	(5,620,898)	(25.0)	(11,299,597)	(35.0)	(16,971,296)	(45.0)	(20,496,118)	(46.0)	(20,938,318)		

Table 8-6: Project Funding Plan

PROJECT FUNDING PLAN

Department:
Project:

All Costs to be in whole (unrounded) dollars

Date Prepared:

	FY 2009/10		FY 2010/ 11		FY 2011/ 12		FY 2012/ 13		FY 2013/ 14		FY 2014/ 15		TOTALS	
	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts	PYs	Amts
TOTAL PROJECT COSTS	**7.0**	**1,302,000**	**8.0**	**2,311,000**	**8.0**	**2,667,000**	**7.0**	**1,439,000**	**7.0**	**1,439,000**	**8.0**	**1,439,000**	**45.0**	**10,597,000**
RESOURCES TO BE REDIRECTED														
Staff	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	**0.0**	**0**
Funds:														
Existing System		0		0		0		0		0		0		**0**
Other Fund Sources		0		0		0		0		0		0		**0**
TOTAL REDIRECTED RESOURCES	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**
ADDITIONAL PROJECT FUNDING NEEDED														
One-Time Project Costs	7.0	1,302,000	8.0	1,986,000	8.0	2,342,000		0					**23.0**	**5,630,000**
Continuing Project Costs				325,000		325,000	7.0	1,439,000	7.0	1,439,000	7.0	1,439,000	**21.0**	**4,967,000**
TOTAL ADDITIONAL PROJECT FUNDS NEEDED BY FISCAL YEAR	**7.0**	**1,302,000**	**8.0**	**2,311,000**	**8.0**	**2,667,000**	**7.0**	**1,439,000**	**7.0**	**1,439,000**	7.0	1,439,000	**44.0**	**10,597,000**
TOTAL PROJECT FUNDING	**7.0**	**1,302,000**	**8.0**	**2,311,000**	**8.0**	**2,667,000**	**7.0**	**1,439,000**	**7.0**	**1,439,000**	**7.0**	**1,439,000**	**44.0**	**10,597,000**
Difference: Funding - Costs	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	(1.0)	0	**(1.0)**	**0**
Total Estimated Cost Savings	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	**0.0**	**0**

ADJUSTMENTS, SAVINGS AND REVENUES WORKSHEET
(DOF Use Only)

Department: Date Prepared:
Project:

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	FY 2012/ 13 PYs	FY 2012/ 13 Amts	FY 2013/ 14 PYs	FY 2013/ 14 Amts	FY 2014/ 15 PYs	FY 2014/ 15 Amts	Net Adjustments PYs	Net Adjustments Amts
One-time Costs														
Previous Year's Baseline	0.0	0	7.0	1,302,000	8.0	1,986,000	8.0	2,342,000	0.0	0	0.0	0		
(A) Annual Augmentation /(Reduction)	**7.0**	**1,302,000**	**1.0**	**684,000**	**0.0**	**356,000**	**(8.0)**	**(2,342,000)**	**0.0**	**0**	**0.0**	**0**		
(B) Total One-Time Budget Actions	7.0	1,302,000	8.0	1,986,000	8.0	2,342,000	0.0	0	0.0	0	0.0	0	**23.0**	**5,630,000**
Continuing Costs														
Previous Year's Baseline	0.0	0	0.0	0	0.0	325,000	0.0	325,000	7.0	1,439,000	7.0	1,439,000		
(C) Annual Augmentation /(Reduction)	**0.0**	**0**	**0.0**	**325,000**	**0.0**	**0**	**7.0**	**1,114,000**	**0.0**	**0**	**0.0**	**0**		
(D) Total Continuing Budget Actions	0.0	0	0.0	325,000	0.0	325,000	7.0	1,439,000	7.0	1,439,000	7.0	1,439,000	**21.0**	**4,967,000**
Total Annual Project Budget Augmentation /(Reduction) [A + C]	**7.0**	**1,302,000**	**1.0**	**1,009,000**	**0.0**	**356,000**	**(1.0)**	**(1,228,000)**	**0.0**	**0**	**0.0**	**0**		

[A, C] Excludes Redirected Resources

Total Additional Project Funds Needed [B + D] **44.0** **10,597,000**

Annual Savings/Revenue Adjustments

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

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ATTACHMENTS

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ATTACHMENT 1 – List of Acronyms

This Attachment contains the list of acronyms used in the Clearinghouse FSR.

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List of Acronyms

Acronym	Acronym Meaning
ADA	Americans with Disabilities Act
AIMS	Agency Information Management Strategy
BCP	Budget Change Proposal
BRN	The Board of Registered Nursing
CCB	Change Control Board
CHDPF	The California Health Data and Planning Fund
CHHSA	California Health and Human Services Agency
CHPDAC	California Health Policy and Data Advisory Commission
CHWPC	California Healthcare Workforce Policy Commission
CIO	Chief Information Officer
CMAS	California Multiple Award Schedules
CMB	The Medical Board of California
COTS	Commercial Off The Shelf
CPEC	The California Post Secondary Education Commission
DBMS	Database Management System
DCA	The California Department of Consumer Affairs
DD&I	Design, Development and Implementation
DTS	The California State Department of Technology Services
EDD-LMID	Employment Development Department's Labor Market Information Division
EEO	Equal Employment Opportunity
FNP	Family Nurse Practitioner
FP	Family Practice
FSR	Feasibility Study Report
FURPS	Functionality, Usability, Reliability, Performance and Supportability
FY	Fiscal Year

Acronym	Acronym Meaning
GIS (also E-GIS)	Geographic Information System (also Enterprise GIS)
HCTP	Health Careers Training Program
HID	Healthcare Information Division
HIRC	Health Information Resource Center
HWDD	Healthcare Workforce Development Division
HWPP	Health Workforce Pilot Projects Program
IPOC	Independent Project Oversight Consultant
ISO	Information Security Office
IT	Information Technology
ITPP	Information Technology Procurement Plan
ITSS	Information Technology Services Section
IV&V	Independent Validation and Verification
MIRCal	Medical Information Reporting for California
MOTS	Modified Commercial Off The Shelf
NHSC/SLRP	National Health Service Corps (NHSC) / California State Loan Repayment Program (CSLRP)
O/S	Operating System
OSHPD	Office of Statewide Healthcare Planning and Development
OTRO	Office of Technology Review, Oversight
PA	Physician Assistant
PDF	Portable Data File
PIER	Post Implementation Evaluation Review
PMBOK®	Project Management Body of Knowledge
PMI	Project Management Institute
PMO	Project Management Office
PMP	Project Management Plan

Acronym	Acronym Meaning
QCP	Quality Control Process
RFO	Request For Offer
RFP	Request For Proposal
RML	Risk Management Log
RMP	Risk Management Plan
RMT	Risk Management Team
RN	Registered Nurse
SAM	State Administrative Manual
SDLC	System Development Life Cycle
SDP	Shortage Designation Program
SIMM	Statewide Information Management Manual
SSL	Secure Socket Layer
WBS	Work Breakdown Structure
WBT	Web-Based Training

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ATTACHMENT 2 – List of Workshop Attendees

This Attachment contains a list of the Clearinghouse FSR Project Workshops and attendees.

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List of Workshops and Attendees

1. Initial Workshop

This included both HWDD and ITSS project team members. The purpose of the workshop was to set the agreed project scope in the major process areas.

Attendee Name	***Organization***
Michael Byrne	ITSS
Deborah Holstien	ITSS
Starla Ledbetter	ITSS
Gloria Robertson	HWDD
Senita Robinson	HWDD
Dorian Rodriguez	HWDD
Monique Scott	HWDD
Deb Wong	PMO

2. HWDD Workshops

- **Clearinghouse – Problems, Opportunities and Objectives** this included the HWDD project team members only. The purpose of the workshop was to discover the perceived business problems and opportunities and the goals/objectives that need to be fulfilled to solve the problems and realize the opportunities.

Attendee Name	***Organization***
Michael Byrne	ITSS
Gloria Robertson	HWDD
Senita Robinson	HWDD
Dorian Rodriguez	HWDD
Monique Scott	HWDD

- **Clearinghouse – Objectives, Functional and Technical Requirements** this included the HWDD project team members only. The purpose of the workshop was to discuss the objectives identified in the first workshop and to define the high level functional and technical requirements that will fulfill them.

Attendee Name	***Organization***
Gloria Robertson	HWDD
Senita Robinson	HWDD
Dorian Rodriguez	HWDD
Monique Scott	HWDD

3. ITSS Workshops

- **Clearinghouse – Problems, Opportunities and Objectives** this included the ITSS project team members only. The purpose of the workshop was to discover the perceived business problems and opportunities and the goals/objectives that need to be fulfilled to solve the problems and realize the opportunities.

Attendee Name	***Organization***
Mike Byrne	PMO
Deborah Holstien	DMO
John Kriege	DMO
Maria Pabon	PMO

- **Clearinghouse – Objectives, Functional and Technical Requirements** this included the ITSS project team members only. The purpose of the workshop was to discuss the objectives identified in the first workshop and to define the high level functional and technical requirements that will fulfill them.

Attendee Name	***Organization***
Mike Byrne	PMO

Deborah Holstien	DMO
John Kriege	DMO

4. Consensus and Requirements Validation Workshop

This included both HWDD and ITSS project team members. The purpose of the workshop was to gain consensus on any differences of vision between HWDD and ITSS discovered during the workshops and for both HWDD and ITSS to validate the high level functional and technical requirements.

Attendee Name	***Organization***
Michael Byrne	ITSS
Deborah Holstien	ITSS
Gloria Robertson	HWDD
Senita Robinson	HWDD
Dorian Rodriguez	ITSS
Monique Scott	HWDD

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ATTACHMENT 3 – Project Workplans

This Attachment contains the Project workplans for the staffing resources identified in the FSR.

