U.S. Department of Commerce
Broadband Technology Opportunities Program
Authentication and Certifications

1. I certify that I am the duly Authorized Organization Representative (AOR) of the applicant organization, and that I have been authorized to submit the attached application on its behalf.

2. I certify that I have examined this application, that all of the information and responses in this application, including certifications, and forms submitted, all of which are part of this grant application, are material representations of fact and true and correct to the best of my knowledge, that the entity(ies) that is requesting grant funding pursuant to this application and any subgrantees and subcontractors will comply with the terms, conditions, purposes, and federal requirements of the grant program; that no kickbacks were paid to anyone; and that a false, fictitious, or fraudulent statements or claims on this application are grounds for denial or termination of a grant award, and/or possible punishment by a fine or imprisonment as provided in 18 U.S.C. §1001 and civil violations of the False Claims Act.

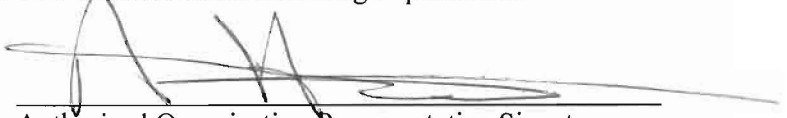
3. I certify that the entity(ies) I represent has and will comply with all applicable federal, state, and local laws, rules, regulations, ordinances, codes, orders and programmatic rules and requirements relating to the project. I acknowledge that failure to do so may result in rejection or deobligation of the grant or loan award. I acknowledge that failure to comply with all federal and program rules could result in civil or criminal prosecution by the appropriate law enforcement authorities.

4. I certify that the entity(ies) I represent has and will comply with all applicable administrative and federal statutory, regulatory, and policy requirements set forth in the Department of Commerce Pre-Award Notification Requirements for Grants and Cooperative Agreements ("DOC Pre-Award Notification"), published in the Federal Register on February 11, 2008 (73 FR 7696), as amended; DOC Financial Assistance Standard Terms and Conditions (Mar. 8, 2009); the Department of Commerce American Recovery and Reinvestment Act Award Terms (Apr. 9, 2009); and any Special Award Terms and Conditions that are included by the Grants Officer in the award.

5. I certify that any funds awarded to the entity(ies) I represent as a result of this application will not result in any unjust enrichment of such entity(ies) or duplicate any funds such entity(ies) receives under federal universal service support programs administered by the Universal Service Administrative Corporation (USAC).

6. I certify that the entity(ies) I represent has secured access to pay the 20% of total project cost or has petitioned the Assistant Secretary of NTIA for a waiver of the matching requirement.

3/12/2010
Date


Authorized Organization Representative Signature

Ahmad Hakim-Elahi Ph.D., J.D.
Print Name

Executive Director, Research Administration
Title

BTOP Public Computer Center and Sustainable Broadband
Detailed Budget

Please complete the Detailed Budget, breaking out individual line items under each category heading (add rows to each section as necessary to accomodate your line items). Please ensure that line item total columns in the "General" and "Detail" sections are equal for each line item (a cell with a yellow highlight indicates an inconsistency). Also, you may utilize the provided space for additional notes , if desired (there is also a Budget Narrative question in the application in which you will provide narrative detail on this budget).

Specifics needed for each cost category line item:

Personnel: For each position, list the number of positions, the location or geography of position, the job/task responsibilities for the position, the annual salary, and the percent of time a person filling the position will spend working on the proposed BTOP project. For lines with more than one position, the Quarters Employed field should represent number of quarters per person (*e.g.,* for two employees each working for one year, Quarters Employed should be 4 rather than 8).

Fringe: For each position, note the number of positions, the annual salary, the percent of time a person filling this position will spend working on the proposed BTOP project, and the fringe rate applied to the position. For lines with more than one position, the Quarters Employed field should represent number of quarters per person (*e.g.* for two employees each working for one year, Quarters Employed should be 4 rather than 8).