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Position Title: Staff Services Manager III

Task Description	FY 08/09 Hours	FY 09/10 Hours	FY 10/11 Hours and Ongoing
Program Management - Provide management guidance and leadership in planning and directing the research factors to produce quality documents. Direct, coordinate, and evaluate programs research and reporting, which highlight such elements as data trends, systems delivery, and statewide issues. Plan and coordinate projects, estimates staffing requirements; assigns staff to project teams. Assign tasks to teams and directs the work of the lead Research Program Specialist II. Oversee project implementation, enforcing adherence to research development standards and assist project manager with the resolution of problems and/or issues affecting implementation. Oversee post-implementation review of tasks and evaluate the quality of systems, services, and appropriateness of standards, methods, and procedures. Ensure adherence to the Office's polices and procedures involving EEO, ADA, and other personnel practices. Resolve EEO issues and other conflicts at lowest possible level and ensure that there is no retaliation. Evaluate the performance of employees to ensure acceptable job performance, and works with each employee to develop required skills to meet and exceed job requirements. Assign projects, monitors and evaluates the performance of unit staff, and review and/or prepare unit training plans. Handle all unit administrative matters, including but not limited to personnel, contracts, budgeting, and review and approve unit purchasing requests.	0	315	630
Program Planning - Oversee, administer and manage the Clearinghouse program. Develop administrative procedures and policies, program alternatives for the Clearinghouse program that are consistent with the Office's mission and organization's objectives. Direct the long-term and short-term planning of implementation activities. Develop strategies, polices and procedures associated with the Clearinghouse and other divisional requirements. Monitor program units' adherence to State, departmental, divisional and programmatic polices to ensure efficient operations within authorized budgetary levels. Prepare and maintain a workplan based on Division priorities and criteria outlined by the Clearinghouse Statute. Meet and discuss complex issues with staff regarding program development and resolve issues and problems. Advise and make recommendations to the Deputy Director, Department Directorate, the California Health and Human Services Agency on the Clearinghouse program and workforce development.	0	225	450

Collaborative Activities - Coordinate with Healthcare Information Division (HID) in the development of the Clearinghouse database warehouse and infrastructure. Represent the HWDD on special task force and at meetings with other governmental stakeholders or agencies, and professional organizations. Prepare programmatic and policy recommendations for submission to Deputy Director. Provide consultation to the Clearinghouse Advisory Committee and other stakeholders as needed regarding the progress of the program development, problems and issues, and research design and methodology. Maintain an awareness of research methods pertaining to the OSHPD technical environment.	0	225	450
Program Management - Provide management guidance and leadership in planning and directing the research factors to produce quality documents. Direct, coordinate, and evaluate staff's research and production of reports, which highlight such elements as data trends, systems delivery, and statewide issues. Prepare and maintain a unit work plan based on Division priorities and criteria outlined in the Clearinghouse Statute. Plans and coordinates projects, estimates staffing requirements; assigns staff to project teams. Assign tasks to teams and direct the work of the lead Research Program Specialist II. Oversee project implementation, enforcing adherence to research development standards and assist project manager with the resolution of problems and/or issues affecting implementation. Oversee post-implementation review of tasks and evaluate the quality of systems, services, and appropriateness of standards, methods, and procedures.	0	90	180
Contracts Management – Approve the preparation and administration of contracts required for maintaining program operations. Work with contractor and the OSHPD contracts/finance personnel to finalize contracts. Monitor timelines and ensure deliverables and scope of work are met. Serve as the point of contact for contractors. Approve final invoices. Update contract budgets and communicate all essential issues to the Clearinghouse program staff, OSHPD contract office or the contractors. Review the Clearinghouse needs and program against budget limitations and recommend appropriate action. Comply with the Office's fiscal polices by participating in management of the program and Division budget by monitoring, tracking and prioritizing expenditures related to the Division and Clearinghouse to ensure fiscal responsibility	0	45	90
TOTAL REQUIREMENTS		**900**	**1800**
FULL-TIME EQUIVALENT (Total Hours/1,800 Hours Per FTE Year/Period in Years)	**0**	**.5**	**1**

Position Title: Research Analyst I (General)

Task Description	FY 08/09 Hours	FY 09/10 Hours	FY 10/11 Hours and Ongoing
Data Collection - Compile, extract, and merge data and provide program data to internal and external researchers. Assist in the collection of workforce data, planning, designing and preparing statistical tables and questionnaires, analyzing healthcare industry trends and relationships and writing text. Respond to Division management, Clearinghouse staff, and external participants' requests for a variety of GIS products including maps, presentation graphics, data tables and reports. Assist with special studies in a timely and accurate manner.	0	450	900
Data Quality Assurance - Perform data quality checks to ensure accurate data entry. Provide oral and written data quality reports for the program. Participate, as required, in the analysis and review of statistical data developed or obtained through the survey tools and under the guidance of the supervisor. Apply structured procedures to ensure statistical validity and reliability of estimates for the Clearinghouse Team.	0	180	360
Regulations and Inquiry - Assist in developing and responding to inquiries from interested parties on issues relating to the Clearinghouse program regulations.	0	135	270
Meetings - Attend meetings with staff to discuss the development and progress of the Clearinghouse program and other relevant issues related to program and policy development.	0	90	180
Perform other related duties as assigned.	0	45	90
TOTAL REQUIREMENTS	0	**900**	**1800**
FULL-TIME EQUIVALENT (Total Hours/1,800 Hours Per FTE Year/Period in Years)	**0**	**.5**	**1**

Position Title: Research Analyst II (General)

Task Description	FY 08/09 Hours	FY 09/10 Hours	FY 10/11 and Ongoing
Research, Design and Implementation - Assemble disparate data dealing with population, healthcare workforce professionals, educational professionals and resources for internal staff and external distribution. Design, implement, and monitor processes for accessing external data sources for the Health Care Workforce Clearinghouse (Clearinghouse) Program. Conduct research into health professions education, licensing and labor market trends in California focusing on identifying, compiling, analyzing, and describing data. Integrate the data elements obtained from various healthcare workforce stakeholders. Work independently to interpret and analyze new data sources to identify emerging trends and to provide Clearinghouse data requirements. Prepare reports as requested.	720	720	720
Analysis and Evaluation - Research methodology including problem exploration and definition, planning and Designing data collection processes, interpretation of findings, and documentation and reporting of findings in support of healthcare workforce policy areas. Work with Clearinghouse and division staff, Clearinghouse Advisory Committee and other stakeholders to help establish priorities for data acquisition in support of research projects. Conduct general research in support of healthcare workforce policy issues. Develop and use ArcView geographic information system (GIS) computer desktop tools to analyze and display data. Use other appropriate computer desktop productivity tools (e.g., Excel, Access, etc.) to analyze and display data. Work with staff and specialists from the OSHPD, government, and private sectors to identify appropriate sources of information suitable for use in building and maintaining GIS data layers of interest to the OSHPD. Prepare results from analysis (statistical and graphical) of new data sources in support of program activities including written reports, tables/charts and map production.	720	720	720
Inquiries and Documentation - Respond to complex information requests by retrieving information utilizing computerized models. Identify problem areas and stratify data for analysis and comparison. Assist the Research Program Specialist in producing and maintaining metadata (documentation) for the Clearinghouse data sets collection including purpose, and process for collection, classifications used, appropriate applications, responsible units and contact persons, map scale and projections, and other metadata in compliance with OSHPD standards. Respond to Clearinghouse Advisory Committee and other stakeholder inquiries regarding healthcare workforce research information.	270	270	270
Perform other duties as required.	90	90	90
TOTAL REQUIREMENTS	**1800**	**1800**	**1800**
FULL-TIME EQUIVALENT (Total Hours/1,800 Hours Per FTE Year/Period in Years)	**1**	**1**	**1**

Position Title: Research Program Specialist II

Task Description	FY 08/09 Hours	FY 09/10 Hours	FY 10/11 Hours and Ongoing
Program Planning - Lead in the design and implementation of the Clearinghouse business program studying and obtaining healthcare workforce data. Lead the ongoing research, development and coordination of data acquisition aspect of the program, data gathering and data framing with stakeholders. Provide subject-matter expertise, evaluation technical consultation, policy interpretation and consultation to Clearinghouse Advisory Committee and other stakeholders and staff from other State, federal, and/or local governmental agencies, or local organizations. Based on the research and analysis conducted, build, support and update data standards in order to interpret study results.	540	540	270
Data Coordination - Serve as the HWDD Data Coordinator for the Clearinghouse, which includes the GIS component, i.e. determine appropriate demographic variables necessary to collect and identify potential data sources, develop data collection methods, collect and compile data, and complete the initial report. Develop survey instruments; identify and assess existing data services; compile; and integrate data into the database. Perform various healthcare research and statistical studies utilizing the healthcare workforce data elements.	450	450	540
Research, Design and Implementation - Participate in research that will assist in translating or representing healthcare workforce data in electronically published documents. Make presentations of various project findings and results to high-level policy makers, including administrators, managers, legislators and their staffs, and data users. Prepare reports using appropriate statistical software packages such as Statistical Analysis Software (SAS), and other software such as Access, FoxPro, or any others required to complete assignments.	450	450	540
Analysis and Evaluation - Create ArcGIS maps that reflect major data resources for the Clearinghouse, including state offices, and external stakeholders as requested. Synthesize complicated data integration and perform statistical analysis in preparation of reporting supply and demand of the healthcare workforce. Use other computer software programs to analyze and display the data and data outcomes. Produce and maintain metadata (documentation) for GIS data sets developed and collected. This includes information on how and why the data were collected, classifications used, appropriate applications, responsible units and contact persons, map scale and projections, and other metadata in compliance with OSHPD standards. Perform literature review of relevant data needs and issues.	180	180	270
Inquiries and Documentation - Respond to requests for data and research services, working with customers to define their needs during the design phase of projects and when responding to the requests. Advise the Deputy Director, HWDD, SSM III, legislative bodies, commissions and external stakeholders on the findings of the research, aspects of health policy and implementation of healthcare legislation.	90	90	90
Other duties as required.	90	90	90
TOTAL REQUIREMENTS	**1800**	**1800**	**1800**
FULL-TIME EQUIVALENT (Total Hours/1,800 Hours Per FTE Year/Period in Years)	**1**	**1**	**1**

Position Title: Associate Governmental Program Analyst

Task Description	FY 08/09 Hours	FY 09/10 Hours	FY 10/11 Hours and Ongoing
Assist with the development of regulations for the Clearinghouse program. Work in a team environment to interpret law, develop regulations necessary to comply with the applicable sections of the California Health and Safety Code. Review procedural requirements for developing and submitting regulations. Identify timelines and procedures. Review other statutes, regulations, and internal policies that relate to the Clearinghouse statutes. Gather relevant legal information. Identify all statutes providing the rulemaking authority; provide documentation to support the need for and authority for the regulations. Serve as liaison to other state Departments, the California Health and Human Services Agency, the Office of Administrative Law, and the Department of Finance regarding regulations development. Prepare proposed text, draft initial statement of reasons and cost to the state, and draft notice of proposed rulemaking. Prepare publication of notice and mailing to interested parties, internet display for receipt of public comment: establish date, location time for public hearing on proposed text. Conduct the public hearing on the proposed rule. Review comments received in public hearing and incorporate changes in the text; complete rulemaking record with documentation-text, final statement of reasons, and response to the comment. Submit proposed action to OAL. Respond to telephone and correspondence inquiries relative to the Clearinghouse policies and programs.	855	1000	455
Assist the Research staff in verifying proposed data fields conform to the Clearinghouse regulations.		710	400
Perform other duties as required.	45	90	45
TOTAL REQUIREMENTS	**900**	**1800**	**900**
FULL-TIME EQUIVALENT (Total Hours/1,800 Hours Per FTE Year/Period in Years)	**.5**	**1**	**.5**

Position Title: Senior Information Systems Analyst (Project Manager)

Task Description	FY 09/10 Hours	FY 10/11 Hours	FY 11/12 Hours and Ongoing
Project Management – Using Project Management Best Practices, the OSHPD Project Management Framework, and the Statewide Information Management Manual (SIMM) guidelines, serves as the Project Manager over the Workforce Clearinghouse Project. Create and maintain the Workforce Clearinghouse Project Management Plan. Coordinate the work of all project teams including, the business teams, OSHPD technical teams, supporting contractor teams and Department of Technology Services (DTS). Maintain the Integrated Project Schedule and monitor and coordinate all cross team activities and dependencies. Track, measure, and report on project costs, schedule and scope. Review and communicate status and future actions on a formal and informal basis with project team, vendors, the data center, management, internal stakeholders, and control agencies. Coordinate the review and acceptance of project deliverables, and implement action plan to correct any unaccepted deliverables. Negotiate, implement, and monitor corrective action plans to keep project on schedule, within budget, and in line with project scope and objectives. Coordinate quality assurance reviews, assess results of quality assurance reviews, and initiate corrective actions. Develop and deliver final report documenting the Workforce Clearinghouse implementation results and lessons learned to the project sponsor, CIO, and PMO. At project closure, logically organize all project documentation for future reference or project audits. Perform risk and issue analysis and report findings and mitigation measures to the Healthcare Workforce Division's (HWD) project sponsor and project team. Maintain and manage the Project's issues and risks log. Ensure appropriate independent oversight is provided to the level required by the Office of the State CIO (OCIO) California Technology Evaluation and Consulting, (CTEC). Procure, monitor, and manage all project consultant contracts that provide development services and project oversight. Ensure compliance with all requirements, deliverables and contract terms. Manage project change control process and any contract amendments. Ensure that all independent oversight reports are submitted to CTEC on time.	990	990	990

Technical Expert – Serves as HWD technical expert demonstrating high-level knowledge with respect to application development, network operations, system design, and general information technology business procedures and practices; solving the more complex business problems which involve planning, developing, and implementing technological solutions that are essential to the mission of the overall organization. Develop and maintain the Clearinghouse data model. Lead and/or participate in multi-agency stakeholder and multi-divisional efforts to analyze and implement solutions to data management issues and problems. Recommend and implement data policies concerning responsibility and accountability for data accuracy timeliness, integrity, security availability and retention. Evaluate, recommend, and implement data warehousing, data reporting and business intelligence technologies.	360	360	360
Customer and Stakeholder Relations Management – Ensure effective communication with Executive, Management, Support Staff; and Deputy Director, SSM III, PMO, ISO, CIO on project status and planned activities. Coordinate and oversee Stakeholder management and outreach tasks. Establish communication process that incorporates release management, issue tracking, escalation, and resolution. Establish mutually respected relationships with the key stakeholders in the business areas. Learn business processes. Proactively establish relationships with 3rd party providers such as vendors and other departments to ensure HWD project staff can access these resources quickly.	360	360	360
TOTAL REQUIREMENTS	**1,800**	**1,800**	**1,800**
FULL-TIME EQUIVALENT (Total Hours/1,800 Hours Per FTE Year/Period in Years)	**1.0**	**1.0**	**1.0**

Position Title: Staff Information Systems Analyst (Junior Project Manager)

Task Description	FY 09/10 Hours	FY 10/11 Hours	FY 11/12 Hours and Ongoing
Project Management Support –Under the guidance of the Senior Project Manager, assists in the management of project activities and resources, tracks and monitors project progress against the project plan, controls project changes and monitors project risks.	720	720	720
Procurement, Contract and Budget Management – Under the guidance of the Senior Project Manager, assists in project procurement, contract management, and budget management tasks to support the project.	720	720	720
Systems Analysis – Under the guidance of the Senior Project Manager, assists in the analysis and documentation of project requirements.	360	360	360
TOTAL REQUIREMENTS	**1,800**	**1,800**	**1,800**
FULL-TIME EQUIVALENT (Total Hours/1,800 Hours Per FTE Year/Period in Years)	**1.0**	**1.0**	**1.0**

Position Title: Senior Information Systems Analyst (Network Specialist)

Task Description	FY 09/10 Hours	FY 10/11 Hours	FY 11/12 Hours and Ongoing
Systems Analysis & Architecture Design			
• Perform complex systems research, systems analysis and planning to define and design network architecture, infrastructure, and interfaces to meet the Workforce Clearinghouse System business and security requirements. Prepare specifications for the architecture components.	180	180	180
• Participate in requirements and design sessions and review system documentation and technical deliverables... Review and approve all Workforce Clearinghouse system requirements and technical design documents	90	90	90
• Lead, oversee and coordinate the complex installation, configuration, testing, and systems upgrades and patching of the network infrastructure components (hardware and software) to support the Workforce Clearinghouse System (routers, hubs, switches, security and firewall components). Research, define requirements, design, configure and install all required hardware and software infrastructure updates or configuration changes required to meet business and security requirements	90	90	90
• Prepare, review and coordinate activities for the Project Description and Project Plan for the Architecture requirements. Schedule and monitor technical tasks to integrate with overall project plan and prepare Change Control documents	45	45	45
• Work with the Information Security Officer (ISO) and other ITSS technical subject matter experts to prepare and/or update policies, procedures, diagrams, and other documentation for the network, security and communications architecture	45	45	45
• Work with network and communications vendor (ATT), other third-party vendors, the OSHPD ISO, and ITSS and other technical experts to identify hardware and software procurement needs for infrastructure installations and upgrades.	45	45	45
• Research, analyze, design, test, define and coordinate the installation, configuration, testing, and implementation of the wireless remote connectivity components	135	135	135
• Work with the ISO and other technical specialists to coordinate and design, maintain, support and integrate backup, recovery, security and disaster recovery operations and procedures into the Office's operational recovery plan	90	90	90

• Research specifications and review industry best practices to prepare the security design of the network infrastructure technology components to adhere to industry and OSHPD's security standards. Ensure compliance to audit, quality, and security standards during design, development & testing. Define security vulnerabilities, assess risk and determine mitigation strategies	135	135	135
• Coordinate security consultant activities	45	45	45
TOTAL REQUIREMENTS	**900**	**900**	**900**
FULL-TIME EQUIVALENT (Total Hours/1,800 Hours Per FTE Year/Period in Years)	**.5**	**.5**	**.5**

Position Title: Senior Information Systems Analyst (Technical Lead)

Task Description	FY 09/10 Hours	FY 10/11 Hours	FY 11/12 Hours and Ongoing
• Serves as the technical lead to provide knowledge and expertise in the SDLC and Operations of the Healthcare Workforce Clearinghouse. Conducts team meetings regularly to review status, coordinate team efforts, delegate and assign work to technical staff, review the work and progress of individual IT staff, and discusses and resolves problems and issues related to systems design, development, implementation, operations, and maintenance of systems. This involves planning and coordinating work activities of a virtual teams comprised of in-house technical specialists, Healthcare Workforce Division research staff, and external Information Technology (IT) consultants. Provides guidance and mentoring to team members as needed to improve technical proficiency and overall performance; reinforces organizational values in team members; enforces continuous improvement practices and total quality principles in the work and performance of team members; provides feedback to Supervisor on the performance and progress of individual team members and the team, and makes recommendations for further development and enhancements for the Office.	900	900	900
• Performs and oversees the planning, development, implementation and maintenance of the Healthcare Workforce Clearinghouse system architectures and application. Independently performs only the most complex analysis, design, programming and integration tasks involving the development and maintenance of mission critical system architectures and applications and other emerging information technology system architectures and applications. Performs and oversees the administration of system application servers. Performs and oversees the implementation of security measures and controls of applications. Reviews and approves the network administrators and other technical specialist's capacity plans for the department. Reviews and approves the analysis of application, web and database servers' performance requirements for the department. Performs and oversees application client support. Tracks application development problems and change requests. Assesses system client support requirements and works closely with other ISS specialists to ensure users have the tools and skills necessary to fully utilize Information systems.	540	540	540
• Assists management and staff in research, analysis, and evaluate new and emerging technologies and methods related to system architectures and application developments. Recommends changes and improvements to departmental IT guidelines, policies, procedures, standards and requirements. Develops, performs and oversees the IT strategies to migrate applications and systems to newer information technologies and standards.	540	270	270

• Provides consultation to management, project team members and ISS specialists on the most complex application and application problems, technologies and methodologies. Acts as department technical representative on multi-departmental task forces, technology forums, advisory committee, etc. that are sponsored by other departments and/or agencies.	90	90	90
TOTAL REQUIREMENTS	**1,800**	**1,800**	**1,800**
FULL-TIME EQUIVALENT (Total Hours/1,800 Hours Per FTE Year/Period in Years)	**1.0**	**1.0**	**1.0**

Position Title: Staff Programmer Analyst (Database Administrator)

Task Description	FY 09/10 Hours	FY 10/11 Hours	FY 10/11 Hours and Ongoing
• Serves as the Data Base Administrator for the Clearinghouse. The incumbent works on the most technically complex software systems and configurations on complex multi-server applications, including the Oracle RDMS, Informatica, and Business Objects (current OSHPD Warehouse infrastructure). Plans and implements software system upgrades and conversions. Supports, and troubleshoots production databases / applications issues. Develops and maintains the Oracle database architecture, configuration, operations, monitoring, performance tuning, security, account management, upgrades, and backup and recovery. Develops and maintains the Informatica database architecture, configuration, operations, monitoring, performance tuning, security, account management, upgrades, and backup and recovery. Develops and maintains the Business Objects technical data dissemination architecture, configuration, operations, repository, monitoring, upgrades and backup and recovery.	990	990	990
• Serves as the technical data coordinator to provide knowledge and expertise in the SDLC and Operations for the data in the Clearinghouse. Conduct team meetings regularly to review status, coordinate team efforts, delegate and assign work to technical staff, review the work and progress of individual IT staff, and discusses and resolves problems and issues related to systems design, development, implementation, operations, and maintenance of systems. Provides guidance and mentoring to team members as needed to improve technical proficiency and overall performance; reinforces organizational values in team members; enforces continuous improvement practices and total quality principles in the work and performance of individual team members and the team, and makes recommendations for further development and enhancements for the Office.	360	360	360
• Performs and oversees the planning, development, implementation, and maintenance of the Database Systems Architecture. Independently performs the most complex analysis, design and programming tasks involving the development and maintenance of Database Systems. Performs and oversees System Administration of Database Systems. Performs and oversees the implementation of security measures and controls of these Systems. Performs and oversees database support for the clients. Performs, oversees, and reviews capacity planning and disaster recovery for the department. Performs, oversees, and reviews the analysis of application, web and database performance requirements for the department. Tracks database development problems and change requests. Assesses client support requirements and works closely with other ITSS specialists like trainers and business systems consultants to ensure users have the tools and skills necessary to fully utilize the applications and databases.	360	360	360

• Provides consultation to management, project team members and ITSS specialists on the most complex system software and database problems, technologies and methodologies. Acts as department technical representative on multi-departmental task forces, technology forums, advisory committee, etc. that are sponsored by other departments and/or agencies.	90	90	90
TOTAL REQUIREMENTS	**1,800**	**1,800**	**1,800**
FULL-TIME EQUIVALENT (Total Hours/1,800 Hours Per FTE Year/Period in Years)	**1.0**	**1.0**	**1.0**

Position Title: Staff Information Systems Analyst (Specialist)