Equipment: List all equipment units required for the project and provide program purpose. For each line item, note the number of units and the unit cost. The multiple of these two factors will yield the total for that line item. For example, an Applicant planning to buy 100 laptops at $500/laptop would have a total line item cost of $50,000. Again, although unit costs may include cents, once multiplied by the number of units, the result must be rounded to the nearest whole dollar. Clearly separate Applicant equipment and user equipment, as indicated in the detailed budget template. When providing the unit cost indicate whether the unit cost has been impacted by a discount and for software equipment list specific package names.

Travel: For each trip list the program purpose of the trip, destination city and the number of people traveling. For each line item (e.g., trip), note the number of trips and the cost per trip. The multiple of these two factors will yield the total for that line item. For example, if the Applicant was accounting for 10 trips at $25 per trip, the total cost would be $250. The cost per trip should be justified on its own, *not* derived by dividing the line item total by the number of trips. Such a calculation will prompt further inquiry from the reviewers about justification for the trip cost. Rather, the *total* trip cost should be derived from the number of trips *times* the justifiable cost per trip.

Supplies: Separate supplies by item type, describing the program purpose or use. For each line item, note the number of units and the nit costs. The multiple of these two factors will yield the total for that line item. For example, an Applicant planning to buy 20 boxes of printer paper at $30/box would have a total line item cost of $600. Again, although unit costs may include cents, once multiplied by the number of units, the result must be rounded to the nearest whole dollar.

Other: Separate item types; for awareness program cost items, such as ads, separate ad types (TV, radio, newspaper, etc) and include geography in which they will run.

Contractual: For each line item, identify the contractor and note the number of contracted hours of service and hourly rate, if applicable. For example, an Applicant planning to hire a technology consultant for 100 hours at a rate of $40/hour would have a total line item cost of $4,000.

Indirect: Provide the indirect rate and basis used. In the space provided at the bottom of the page briefly explain the calculation used to derive the indirect costs (including the indirect rate and what is included in the basis). If a negotiated indirect cost rate agreement exists and is being used, please

is included in the basis). If a negotiated indirect cost rate agreement exists and is being used, please identify the cognizant agency.

The category subtotals for this Detailed Budget should correspond to the data provided in your SF-424A, and both the SF-424 budget and this Detailed Budget should match the Federal Grant Request and Total Match Amount provided on the Project Budget page of the application. Please review both budget attachments, the budget narrative in the application, and the Project Budget page for consistency before submitting the application. If you are a submitting a PCC project with an SF-424C instead of an SF-424A, the sections of this Detailed Budget will not align directly with categories of the SF-424C, but you should complete this Detailed Budget, allocating costs to the appropriate cost categories.

The data provided via this template will be subject to automated processing. Applicants are therefore required to provide this attachment as an Excel file, and not to convert it to a PDF prior to submitting a copy of their application on an appropriate electronic medium, such as a DVD, CD-ROM, or flash drive. Additionally, applicants should not modify the format of this file.

BTOP Public Computer Center and Sustainable Broadband Adoption
Detailed Budget Template

Easy Grants ID: **4871**
Applicant: University of California, Davis
Project Title: California Telehealth Network eHealth Broadband Adoption

SF-424A Object Class Category	General				Detail				
a. Personnel - List position, number of staff, annual salaries, % time spent on project	**Position**	**Federal Support**	**Matching Support**	**Total**	**# of Positions**	**Salary**	**% Time Spent on Project**	**Quarters Employed**	**Total**
									$0.00
Curriculum Development & Training									$0.00
On-Line Training									
	eHealth Educator, Analyst V	$228,871		$228,871	3.20	$ 71,634	50%	8.00	$ 228,871
	Clinical Educator, MSP III	$399,375		$399,375	3.20	$ 125,000	50%	8.00	$ 399,375
	Physician Educator, Clinical Faculty	$404,700		$404,700	2.13	$ 190,000	50%	8.00	$ 404,700
On-Site Training									
	Tech Support, Analyst III	$53,244	$ -	$53,244	1	$ 59,160	45%	8.00	$ 53,244
	Clinical Educator, MSP III	$112,500	$ -	$112,500	1	$ 125,000	45%	8.00	$ 112,500
	Physician Educator, Clinical Faculty	$38,000	$ -	$38,000	1	$ 190,000	10%	8.00	$ 38,000
									$ -
				$0					$ -
Executive Management				$0					$ -
	Medical Director, Assoc. Vice Chancellor	$67,000		$67,000	1	$ 335,000	10%	8.00	$ 67,000
	Executive Director, MSP VII		$ 399,400	$399,400	1	$ 199,700	100%	8.00	$ 399,400
	Asst. Director, MSP VI		$ 375,000	$375,000	1	$ 187,500	100%	8.00	$ 375,000
	Manager of Operations, Analyst VI		$ 176,000	$176,000	1	$ 88,000	100%	8.00	$ 176,000
	General Admin Assistant, Admin. Assist. II	$79,116		$79,116	1	$ 39,558	100%	8.00	$ 79,116
	ARRA Grant Project Manager, Analyst IV	$130,000		$130,000	1	$ 65,000	100%	8.00	$ 130,000
FCC Admin. & Finance									$ -
	Finance Analyst, Accountant III	$130,380		$130,380	1	$ 65,190	100%	8.00	$ 130,380
	Contractor Liaison	$118,320		$118,320	1	$ 59,160	100%	8.00	$ 118,320
	Admin Assistant II	$79,116		$79,116	1	$ 39,558	100%	8.00	$ 79,116
	Billing Technician	$79,116		$79,116	1	$ 39,558	100%	8.00	$ 79,116
Database Support									$ -
	Database Technician, Programmer VI	$157,656		$157,656	1	$ 78,828	100%	8.00	$ 157,656
	Data Entry, Admin Asst II	$79,116		$79,116	1	$ 39,558	100%	8.00	$ 79,116
HIE Integration and Implementation									$ -
	Telecom Policy Analyst, Analyst V		$ 143,268	$143,268	1	$ 71,634	100%	8.00	$ 143,268
	Programmer, Programmer V	$143,268		$143,268	1	$ 71,634	100%	8.00	$ 143,268
Network Technical									
	Monitoring Tech, Programmer III	$59,160	$ 59,160	$118,320	1	$ 59,160	100%	8.00	$ 118,320
Web Communications				$0					
	Communications Analyst, Analyst III	$118,320		$118,320	1	$ 59,160	100%	8.00	$ 118,320
				$0					
				$0					
				$0					
				$0					
				$0					
				$0					
				$0					$ -
				$0					$ -
				$0					$ -
Subtotal		**$2,477,258**	**$ 1,152,828**	**$3,630,086**					