Task Description	FY 09/10 Hours	FY 10/11 Hours	FY 11/12 Hours and Ongoing
• Configures, installs, and monitors physical and virtual desktop functions including operating systems and files. Oversee creation of standard workstation image. Configures, installs, and maintains network printers on print servers. Works with other technical specialists to diagnose and resolve complex workstation and printer problems. Maintain local and domain policies affecting customer workstations. Create and maintain software installation packages for desktop support.	495	495	495
• As higher-level support, diagnose and resolve complex service desk issues related to the network infrastructure. Works with other ITSS network administrators to monitor network operations at all OSHPD locations. Work with support vendors, the Department of Technology Services (DTS) and other technical experts to resolve mainframe access, performance, and connectivity issues.	135	135	135
• Provide leadership and guidance to other technical specialists engaged in workstation systems operations and support. Review work for completeness, accuracy, and fulfillment of requirements. Ensure adherence to standards. Identify individual or project problem areas. Prepare project plans and change management requests, provide status reports, and communicates project updates for enterprise technical workstation projects to the Customer Services Center Supervisor.	180	180	180
• With direction from the Enterprise Technical Architect, research new and emerging workstation technologies. Assess the benefit and impact on business operations. Formulate recommendations based on alternative technology solutions.	90	90	90
TOTAL REQUIREMENTS	**900**	**900**	**900**
FULL-TIME EQUIVALENT (Total Hours/1,800 Hours Per FTE Year/Period in Years)	**0.5**	**0.5**	**0.5**

Position Title: Staff Programmer Analyst (Permanent)

Task Description	FY 09/10 Hours	FY 10/11 Hours	FY 11/12 Hours and Ongoing
• Programs the complex application development, support and enhancements tasks. (1) Object-oriented programming using Visual Studio and SqlServer; (2) Programming enhancements of application system interfaces including document imaging, accounting, and external systems; (3) Programming infrastructure components for rules engine, business objects, workflow management, letter generation, reporting, etc; (4) SQL programming and database schema enhancements; (5) Application report development and enhancements; (6) Maintenance of functional and technical programming specifications; (7) Development of technical documentation using code commenting, diagramming and technical writing as required.	1080	1080	1080
• Plans, develops and administers database management systems. Ensures database system quality, integrity, resolves data access problems, ensures that data systems are consistent with user's business requirements, and ensures data security. Participates with network administrators in capacity planning, and analysis of database server performance and storage requirements. Installs and tests new database management system software releases and patches. Implements security and backup/recovery procedures and performs database server load balancing. Institutes specific processes and procedures to coordinate database systems upgrades. Evaluates database systems for effectiveness and improvements.	360	360	360
• Research new and emerging application development technologies. Formulate technical recommendations based on alternative technology solutions studies. Provide analysis for procurement of network-related software and hardware. Consult with vendors and other technical experts to perform research and analysis.	180	180	180
• Other duties include (1) Preparing correspondence relating to project assignments such as meeting agendas, meeting minutes, memos, and weekly status reports to supervisor; (2) Assisting in the development of system development life cycle standards by researching the Internet, textbooks, lessons learned, best practices, and/or training class materials; (3) Preparing special reports and budget estimates as required; (4) Developing specifications and cost estimates for new PCs, network servers, hardware and software as needed for development services procurement.	180	180	180
• Other duties	180	180	180
TOTAL REQUIREMENTS	**1800**	**1800**	**1800**
FULL-TIME EQUIVALENT (Total Hours/1,800 Hours Per FTE Year/Period in Years)	**1.0**	**1.0**	**1.0**

Position Title: Staff Programmer Analyst (2 Year Limited Term)

Task Description	FY 09/10 Hours	FY 10/11 Hours	FY 11/12 Hours	On-Going
• Programs the complex application development, support and enhancements tasks. (1) Object-oriented programming using Visual Studio and SqlServer; (2) Programming enhancements of application system interfaces including document imaging, accounting, and external systems; (3) Programming infrastructure components for rules engine, business objects, workflow management, letter generation, reporting, etc; (4) SQL programming and database schema enhancements; (5) Application report development and enhancements; (6) Maintenance of functional and technical programming specifications; (7) Development of technical documentation using code commenting, diagramming and technical writing as required.	1080	1080	1080	0
• Data Warehouse and Data Mining – Analyzes, designs, and manages the MIRCal data warehouse architecture; defines and integrates the Online Analytical Processing (OLAP) requirements with the data warehouse schema; establishes and maintains logical and physical data warehouse designs; develops and maintains Extraction, Transformation, and Transportation (ETT) processes utilizing data cleansing and translation software and tools; creates and maintains queries, views and dimensions; monitors and tunes the physical database layout for data warehousing to ensure optimal performance of parallel execution and partitioning of data; installs and configures hardware and software for data warehouse and data mining; creates and maintains models and algorithms for data mining.	540	540	540	0
• Research new and emerging application development technologies. Formulate technical recommendations based on alternative technology solutions studies. Provide analysis for procurement of network-related software and hardware. Consult with vendors and other technical experts to perform research and analysis.	180	180	180	0
TOTAL REQUIREMENTS	**1800**	**1800**	**1800**	**0**
FULL-TIME EQUIVALENT (Total Hours/1,800 Hours Per FTE Year/Period in Years)	**1.0**	**1.0**	**1.0**	**0**

Position Title: Office Technician

Task Description	FY 09/10 Hours	FY 10/11 Hours	FY 11/12 Hours
• Handles less complex tasks related to the personnel action requests from preparation and submission to Personnel, and tracking requests through completion. Responds to questions and provides additional information to Personnel related to pending actions. Maintains position duty statement, updates project organization chart, emergency notification forms, alternate workweek agreements, etc. Serves as the primary point of contact with Personnel regarding questions related to personnel actions, pay and benefits, and attendance reporting.	360	360	360
• Serves as the Project's training coordinator handling the processing individual training requests for Project employees. Researches sources of training whether in-service of out-service; negotiates best price with private training vendors; makes special arrangements for group, package or onsite training; resolves service problems with vendors and State providers; maintain contacts with regular training vendors/providers. Screens training requests for proper completion according to Office policy; resolves discrepancies with supervisors and employees; submits training requests to the Office's Training Officer for processing; follows up to ensure registration and payment of fees. Works with the Training Officer to ensure that the training records of Project employees are accurate and up-to-date, communicate training activities, and inquire and respond to questions related to Project's training needs. May serve as backup registering employees in ISS' LearnIT Center computer training classes, including updating the registration database.	360	360	360
• Orders and maintains office supplies, furniture and equipment. Researches and secures bids from vendors, prepare required ordering documents; works with business services to track orders from processing through delivery. Initiates purchases of authorized goods and services from CMAS, State-contract suppliers, and other private vendors using online ordering systems or CAL-Card, as permitted. May serve as backup for the ordering and purchasing of computer commodities. Serves as point-of-contact to business services for facilities maintenance problems/repairs/cleaning; initiates telephone line, computer cabling, and electrical repairs, installations, or changes; maintains and initiates orders for repair of general office equipment.	360	360	360
• Follows up with accounting on the payment of invoices for goods and services. Handles pre-payments, travel advances, travel expense claims, etc. Reconciles invoices for payment approvals and resolves errors with vendors/suppliers.	360	360	360

• Perform receptionist and general clerical duties, including but not limited to screening and directing incoming calls, making travel and lodging arrangements for staff, timekeeping, preparing correspondence, and occasional typing/proofreading, filing, and copying. Provides secretarial support to the Project manager as required.	360	360	360
TOTAL REQUIREMENTS	**1800**	**1800**	**1800**
FULL-TIME EQUIVALENT (Total Hours/1,800 Hours Per FTE Year/Period in Years)	**1.0**	**1.0**	**1.0**

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ATTACHMENT 4 – Other States Research

This Attachment contains three items:

1. A copy of the electronic survey form that was used when talking with other states about how they met their needs for a healthcare workforce clearinghouse. Specifically, did the state work with a vendor who supplied it with a COTS/MOTS product.
2. A matrix showing the results of the states that agreed to complete a survey for California.
3. A series of pie charts that compares the results between states on how closely they matched California in the categories surveyed concerning a healthcare workforce clearinghouse for that state.

These items are provided on the following pages.

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State of California, Office of Statewide Healthcare Planning and Development (OSHPD)

Other States Clearinghouse Survey

1. Purpose of your Clearinghouse.

a. Does your Clearinghouse track data for Healthcare Workforce:	*YES*	
i. Education	☐	*Please check all the areas that are tracked by your Clearinghouse.*
ii. Certification and Licensing	☐	
iii. Employment	☐	
iv. Movement	☐	
v. Demographics	☐	

b. Does your Clearinghouse track Current and/or Forecasted Healthcare Workforce Supply and Demand:	*Please check all that are presently tracked by your Clearinghouse.*		
	Tracked	***Supply***	***Demand***
i. By Specialty	**Current**	☐	☐
	Forecasted	☐	☐
ii. By Region	**Current**	☐	☐
	Forecasted	☐	☐
iii. By Demographics	**Current**	☐	☐
	Forecasted	☐	☐
iv. By Institution Educational Capacity	**Current**	☐	☐
	Forecasted	☐	☐

2. Was your Clearinghouse developed by your in-house IT (programming) staff?

☐ **YES**

a. May we have your IT Contact information?

Name	
Phone No.	
Email Address	

b. Is your in-house system available for use by another State? ☐ **YES** ☐ **NO**

☐ **NO**

a. Who developed your Clearinghouse?

b. May we have the vendor Contact information?