b. Fringe Benefits - Include salaries and fringe rate.	**Position**	**Federal Support**	**Matching Support**	**Total**	**# of Positions**	**Salary**	**% Time Spent on Project**	**Quarters Employed**	**Fringe Rate**	**Total**
Curriculum Development & Training										
On-Line Training										
	eHealth Educator, Analyst V	$68,661		$68,661	3.20	$ 71,634	50%	8.00	30%	$68,661
	Clinical Educator, MSP III	$119,813		$119,813	3.20	$ 125,000	50%	8.00	30%	$119,813
	Physician Educator, Clinical Faculty	$121,410		$121,410	2.13	$ 190,000	50%	8.00	30%	$121,410
On-Site Training										
	Tech Support, Analyst III	$15,973		$15,973	1	$ 59,160	45%	8.00	30%	$15,973
	Clinical Educator, MSP III	$33,750		$33,750	1	$ 125,000	45%	8.00	30%	$33,750
	Physician Educator, Clinical Faculty	$11,400		$11,400	1	$ 190,000	10%	8.00	30%	$11,400
Executive Management										
	Medical Director, Assoc. Vice Chancellor	$20,100		$20,100	1	$ 335,000	10%	8.00	30%	$20,100
	Executive Director, MSP VII		$119,820	$119,820	1	$ 199,700	100%	8.00	30%	$119,820
	Asst. Director, MSP VI		$112,500	$112,500	1	$ 187,500	100%	8.00	30%	$112,500
	Manager of Operations, Analyst VI		$52,800	$52,800	1	$ 88,000	100%	8.00	30%	$52,800
	General Admin Assistant, Admin. Assist. II	$23,735		$23,735	1	$ 39,558	100%	8.00	30%	$23,735
	ARRA Grant Project Manager, Analyst IV	$39,000		$39,000	1	$ 65,000	100%	8.00	30%	$39,000
FCC Admin. & Finance										
	Finance Analyst, Accountant III	$39,114		$39,114	1	$ 65,190	100%	8.00	30%	$39,114
	Contractor Liaison	$35,496		$35,496	1	$ 59,160	100%	8.00	30%	$35,496
	Admin Assistant II	$23,735		$23,735	1	$ 39,558	100%	8.00	30%	$23,735
	Billing Technician	$23,735		$23,735	1	$ 39,558	100%	8.00	30%	$23,735
Database Support										
	Database Technician, Programmer VI	$47,297		$47,297	1	$ 78,828	100%	8.00	30%	$47,297
	Data Entry, Admin Asst II	$23,735		$23,735	1	$ 39,558	100%	8.00	30%	$23,735
HIE Integration and Implementation										
	Telecom Policy Analyst, Analyst V		$42,980	$42,980	1	$ 71,634	100%	8.00	30%	$42,980
	Programmer, Programmer V	$42,980		$42,980	1	$ 71,634	100%	8.00	30%	$42,980
Network Technical										
	Monitoring Tech, Programmer III	$17,748	$17,748	$35,496	1	$ 59,160	100%	8.00	30%	$35,496
Web Communications										
	Communications Analyst, Analyst III	$35,496		$35,496	1	$ 59,160	100%	8.00	30%	$35,496
										$0
Subtotal		**$743,177**	**$345,848**	**$1,089,026**						

c. Travel - For significant costs, include details such as number and purpose of trips, destinations.	**Purpose of Trip**	**Federal Support**	**Matching Support**	**Total**	**# of Trips**	**Cost per Trip**	**Total**
National Travel	National Meetings/Conferences (3 trips/year for 2 staff)	$36,000	$0	$36,000	12	$ 3,000	$36,000
Statewide Travel	Equipment Installation (State)	$120,000	$0	$120,000	200	$ 600	$120,000
	Conduct Trainings & Regional Meetings (State)	$24,000	$0	$24,000	40	$ 600	$24,000
				$0			
Subtotal		**$180,000**	**$0**	**$180,000**			

d. Equipment Costs - List equipment with # of units and unit costs. Distinguish between equipment intended for applicant use versus equipment for the end user.	**Equipment Description**	**Federal Support**	**Matching Support**	**Total**	**#Units**	**Unit Cost**	**Total**
Applicant Equipment							
				$ -			-
				$ -			-

				$ -			-
				$ -			-
User Equipment							
HIE/eHealth equipment	Standardized end-user eHealth equipment purchased as unit	$ 4,443,170	$ 1,556,830	$ 6,000,000	200	$ 30,000	6,000,000
	(Pole mounted telemedicine unit consisting of: HD videoconferencing			$ -			-
	codec w/camera, and general exam camera; Integrated medical cart;			$ -			-
	20" LCD monitor; peripherals and support)			$ -			-
Subtotal		**$ 4,443,170**	**$ 1,556,830**	**$ 6,000,000**			

e. Supplies - List costs associated with materials/printing, curriculum, translations, and other supplies	**Description**	**Federal Support**	**Matching Support**	**Total**	**#Units (If Applicable)**	**Unit Cost (If Applicable)**	**Total**
	Laptop Computers for Training Staff	$72,000	$0	$72,000	24	$ 3,000	$72,000
	Printing Costs (on-site training)	$4,800	$0	$4,800	6	$ 8,000	$48,000
Subtotal		**$76,800**	**$0**	**$76,800**			

f. Contractual - List contractors with purpose of contract, hourly rate or total fixed rate.	**Contractor**	**Federal Support**	**Matching Support**	**Total**	**# Hours (If Applicable)**	**Hourly Rate (If Applicable)**	**Total Contract**
Internet Connectiviey (TBN)	Cost Based on comparative pricing	$ -	$ 177,210	$ 177,210			$177,210
CalHIPSO	Costs estimate based curriculum development and training for	$ -	$ 265,000	$ 265,000			$265,000
	Local Extension Centers						$480,000
California Community Colleges	CCC faculty - 2 Year contracts with 4 CCC for 5 faculty @ 10%	$ -	$ 480,000	$ 480,000			
	of $100,000 annual salary and associated IDC of 20%						
Subtotal		**$ -**	**$ 922,210**	**$ 922,210**			

g. Construction - If applicable, list construction costs	**Description**	**Federal Support**	**Matching Support**	**Total**
				$0.00
				$0.00
				$0.00
				$0.00
Subtotal		**$0.00**	**$0.00**	**$0.00**

h. Other - List costs associated with grant subrecipients as well as other costs not listed above such as rent, technology (website hosting, internet connection), advertising (TV, radio, online), etc.	**Description**	**Federal Support**	**Matching Support**	**Total**	**#Units (If Applicable)**	**Unit Cost (If Applicable)**	**Total**
Multi Module eHealth Curriculum	Professional Services EHP Tier 1 140 hrs @$125/hr ($17,500)		$187,300.00	$187,300.00			$187,300.00
UC Davis Extention	Professional Services EHP Tier 2 140 hrs @$80 (11,200)						
	46 finished production hrs - 7 modules ($147,200)						
	Course revisions - up to 80 hrs production ($6400)						$0.00
	Set up customized Moodle site ($5000)						$0.00
							$0.00
Subtotal		**$0.00**	**$187,300.00**	**$187,300.00**			

i. Total Direct Charges (sum of a-h)	**$7,920,405**	**$4,165,016**	**$12,085,421**
j. Indirect Charges	**$1,224,623**	**$512,252**	**$1,736,875**

Total Eligible Project Costs		**$9,145,027**	**$4,677,269**	**$13,822,296**
Match Percentage		**34%**		

Explanation of Indirect Charges

Additional Budget Notes

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. BTOP	11.557	$	$	$ 9,145,027.00	$ 4,677,269.00	$ 13,822,296.00
2.						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 9,145,027.00	$ 4,677,269.00	$ 13,822,296.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1)	(2)	(3)		(5)
a. Personnel	$ 2,477,258.00	$	$	$	$ 2,477,258.00
b. Fringe Benefits	743,177.00				743,177.00
c. Travel	180,000.00				180,000.00
d. Equipment	4,443,170.00				4,443,170.00
e. Supplies	76,800.00				76,800.00
f. Contractual					0.00
g. Construction					0.00
h. Other					0.00
i. Total Direct Charges *(sum of 6a-6h)*	7,920,405.00	0.00	0.00	0.00	7,920,405.00
j. Indirect Charges	1,224,623.00				1,224,623.00
k. TOTALS *(sum of 6i and 6j)*	$ 9,145,028.00	$ 0.00	$ 0.00	$ 0.00	$ 9,145,028.00
7. Program Income	$ 0.00	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8. BTOP	$ 750,000.00	$ 0.00	$ 3,927,269.00	$ 4,677,269.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 750,000.00	$ 0.00	$ 3,927,269.00	$ 4,677,269.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 0.00	$	$	$	$
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16. BTOP	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges:	22. Indirect Charges:
23. Remarks:	

OMB Approval No: 4040-0007
Expiration Date: 07/30/2010

ASSURANCES - NON-CONSTRUCTION PROGRAMS

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE OFFICE OF MANAGEMENT AND BUDGET. SEND IT TO THE ADDRESS PROVIDED BY THE SPONSORING AGENCY.

NOTE: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application.

2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.

3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.

4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency

5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).

6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U. S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.