Name	
Phone No.	
Email Address	

c. Was your Clearinghouse custom developed just for YOU? ☐ **YES** ☐ **NO**

d. Overall, are you satisfied with the system? ☐ **YES** ☐ **NO**

3. These are questions about the source of the data that feeds into your Clearinghouse.

a. Of the following Data Providers, what percent of the possible total supply your Clearinghouse with data?	*Percent*	
i. Education	0%	*Data Provider participation is noted by entering a percentage greater than zero.*
ii. Government (State & Local)	0%	
iii. Licensing Boards	0%	
iv. Other (specify)	0%	

b. These are questions about the format and content of the data you receive from your Data Providers.	*YES*	
i. Do you specify the format?	☐	*Please check as appropriate for each question regarding the data received by Data Providers for your Clearinghouse.*
ii. Do you validate the data?	☐	
iii. Do you accept some level of errors (ETL*) in the data submitted?	☐	***ETL = Error Tolerance Level**
iv. Is that ETL based on the entire data submitted from the Data Provider?	☐	
v. If that ETL is higher than allowed, is the entire data set submitted rejected?	☐	
vi. Do you generate reports for Data Providers?	☐	

State of California, Office of Statewide Healthcare Planning and Development (OSHPD)

Other States Clearinghouse Survey

3. Continuing questions about the source of the data that feeds into your Clearinghouse...		
c. How is data submitted to your Clearinghouse?	***YES***	
i. Secure email attachments? ii. Web/HTTPS iii. CD/DVD iv. Direct interface v. Other (Specify)	☐ ☐ ☐ ☐ ☐	*Please check as appropriate for each media type that data can be received from Data Providers into your Clearinghouse.*
d. How often is data accepted from Data Providers?	***Frequency***	
i. Education ii. Government (State & Local) iii. Licensing Boards iv. Other (specify)	*(Does not submit)* *(Does not submit)* *(Does not submit)* *(Does not submit)*	*Select the corresponding frequency for data submission from each Data Provider from the drop-down list.*
4. These are questions about information accessibility from your Clearinghouse.		
a. Who has access to your Clearinghouse information?	***YES***	
i. Data Providers ii. Legislature iii. Your Internal Users iv. Other government agencies (federal/state/local) v. Public vi. Other (specify)	☐ ☐ ☐ ☐ ☐ ☐	*Please check all those who have some form of access to information in your Clearinghouse.*
b. What types of access to your Clearinghouse information are available?	***YES***	
i. Can data be selected and downloaded? ii. Are standard reports available on-line? iii. Is there an on-line 'Ad Hoc' reporting capability?	☐ ☐ ☐	*Please check all types of access to information in your Clearinghouse that apply.*
5. These are questions about specific legislation for your Clearinghouse.		
a. To promote Data Provider participation in your Clearinghouse, does your State have specific legislation that includes:		
☐ **i. Penalties:** ✓ Do you believe that this has helped to enforce Data Provider participation in your Clearinghouse? ☐ **YES** ☐ **NO**	☐ **ii. Incentives:** ✓ Do you believe that this has helped to encourage Data Provider participation in your Clearinghouse? ☐ **YES** ☐ **NO**	
6. Questions about *this* survey.		
a. Did you find this survey took too much of your time?	☐ **YES** ☐ **NO**	
b. Would you be open to us contacting you in the future with more specific questions about your Clearinghouse? Your contact information:	☐ **YES** ☐ **NO**	
c. Your suggestions on how to improve this survey:		

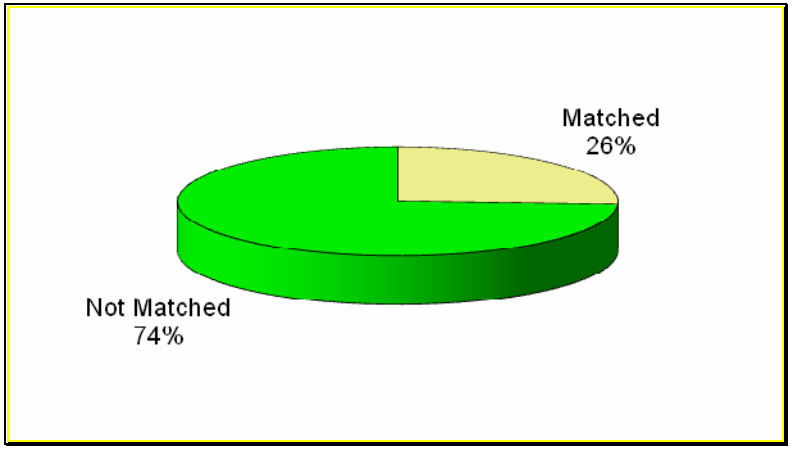
Name	
Title:	
Organization	
State	*(Select)*
Phone No.	
Email Address	

No.	Questions			FL Florida	MA Massachusetts	MD Maryland	MI Michigan	MN Minnesota	NE Nebraska	NC North Carolina	OR Oregon	SD South Dakota	TN Tennessee	TX Texas	WY Wyoming
				|-------STATES that were contacted and agreed to be SURVEYED-------|										
1	a. Does your Clearinghouse track Healthcare Workforce:	i. Education											X		X
		ii. Certification and Licensing		X				X						X	X
		iii. Employment		X				X					X		X
		iv. Movement													X
		v. Demographics		X				X							X
	b. Does your Clearinghouse track Current and/or Forecasted b. Healthcare Workforce for Supply and Demand:	i. By Specialty	Current--*Supply*	X			X	X					X	X	X
			Current--*Demand*				X	X					X		
			Forecasted--*Supply*				X								X
			Forecasted--*Demand*				X								
		ii. By Region	Current--*Supply*	X				X					X	X	X
			Current--*Demand*					X					X		
			Forecasted--*Supply*												X
			Forecasted--*Demand*												
		iii. By Demographics	Current--*Supply*	X			X	X						X	X
			Current--*Demand*												
			Forecasted--*Supply*												X
			Forecasted--*Demand*												
		iv. By Institution Educational Capacity	Current--*Supply*				X								X
			Current--*Demand*												
			Forecasted--*Supply*												X
			Forecasted--*Demand*												
2	Was the Clearinghouse developed by the State's in-house IT (programming) staff?	YES		X				X						X	
		YES	Can be used by another state												
			Developed by:												
		No					Program Staff						Mercatus Communication		University of Nebraska
		No	Was customed developed?										X		X
			Overall satisfied with system												
		No											X		X
3	a. Which Data Providers	i. Education						X					X		

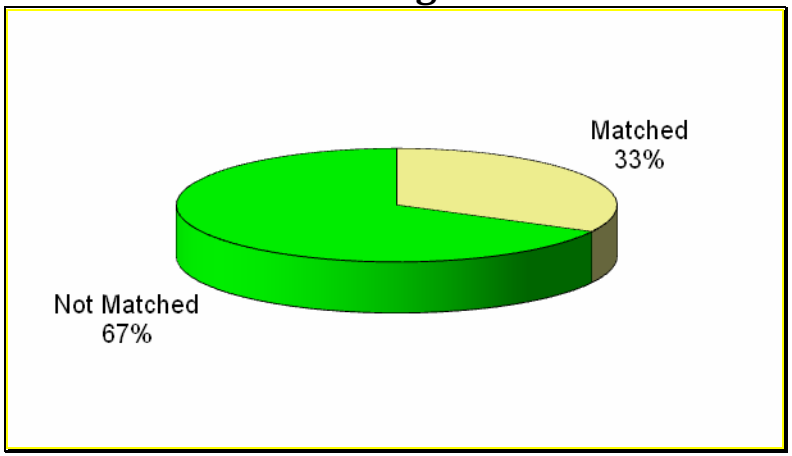
No.	Questions		FL Florida	MA Massachusetts	MD Maryland	MI Michigan	MN Minnesota	NE Nebraska	NC North Carolina	OR Oregon	SD South Dakota	TN Tennessee	TX Texas	WY Wyoming
			[------STATES that were contacted and agreed to be SURVEYED-------]											
3	a. Which Data Providers supplied data to the Clearinghouse?	i. Education					X					X		
		ii. Government (State & Local)	X			X	X							
		iii. Licensing Boards	X				X						X	X
		iv. Other				X						X		X
	b. These are questions about the format and content of the data you receive from your Data Providers.	i. Format specified by State										X	X	X
		ii. State validates submitted data				X						X		X
		iii. Some level of errors (ETL) are accepted in submissions				X								
		iv. ETL based on entire data submitted from the Data Provider												
		v. Entire submitted data is rejected if ETL exceeded												
		Vi. Reports generated for Data Providers				X								X
	c. How is data submitted to your Clearinghouse?	i. Secure email attachments										X		
		ii. Web/HTTPS					X						X	
		iii. CD/DVD												
		iv. Direct interface	X									X		
		v. Other				X								X
	d. How often is data accepted from Data Providers?	i. Education	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	Semi-Annua Annually	(None) Daily	(None) Daily
		ii. Government (State & Local)	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily
		iii. Licensing Boards	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	Semi-Annua Annually
		iv. Other	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	(None) Daily	Annually as available	(None) Daily	Semi-Annua Annually
4	a. Who has access to your Clearinghouse information?	i. Data Providers	X			X	X					X	X	
		ii. Legislature	X			X	X					X		X
		iii. Your Internal Users	X			X	X					X	X	X
		iv. Other government agencies (federal/state/local)	X			X	X					X		X
		v. Public				X	X					X		
		vi. Other												
	b. What types of access to your Clearinghouse information are available?	i. Data CAN be selected and downloaded				X						X		
		ii. Standard reports ARE available on-line	X			X	X						X	X
		iii. There ARE on-line 'Ad Hoc' reporting capabilities												
5	a. To promote Data Provider participation, does "Clearinghouse" legislation contain:	i. Penalties — Helped												
		i. Penalties — Didn't help												
		ii. Incentives — Helped												
		ii. Incentives — Didn't help												
		Count — *Matched*	*15*	*0*	*0*	*19*	*19*	*0*	*0*	*0*	*0*	*20*	*11*	*25*
		Count — *Possible*	*58*	*58*	*58*	*58*	*58*	*58*	*58*	*58*	*58*	*58*	*58*	*58*
		Matched — *Percent*	25.9%	0.0%	0.0%	32.8%	32.8%	0.0%	0.0%	0.0%	0.0%	34.5%	19.0%	43.1%
		Not Matched — *Percent*	74.1%	100.0%	100.0%	67.2%	67.2%	100.0%	100.0%	100.0%	100.0%	65.5%	81.0%	56.9%

Comparison of California Healthcare Workforce and Educational Clearinghouse Solution Requirements to active healthcare 'clearinghouses' in other states that responded to our contacts and survey