7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.

8. Will comply, as applicable, with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.

10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is $10,000 or more.

11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).

12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.

13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a -1 et seq.).

14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.

15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. §§2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.

16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.

17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."

18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.

* SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL	* TITLE
	Executive Director
* APPLICANT ORGANIZATION	* DATE SUBMITTED
The Regents of the University of CA	3/12/2010

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Ahmad Hakim-Elahi, Ph.D., J.D.
Executive Director, Research Admin[illegible]

Supplemental Upload

The following documents are included in the Supplemental Upload:

- Training Strategy Diagram
- Training Overview
- Bios of Health Informatics Faculty
    - Carroll Bio
    - Geraghty Bio
    - Hogarth Bio
    - Malyj Bio
    - Odor Bio
- “Your Health in the Information Age” by P. Yellowlees, MD
- Example of Model eHealth Community
- California Telehealth Network: Technical Diagram
- California Telehealth Network: Sustainability Plan

CTN eHealth Adoption Training Strategy

Education and Operating Support for 863 CTN Sites to Adopt Broadband via CTN to Advance Health

Curriculum Development Team

- *HIE/EHR Adoption (CalHIPSO)*
- *Telehealth (CHT)*
- *Informatics/eHealth & Decision Support (UCD Informatics)*

Delivery Expertise Team

CalHIPSO (via LECs)	UC Ag & Natural Res.	UCD Extension	CHT	CA Community Colleges
Leverage content for non-FCC sites adoption of EHR and HIE Adoption	Leverage content to provide community training programs	Online e-Health Informatics and TH Courses	Onsite TH Courses	Leverage content to enrich existing Clinician training programs

SBA Training Overview

Curriculum		Participants				Content Description	Implementation Method	Notes
Content	**Total Hours**	**100 Select Super Users**	**763 Remaining Sites**	**CalHIPSO**	**Librarians/Community College Faculty/Others**			
Change Management	8	Required/ No charge	Available at No-Charge	Available / FFS	Available / FFS	*CTN instructors will collaborate with UCEx for development of change management content. *HI has work with UC Ex.	* On-line delivery via UC Extension over CTN * Possible delivery through DANR to existing rural community partnerships. * Content leveraged through CA Community Colleges	
Broadband Adoption	2	Required/ No charge	Available at No-Charge	Available / No Charge	Available / FFS	* CTN to create content that provides overview of broadband, neccessity/value and additional information necessary to support BB adoption. * Every health facility that connects to CTN will be required to assign one technical support person to take the course to assist them with learning the various benefits of CTN and understand troubleshooting basics.	* On-line delivery via UC Extension over CTN * Possible delivery through DANR to existing rural community partnerships. * Content leveraged through CA Community Colleges	
CTN Orientation	2	Required/ No charge	Required/No-Charge	Available / FFS	Available / FFS	CTN to create content that provides overview of technical assistance, guidance, and information necessary to support CTN use.	* On-line delivery via UC Extension over CTN * Possible delivery through DANR to existing rural community partnerships. * Content leveraged through CA Community Colleges	

EHR/HIE Adoption	12	Required/ No charge	Available at No-Charge	Available at No Charge	Available / No Charge	*Collaborate with CalHIPSO to identify content that provides overview of technical assistance, guidance, and information necessary to support to support and accelerate health care providers' efforts to become meaningful users of EHRs/HIE. *Bring REC services for providers that don't qualify for REC. Ubiquitous healthcare delivery.	* CalHIPSO Instructors will deliver the curricula and teach the on-site eHealth courses. *Adapt EHR curriculum to overarching goal of eHealth goal - optional module for providers - "what is meaningful use" * Possible delivery through DANR to existing rural community partnerships. *Content leveraged through CA Community Colleges	
Telehealth (certificate program)	24	Required/ No charge	Available at No-Charge	Available at FFS	Available / FFS	Mini-certificate program design to assist sites in starting and expanding telehealth programs (includes in-depth strategic planning, budget development, technical and clinical details, ties to HI/HIE/EHR, etc.)	* On-line delivery via UC Extension over CTN and on-site delivery via CHT eHealth Trainers. * Possible delivery through DANR to existing rural community partnerships * Content leveraged through CA Community Colleges	
Consumer Health Informatics	6	Required/ No charge	Available at No-Charge	Available at FFS	Available / FFS	* UCD Health Informatics Program will provide curriculum development and education * Both conumer and clinician course will explore aspects of how acquisition, storage, retrieval and use of information can enhance the quality of care, reducing the costs of delivery and addressing population health issues.	* On-line delivery via UC Extension over CTN * Possible delivery through DANR to existing rural community partnerships. * Content leveraged through CA Community Colleges	*Include CVs for local faculty as upload *Scan cover of HI book *Consultation individuals are new users of broadband = new subscribers - especially underserved (ie. Latino)