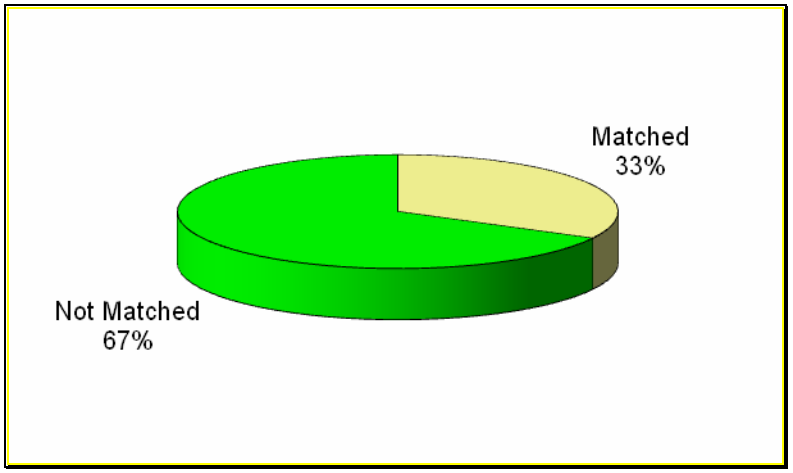
Florida



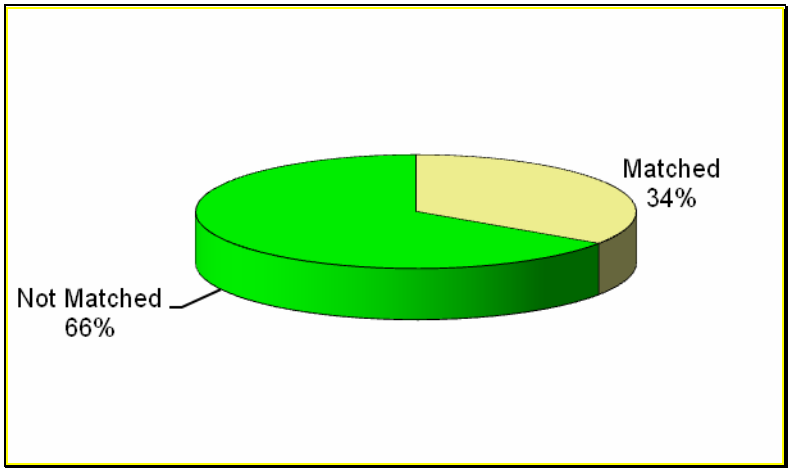
Michigan



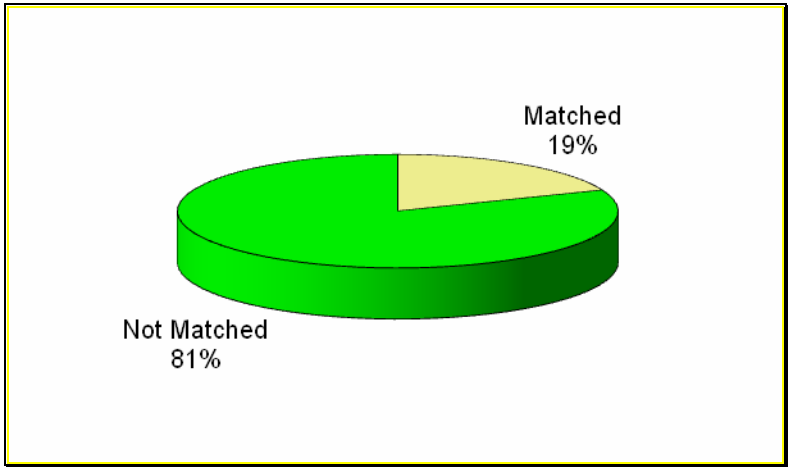
Minnesota



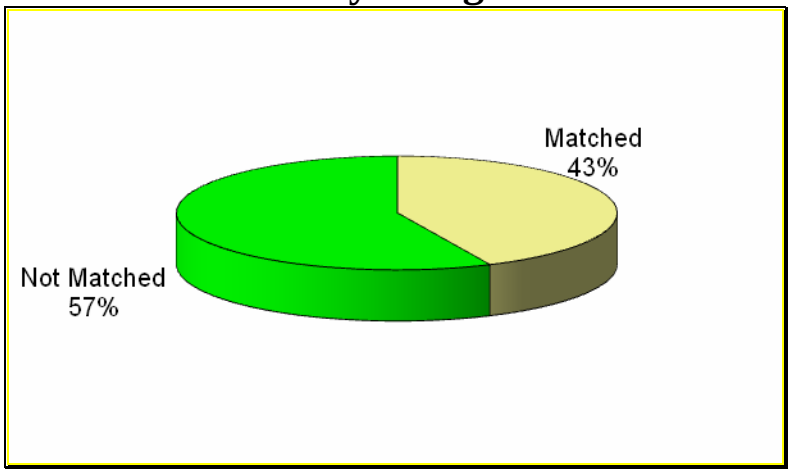
Tennessee



Texas



Wyoming



ATTACHMENT 5 – Risk Management Plan

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Healthcare Workforce and Educational Clearinghouse

ISSUE/RISK MANAGEMENT PLAN

Version 1

June 30, 2008

Project Name: Workforce Clearinghouse	**Prepared By:** Deborah Holstien
Project Manager: Mike Byrne	**Date Prepared:** June 30, 2008

Revision History

Change Number	Brief Description of Change(include page numbers when applicable)	Date	Responsible Parties
1.0	**V 1.0 Risk Management Plan prepared by Deborah Holstien**	**06/30/08**	

1.0 Risk, issue, finding, and Test DEFECT coordination

1.1 Overview

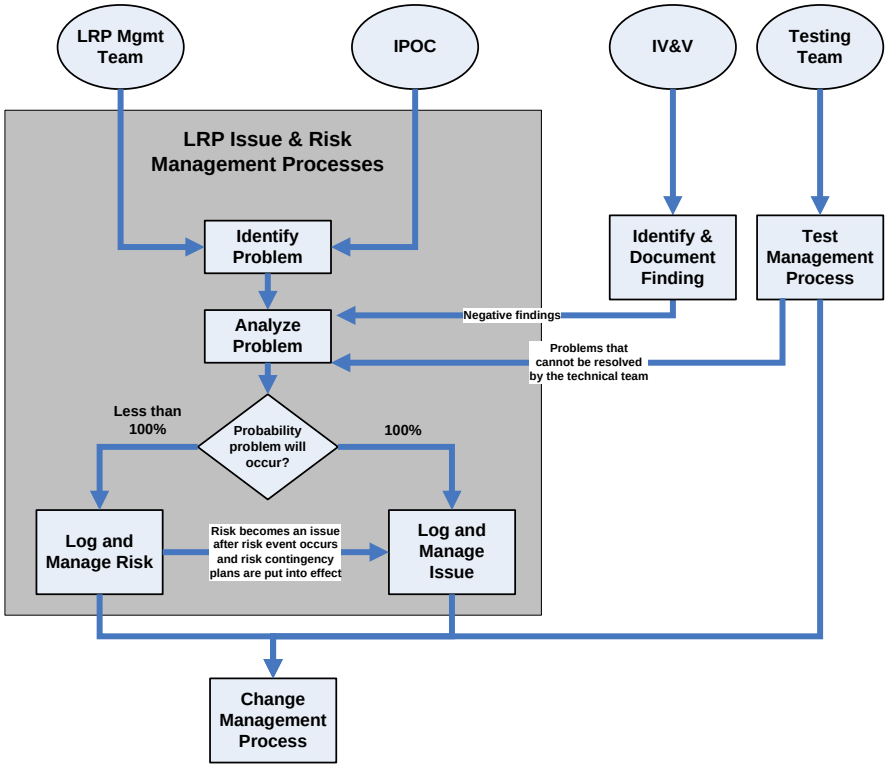
During the Healthcare Workforce and Educational Clearinghouse project, all project problems will be categorized as risks, issues, findings, or test incidents. Each of these categories of problems has a different management process (and different project team member or group) to identify, assess, monitor, and resolve:

- Risks – Workforce Clearinghouse Risk Management Process (Project Manager and IPOC)
- Issues – Workforce Clearinghouse Issue Management Process (Project Manager)
- Findings – IV&V Findings Process (IV&V consultant)
- Test Defects – Test Management Process (Test Manager)

Despite the fact that these categories of problems are managed separately, they all have similarities to each other and they all interface at certain points with each other. The Figure below illustrates their relationships.

The Workforce Clearinghouse Issue/Risk Management Plan has divided the discussion of issue management and risk management into their own sections because the project is managing each using similar but different approaches. Section 2 describes how risks are managed, and section 3 describes how issues are managed.

Figure 1-1 – Risk, Issue, Finding, and Test Defect Coordination Chart



1.2 Process Descriptions

The Workforce Clearinghouse Risk and Issue Management Processes are considered the core of all of the problem management processes, and all of the problem management processes are either within the Workforce Clearinghouse Risk or Issue Management Processes, or provide input into them.

Workforce Clearinghouse Risk and Issue Management Processes

During the course of the Logbook Redesign Project, problems will be identified by the Workforce Clearinghouse Project Team and the Workforce Clearinghouse IPOC. These problems will go through a quick analysis process to determine if they are significant enough to require formal management, and then a determination will be made whether the problem is to be managed as an issue or a risk.

For the purposes of the Workforce Clearinghouse, the difference between a risk and an issue is the probability or certainty that the risk event will occur. If the probability is 100%, even if it has not yet occurred, then the problem is managed as an issue. If the probability is less than 100%, then the problem is managed as a risk.

Once the problem is classified as a risk or an issue, the information on the problem will be entered into the Issue/Risk Log for further analysis, management, and development of a recommended solution or approach to resolve or mitigate the issue or risk.

IV&V Findings

One of the primary responsibilities of the IV&V consultant is to document findings regarding the project's processes, deliverables, and results. The IV&V consultant will provide information on significant findings to the Workforce Clearinghouse management team. Each negative finding submitted by the IV&V will be analyzed using the same methodology as problems submitted by the Workforce Clearinghouse Management Team or Workforce Clearinghouse IPOC.

For the purposes of the Workforce Clearinghouse project, all IV&V processes and procedures are documented in the IV&V vendor's project plan.

Test Defects

During testing, the testing team will often uncover significant defects that cannot be resolved by the technical team. For example, the requirements may specify a performance level that cannot be achieved with the specified hardware, software, and network infrastructure. In these types of situations, the defect will be added to the Issue/Risk Log and managed by the Workforce Clearinghouse Management Team.

For the purposes of the Workforce Clearinghouse project, all test management processes and procedures will be documented in the test management plan (still to be developed).

2.0 Risk Management Plan

2.1 Purpose and Overview

The term *risk* is defined as a potential event that would have a negative impact on the success of the project if the event were to occur. This section describes the Risk Management Plan (RMP) for the Logbook Redesign Project and defines the process to manage risks during the course of the project. The Risk Management Plan is a subsidiary plan of the *Logbook Redesign Project Management Plan,* and will be used to communicate and implement the standard processes for risk analysis, risk mitigation planning and tracking, and risk escalation. In this context, risk management is to be viewed as an integral part of overall project management and execution, rather than a separate process executed outside of normal project activities.

The methodology described in the Risk Management Plan is based primarily upon the standard risk management approach recommended in PMI's *A Guide to the Project Management Body of Knowledge (PMBOK)*. Where appropriate, elements of the Department of Finance (DOF) *Information Technology Project Oversight Framework* are also used.

2.2 Risk Management Participants

The participants in the Logbook Redesign Project Risk Management process are:

- Workforce Clearinghouse Management Team
  - Workforce Clearinghouse Project Manager
  - Workforce Clearinghouse Program Director
  - Workforce Clearinghouse Project Management Support Team
  - Workforce Clearinghouse Independent Project Oversight Consultants (IPOC)
  - Workforce Clearinghouse Independent Validation and Verification (IV&V) consultants
  - OSHPD Project Management Office (PMO) manager
- Workforce Clearinghouse sponsor
- Workforce Clearinghouse team members
- Workforce Clearinghouse steering committee
- OSHPD executive managers
- OSHPD Director

2.3 Risk Management Process

The Risk Management process for this plan consists of six basic steps:

Step 1 – Identification

Step 2 – Analysis

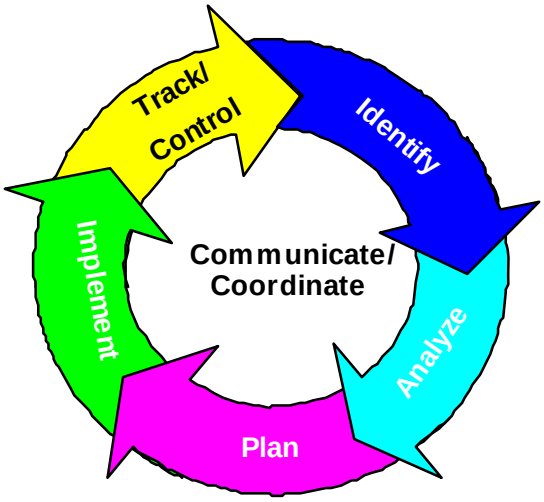
Step 3 – Planning

Step 4 – Implementation

Step 5 – Tracking/Controlling

Step 6 – Communication/Coordination

Figure 1-2 – Risk Management Process



Note: Although discussed as a separate step, communication and coordination is an essential part of each step and is conducted throughout the Workforce Clearinghouse. The risk management process is an iterative process as illustrated below.