Clinician Health Informatics	6	Required/ No charge	Available at No-Charge	Available / FFS	Available / FFS	UCD Health Informatics Program will provide curriculum development and education	* On-line delivery via UC Extension over CTN * Possible delivery through DANR to existing rural community partnerships. * Content leveraged through CA Community Colleges	

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME	POSITION TITLE
Mark J. Carroll, MPH	Assistant Director, Health Informatics Graduate Program Lecturer, Department of Pathology and Laboratory Medicine - Division of Pathology Informatics University of California, Davis Public Health Informaticist
eRA COMMONS USER NAME (credential, e.g., agency login)	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
St. Mary's College of California	BS	1996	HealthCare Admin.
University of Illinois, Chicago	MPH	2006	Informatics/Epidemiology

A. Personal Statement

During my time within the Biotech and Pharmaceutical Industries, I was tasked with the management of several projects. These projects mainly focused on the collection and analysis of adverse events documented within a specific geographical area. My team and I were consistently monitoring medical entities of all sizes. At any given time, I was responsible for the management of a large group of adverse events representatives. This experience will allow me to manage different portions of this grant with expertise.

I have been successfully working within informatics for some time now and along with my experiences training/educating in the Pharmaceutical, Biotech and Informatics areas; I will bring an ability to professionally develop products in a timely and efficient manner. I have been working diligently with our director, Dr. Yellowlees, to increase both the number of students and the number of quality course offerings within the health informatics program. I have been very successful meeting the deliverables required for each of the grants I have been a part of and believe my background will bring a strong ability to the development and implementation of this grant opportunity.

B. Positions and Honors

Positions and Employment

1991-1997 Pathology Products -Technical Training Manager Biogenex Laboratories San Ramon, CA.
1997-1998 Territory Business Manager Bristol-Myers Squibb Princeton, NJ.
1998-2003 Pharmaceutical Marketing Manager Pharmacia/Pfizer Pharmaceuticals New York, NY.
2005-2007 Graduate Research Assistant State of California Department of Health and Human Services Sacramento, CA.
2007-2008 Public Health Information Specialist University of California, Davis Sacramento, CA.
2008-2009 Student Recruitment Specialist Health Informatics Program University of California, Davis Sacramento, CA.
2008- Public Health Informaticist Health Informatics Program University of California, Davis Sacramento, CA.
2008- Faculty, University of California, Davis Extension – Certificate Health Informatics Davis, CA.
2009- Assistant Director, Health Informatics Graduate Program University of California, Davis Sacramento, CA.

2009- Lecturer, Department of Pathology and Laboratory Medicine – Division of Pathology Informatics
University of California, Davis Sacramento, CA.

C. Selected Peer-reviewed Publications

As necessary for academic appointment, several peer-reviewed articles are currently being worked on.