2.3.1 Step 1 – Identification

The objective of Step 1 – Identification is to search for and find risks before they become issues. A risk is a potential event that will have a negative impact on the success of the project if the event were to occur. The Identification Step will result in clear risk statements in the following format:

Problem * Likelihood * Consequence

The primary responsibility for risk identification belongs to the Workforce Clearinghouse Management Team, though anyone can submit a risk and will be encouraged to do so.

The Workforce Clearinghouse Management Team is responsible for conducting an initial, high-level risk assessment to identify risks associated with the project. The Workforce Clearinghouse IPOC also facilitates meetings of the Workforce Clearinghouse Management Team so that the group can brainstorm all currently known risks to the project. To assist with the effort the Workforce Clearinghouse IPOC will provide lists of commonly occurring risks that have had an effect on similar types of projects.

During the course of the project, risk identification is conducted through three methods:

- Individual identification
- Status meeting discussions
- Periodic risk identification meetings

2.3.2 Step 2 – Risk Analysis

The objective of Step 2 – Risk Analysis is to transform the list of risks identified in Step 1 into information that can be used to aid decision-making and to validate the risk information.

During Step 2, team members identifying risks may recommend assignments of risk impact, time frame, and probability as well as recommended risk mitigation plans for consideration. The result of Step 2 is the confirmation of risks that have been reviewed, validated, classified, and prioritized. Confirmed risks are those risks that have been acknowledged by the Workforce Clearinghouse Management Team as being valid threats that require development and execution of a response to the risk.

The risk analysis process is composed of the following detailed steps:

<u>Determine Risk Probability</u>

The Workforce Clearinghouse Management Team is responsible for determining the risk probability, which involves considering the likelihood of the occurrence of the risk. Table 1 lists the criteria to determine if a risk's probability is high, medium, or low.

Table 1 – Risk Probability Criteria

PROBABILITY	CRITERIA: THE RISK EVENT IS …
High	Very likely to occur
Medium	May occur or 50/50 chance to occur
Low	Not likely, probably will not occur

Determine Risk Impact

The Workforce Clearinghouse Management Team is responsible for determining the risk impact, which involves considering the consequences that the risk would have on the project if the risk event were to occur. Table 2 lists the criteria to determine if a risk's impact is high, medium, or low.

Table 2 – Risk Impact Criteria

IMPACT	CRITERIA: RISK CONSEQUENCES INCLUDE…
High	**Risk consequences include one or more of the following:** • Significant schedule delay. For example, delay in a critical path activity by more than 2 months or by more than 10%. • Significant cost increase. For example, project budget increase by more than 10%. • Significant resource change. For example, loss of more than 20% of personnel, or loss of more than 10% of key management personnel. • Significant scope changes. For example, major objectives of the project are dropped or increased. • Significant political repercussions. For example, non-compliance with current legislation that involves significant penalties. • Significant impact to ability to meet needs of stakeholders. For example, lack of communication or miscommunication with business partners result in non-acceptance of project and adverse perceptions of FDD. • Significant user dissatisfaction. For example, more than 20% of users are extremely dissatisfied with more than 20% of system functions or performance characteristics.

IMPACT	CRITERIA: RISK CONSEQUENCES INCLUDE…
Medium	**Risk consequences include one or more of the following, but do not include any consequences identified above under "High":** • Moderate schedule delay. For example, delay in a critical path activity by 2-8 weeks, or delay in a non-critical path activity by more than 1 month. • Moderate cost increase. For example, project budget increase by 5 to 10%. • Moderate resource change. For example, loss of 10-20% of personnel, or loss of 5-10% of key management personnel. • Moderate political repercussions. For example, moderate dissatisfaction of political parties or special interest groups. • Moderate impact to ability to meet needs of stakeholders. For example, lack of communication with business partners result in the need for increased negotiations with stakeholders. • Moderate user dissatisfaction with system or program changes. For example, 10-20% of users are extremely dissatisfied with 10-20% of system functions/performance.
Low	**Risk consequences include one or more of the following, but do not include any consequences identified above under "High" or "Medium":** • Minor schedule delay. For example, delay in a critical path activity by less than 2 weeks, or delay in a non-critical path activity by less than 1 month. • Minor cost increase. For example, project budget increase by less than 5%. • Minor resource change. For example, loss of less than 10% of personnel, or loss of less than 5% of key management personnel. • Minor political repercussions. For example, minor dissatisfaction of political parties or special interest groups. • Slight impact to ability to meet needs of stakeholders. For example, lack of communication or miscommunication with business partners result in increased attempts to clarify the project. • Minor user dissatisfaction. For example, less than 10% of users are extremely dissatisfied with less than 10% of system functions or performance characteristics.

Determine Risk Exposure

Risk exposure is derived from the risk's probability and impact, and is used in conjunction with time frame to prioritize risks for mitigation and escalation. Determine risk exposure for each risk from the risk's probability and impact in the Table 3.

Table 3 – Risk Exposure Matrix

	PROBABILITY			
	✓	✓ High	✓ Medium	✓ Low
IMPACT	✓ High	✓ **High**	✓ **High**	✓ **Medium**
	✓ Medium	✓ **High**	✓ **Medium**	✓ **Low**
	✓ Low	✓ **Medium**	✓ **Low**	✓ **Low**

Determine Risk Time Frame

The Workforce Clearinghouse Management Team is responsible for assigning the time frame within which action must be taken to successfully mitigate the risk. Table 4 lists the criteria to determine if a risk's time frame is long, medium, or short.

Table 4 – Risk Mitigation Time Frame Criteria

TIME FRAME	CRITERIA: ACTION MUST BE TAKEN IN …
Short	Less than three months
Medium	Three to six months
Long	Greater than six months

Determine Risk Severity

Risk severity is a function of exposure and time frame. Risk severity will be used to determine the relative priority of the identified risks in Step 3 – Planning. Determine risk severity for each risk from the intersection of that risk's exposure and time frame in Table 5.

Table 5 – Risk Severity Matrix

		EXPOSURE		
	✓	✓ High	✓ Medium	✓ Low
TIME FRAME	✓ Short	✓ **High**	✓ **High**	✓ **Medium**
	✓ Medium	✓ **High**	✓ **Medium**	✓ **Low**
	✓ Long	✓ **Medium**	✓ **Low**	✓ **Low**

2.3.3 Step 3 – Planning

The objective of Step 3 – Planning is to take ownership of risk mitigation. Risk planning involves prioritizing risks for the Workforce Clearinghouse Management Team's attention, assigning risk ownership, developing risk response strategies, developing mitigation plans, and recording risk status changes in the issue/risk log.

In the SharePoint issue/risk log, issues and risks are maintained within the same list, but are grouped into the categories of issue and risk for maintenance and reporting purposes.

Determine Risk Priority

The Workforce Clearinghouse Management Team is responsible for determining and assigning the priority of each risk based on the severity of the risk as determined in Step 2.

Risks with high severity should be ranked in relative order of importance to the project, then medium severity risks, and finally low severity risks. The priority allows the Workforce Clearinghouse Management Team to focus efforts on those risks that have the highest probability, greatest impact, and/or shortest time frame for mitigation.

Assign Risk Owner

The Workforce Clearinghouse Project Manager is responsible for identifying the risk owner. The risk owner is a member of project team who will have primary responsibility for developing the risk response strategy (e.g. avoid, accept, mitigate, watch, transfer) and recommendations.

Develop Risk Recommendation

The risk owner, along with the Workforce Clearinghouse Project Manager and other project team members, is responsible for developing a risk recommendation. The risk recommendation describes the actions the team should take to avoid the risk, mitigate the risk, accept the risk, or transfer the risk. The risk recommendation should include enough detail to provide the reader with a clear understanding of the approach to be taken to handle the risk.

For high severity risks, the risk recommendation should also have a contingency plan to be executed in the event mitigation fails or an accepted risk occurs. The contingency plan defines actions to be taken when the consequence of the risk is imminent or has occurred.

Review Risk with Team and Update Project Sponsor

The Workforce Clearinghouse IPOC is responsible for reviewing the risk with the Workforce Clearinghouse Management Team to validate all of the risk information identified at the time of the review, including the risk impact, risk probability, risk time frame, and other information. The result of this step is to validate the risk as a confirmed risk and to confirm or modify the risk recommendation. The Workforce Clearinghouse Project Manager and Workforce Clearinghouse IPOC are responsible for informing the project sponsor of risks and their status on an On-Going basis. Extracts from the Issue/Risk Log may be used for this purpose.

The primary forum for reviewing risks will be the project status meeting where the Workforce Clearinghouse IPOC will lead the discussion of project related risks. Due to time constraints, only the high severity risks will be reviewed at status meetings. However, a monthly issue/risk meeting will be conducted in order to review all the current risks and issues.

Independent Reviews

The Independent Project Oversight Consultant will provide independent reviews of the Team's risk analysis process and decisions as part of its responsibilities for independent project oversight according to the State Office of the Chief Information Officer's Project Oversight Framework. The IPOC review focuses on consistency with recognized best practices and industry standards for risk management.

Update Issue/Risk Log

The Workforce Clearinghouse IPOC is responsible for updating issues and risks in the issue/risk log.

2.3.4 Step 4 – Implementation

The objective of Step 4 – Implementation is to conduct risk recommendation activities. Implementation involves the execution of mitigation plans and recording risk information changes in the issue/risk log.

Execute Action Items

The risk owner is primarily responsible for the execution of the risk recommendation activities. Other project team members may be responsible for performing some of the action items under the direction of the risk owner and the Workforce Clearinghouse Project Manager.

Escalation of Risks

If the risk owner has difficulty implementing a risk recommendation activity then he or she can escalate the risk to a higher management level in the organization. The reasons for having an escalation process include:

- Provide a check-and-balance mechanism to help ensure that proper actions are taken.
- Resolve risk problems earlier.
- Help reduce frustration among project members.
- Help prioritize work activities.
- Encourage employee participation and ownership of problems.

The risk escalation flow is illustrated in the Figure on the next page.

Figure 2-3 – Risk Escalation Flow

The general guidelines for risk escalation are:

- Escalate only after a sincere attempt has been made to address the risk.
- The risk owner is responsible for escalating the risk.
- Initiate the escalation as quickly as possible.
- Escalate the problem, not the person.
- Always inform your manager prior to initiating an escalation, and obtain his or her approval to proceed.
- Always inform the involved parties before beginning the escalation.
- When an escalation is under way, do not stop working.
- An escalation continues until one of the following occurs:
    - The person initiating the escalation is satisfied with the outcome of the escalation.
    - The final management point of escalation has occurred, and a decision has been made.
    - Your manager has directed the escalation process to stop.

Update Issue/Risk Log

The Workforce Clearinghouse Issue/Risk Log is maintained in the project's SharePoint website. The Issue/Risk Log is available for view and update by anyone with access to the SharePoint site.

The Workforce Clearinghouse IPOC is responsible for updating the status of risks in the Issue/Risk Log based on information provided by the risk owner and others. The Workforce Clearinghouse IPOC will print out copies of the Issue/Risk Log prior to the status meetings. During the status meetings all high risks will be reviewed and any new risks will be added or existing risks will be modified.

2.3.5 Step 5 – Tracking/Controlling

The objective of Step 5 – Tracking/Controlling is to ensure that all steps of the risk management process are being followed and, as a result, risks are being mitigated. Risk tracking/controlling involves the oversight and tracking of risk recommendation activities execution, re-assessment of risks, reporting risk status, and recording risk information changes in the issue/risk log.

Re-Assess Risks

The Workforce Clearinghouse Management Team will re-assess the risk information in the Issue/Risk Log to determine if any changes are needed to risk priority or time frame based upon current project events or changes to other risks. At a minimum, re-assessment of risk information in the Issue/Risk Log will be performed on a monthly basis. However, re-assessment may be performed more frequently as needed.

Report Risk Status

The risk owners will report risk status at the recurring project status meetings. Risk status reporting will focus on high severity risks. The risk owner may recommend changes in the schedule or assignment of action Items, and risk probability, impact, or time frame for consideration by the Workforce Clearinghouse Management Team. Information presented will include the status of risk recommendation activities, changes in risk priority for known risks, and any new risks identified.

Maintain the Issue/Risk Log

The Workforce Clearinghouse IPOC will maintain the risk information in the issue/risk log, updating risk impact, probability, time frame, severity, and priority. Newly identified risks will be added to the Issue/Risk Log and updated with information from Steps 2 and 3.

2.3.6 Step 6 – Communication and Coordination

Team members must communicate amongst themselves to coordinate risk management activities within the context of the overall project management plan. The escalation of risks to higher levels of OSHPD management and external oversight agencies is also included in communication and coordination.

Report to Management and Oversight

Parties responsible for risk reporting include all the members of the Workforce Clearinghouse Management Team. Internal and external reporting and escalation of risks and risk mitigation status is performed as indicated in Table 6

Table 6 – Risk Reporting

DOCUMENT	RISK SEVERITY	PREPARED BY	SUBMITTED TO	FREQUENCY
Issue/Risk Log	High, Medium	Workforce Clearinghouse IPOC	Presented to Workforce Clearinghouse Management Team	As necessary
Independent Project Oversight Report	High	Workforce Clearinghouse IPOC	Office of the CIO	Monthly, by the 10th of the month following the report period
Quarterly IPOC Report	All	Workforce Clearinghouse IPOC	Project Sponsor, CIO, Workforce Clearinghouse Management Team	By the end of the month following the reporting quarter
Quarterly Steering Committee Meeting	High	Workforce Clearinghouse IPOC	Presented to Steering Committee Members	Once each quarter

Approve Risk Resolution

When a risk is no longer a threat to the project as a result of successful risk mitigation or changes in the project environment, it is considered resolved. The Workforce Clearinghouse Project Manager will approve resolution of risks and the Workforce Clearinghouse IPOC will mark them as retired or closed.

Update Project Risk Database

The Workforce Clearinghouse IPOC updates the Issue/Risk Log to indicate the most current status of risks.

3.0 ISSUE Management Plan

3.1 Overview

The term *issue* is defined as an event that is or will have a negative impact on the success of the project, and the event is occurring or is certain to occur. This section describes the Issue Management Plan (IMP) for the Logbook Redesign Project and defines the process to manage issues during the course of the project. Because issues and risks are managed in a similar fashion, this section will only describe how and when issues are managed differently than risks.

3.2 Issue Management Process

3.2.1 Issue Management Responsibility

Because issues are events that are certain to occur or will occur, and are certain to or will have a negative effect on the project, they have a greater urgency for being addressed and resolved. Because of the urgent nature of issues, the project manager is the primary team member responsible for the management of project issues.

3.2.2 Changing a Risk into an Issue

A risk becomes an issue when its probability becomes certain or the risk event occurs. The risk event may be occurring at the moment, or may occur in the future.

To change a risk into an issue the user accesses the Issue/Risk Log and changes the risk probability to “high,” the issue/risk identifier to “issue,” and a note is made in the status field for the reason or reasons why the risk became an issue.

4.0 Appendices

4.1 Appendix A – Glossary

Contingency Plan: Identifies the actions to take to respond to the issue/risk that occurs when the risk materializes.

Escalation: The process of reporting risks to higher levels of departmental authority or oversight agencies based on the severity of the risks and the criticality of the project.

Exposure: Risk exposure is derived from the risk attributes impact and probability, and is used, in conjunction with time frame, to prioritize risks for mitigation and escalation.

Issue: An issue is a problem that is having or will have a negative impact on the project, and the probability that the problem (or the event that causes the problem) is 100 percent.

Risk: A potential event that is expected to have a negative impact on the success of the project if the event were to occur. A risk is stated as a problem (called a 'risk event'), its likelihood, and the consequences to the project should the problem materialize.

Risk Analysis: A method used to transform risk items into information that can be used to aid decision-making and to validate risk information. Risk analysis involves classification and prioritization of risk items, providing recommendations for mitigating and measuring risk items, and reviewing risk item information with the Workforce Clearinghouse Management Team.

Risk Event: The potential event or problem that is expected to have a negative impact on the success of the project if the event were to occur.

Risk Impact: A description of the anticipated consequences of a risk materializing.

Risk Log: A repository of key risk related information used to record the results of the risk management process, including identification of the risk, assessment of risk probability, impact, time frame, exposure, severity, priority, response strategy (e.g. mitigate, transfer, avoid, accept, watch), risk recommendation activities, , and status of the risk.

Risk Mitigation: Response to an identified risk, designed to eliminate or reduce the risk impact or probability of the risk occurring.

Risk Owner: The person assigned responsibility for developing risk mitigations, measurements, and implementing and tracking mitigation plans.

Risk Planning: A method used to take ownership of risk mitigation. Risk planning involves assigning risk ownership, developing risk mitigations, developing measurements, reviewing and approving risk mitigations and measurements, translating mitigations into action plans, and recording risk information changes in the Workforce Clearinghouse Issue/Risk Log.

Risk Priority: A determination of the importance of the risk based upon: (1) potential impact of the risk on the project, (2) the probability of occurrence, and (3) the risk time frame.

Risk Response Strategy: The strategy for responding to a specific risk (as defined by the DOF IT Oversight Framework):

- Research – More information is needed to define the risk and develop the strategy.
- Watch – No action taken at this time. Continue to monitor the risk for changes.
- Mitigate – Develop and implement a plan to reduce or eliminate the impact of the risk or the probability of the risk occurring.
- Avoid – Involves changing project plans to eliminate the threat posed by a risk, to isolate the project's objectives from the risk's impact, or to relax the objective that is in jeopardy, such as extending the schedule or increasing the budget.
- Transfer – Shifts the negative impact of the risk to a third party outside of the project. However, it does not eliminate the risk.
- Accept – Live with the consequences if the risk were to actually occur.

Risk Probability: The likelihood of the occurrence of the risk.

Risk Tracking/Control: A method to insure that all steps of the risk management process are being followed and, as a result, risks are being mitigated. Risk tracking/control involves the oversight and tracking of risk mitigation execution, re-assessment of risks, reporting risk status, and recording risk information changes in the Workforce Clearinghouse Issue/Risk Log.

Severity: Risk Severity is a composite of the risk exposure rating and time frame. Risk severity is usually determined by using a matrix that assigns a severity based on the intersection of exposure and time frame ratings. Severity is used to determine the relative priority of the identified risks and the need for escalation.

Time Frame: The risk impact time frame is a measure of how soon the impact of the risk may occur. It is usually expressed as short, medium, or long based on the period of time (e.g. months) within which action must be taken to successfully mitigate the risk.

ATTACHMENT 6 – References

This Attachment contains a list of documents that were referenced during the creation of the Clearinghouse FSR.

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Reference Documentation List

The following is a list of the reference material that was made available to the Pacific Project Management, Inc. team, for background information and research purposes.

1. Advisory Team List – a list of the Clearinghouse Advisory Team Members and their organizational affiliations.
2. Application Cover Sheet – The California Endowment grant application details.
3. Budget Change Proposal – the BCP for the proposed Clearinghouse Project staff augmentation, 30 November 2007.
4. Closing the Health Workforce Gap in California: The Education Imperative – a report published by the Campaign for College Opportunity
5. Healthcare Workforce Clearinghouse Fact Sheet – a one page summary of the background, related legislation, data collection and benefits of the Healthcare Workforce Clearinghouse.
6. Clearinghouse HWDD Workplan 1 – a list of the Workforce Clearinghouse Program Implementation Activities for:
   - Phase 1 – Needs Assessment
   - Phase 2 – Program Planning and Coordination
   - Phase 3 - Implement Technical Solution
7. CSU Report – a CSU Fresno report on Health Reform 2007, Impact on the Valley.
8. DCA Health Licensing Boards – a list of the Licensing Boards including contact information.
9. Enterprise Architecture – IT Enterprise Architecture Revised Bricks report, dated 21 February 2006.
10. Expanded Phase SPR Final – Special Project Report for the MIRCal Emergency Departments and Ambulatory Surgery Centers expansion, 24 September 2002.
11. Final Budget Change Proposal - the final BCP for the proposed Clearinghouse Project staff augmentation, 3 December 2007.
12. Final OSHPD IAR – the BASE Consulting Group's Information Access Roadmap. Through the IAR, BASE provided insight into best practices for its ISS and business community regarding maintenance and support of an Enterprise Information Architecture. The purpose of this initiative was to identify a long-term technical strategy to allow OSHPD's business community and its customers simple and flexible access to enterprise-wide information.
13. Health Professions List – an OSHPD published list of all the health professions.
14. HWCDD Needs Assessment – the HWCDD (now HWDD) GIS Needs Assessment, 30 April 2003.
15. Workforce Clearinghouse (SB139) Development Project Charter – 20 November 2007.

16. SB139 RFO – Request for Offer for Healthcare Workforce Clearinghouse Feasibility Study Report.
17. SB139 – Senate Bill 139 content.
18. SB139 Analysis – February 2007 legislative analysis of SB139 by Patrick Sullivan, Assistant Director for Legislative Affairs.
19. SB139 Supplemental Analysis – May 2007 legislative analysis of the May 2007 amendments to SB139 Patrick Sullivan, Assistant Director for Legislative Affairs.
20. Strategic Plan, HWCDD (now HWDD) – Annual Report for Fiscal Year 2005/06.
21. TCWF Whitepaper – Developing the California Health Care Workforce of Tomorrow report, authored by Field Research Corporation May 2006.
22. UC Report – Advisory Council on Future Growth in the Health Professions, January 2007.