D. Research Support

Grants Completed

1-HFPEP070013-01-00 Sandrock (PI) 2007-2009
Hospital Bioterrorism Surge Capacity
The goal of this study is to develop a feasible model of hospital bioterrorism response.
Role: Investigator

California Department of Public Health 2006-2009
California Laboratory Readiness Project
The goal of this project is to develop interoperable laboratory systems for California Department of Public Health.
Role: Investigator

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME	POSITION TITLE
Geraghty, Estella Marie	Assistant Professor of Clinical Internal Medicine
eRA COMMONS USER NAME (credential, e.g., agency login) EGERAGHTY	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Scripps College, Claremont, CA	B. A.	1994-1996	Biology
University of California, Davis, CA	M.D.	1997-2002	Medicine
University of California, Davis, CA	M.S.	2001-2002	Medical Informatics
University of California, Davis, CA	Diploma	2005-2006	Teaching Scholar
University of California, Davis, CA	M.P.H.	2005-2006	Public Health
University of California, Davis, CA	Diploma	2005-2007	Primary Care Outcomes Research Fellowship
American River College, Sacramento, CA	Certificate & A.S.	2007-2009	Geographic Information Systems

A. Personal Statement.

My research area of interest is spatial epidemiology and geographic information systems (GIS), a field that deals with the spatial/geographic distribution of disease and/or exposures. The GIS portion relates to the software program that performs spatial analysis and creates maps/diagrams to present data. I have completed a certificate and Associate of Science degree in this area and teach a graduate level course using GIS for health applications. Since over 80% of all health data has a 'spatial' component, this methodology is a highly relevant and underused field of inquiry. One of my current projects focuses on exposure prediction models for ambient pollutants, pollens and mold spores. Another study is a multi-disciplinary, multi-scalar, mixed-method approach to understanding youth outcomes in a 9-county Sacramento region. Outcomes, including health, are analyzed by their geographies to understand disparities and vulnerabilities in the population. Based on my informatics and public health education, combined with my expertise in Geographic Information Systems, I am well equipt to provide a high level educational experience for students seeking informatics training.

B. Positions and Honors.

Positions and Employment

2001-2002 Research Assistant II, University of California, Davis, Department of Radiology Research, Sacramento, CA
2002-2003 Internal Medicine Preliminary Year, University of Utah Affiliated Hospitals, Salt Lake City, UT
2003-2005 Internal Medicine Resident, California Pacific Medical Center, San Francisco, CA
2005-2007 Primary Care Outcomes Research Fellow, University of California, Davis, CA
2007-2007 Associate Physician, Division of General Medicine, University of California, Davis, CA
2007-present Assistant Professor of Clinical Internal Medicine, University of California, Davis, CA

Other Experience and Professional Memberships

1998-present Member, Sierra Sacramento Valley Medical Society
2002-present Physician Member, American Medical Student Association
2004-present Member, American College of Physicians
2005-present Member, Society of General Internal Medicine
Member, California Medical Association

Member, American Medical Informatics Association
2006-present Founding President, UCD MPH Graduate Network
2007-present Member, ESRI Health GIS User Group
Exec Committee, Health Informatics Graduate Group, UC Davis School of Medicine
Member, Public Health Sciences Graduate Group, UC Davis School of Medicine
Member, Faculty Development Advisory Council, UC Davis
2009-present Member, Epidemiology Graduate Group, UC Davis
Member, Faculty Forward Task Force, Association of American Medical Colleges

Honors

2004 Abstract & Poster Contest, California 2nd Place Winner, American College of Physicians
2005 Abstract & Poster Contest, National Winner, American College of Physicians
2007 Abstract & Oral Presentation, Mack Lipkin Sr. Associate Award, Society of General Internal Medicine
2008 Saddleback College Commencement Keynote Speaker
2009 Elected to Fellowship in American College of Physicians

C. Selected peer-reviewed publications (in chronological order).

1. Nehlsen-Cannarella SL, Fagoaga OR, Nieman DC, Henson DA, Butterworth DE, Schmitt RL, Bailey EM, Warren BJ, Utter A, Davis JM. "Carbohydrate and the cytokine response to 2.5 h of running." Journal of Applied Physiology, 1997 May, 82(5):1662-7.
2. Bailey-Geraghty EM. "Are medical students ready for the digital age?" Western Journal of Medicine, 2002 Mar;176(2):137-8. PMCID: PMC1071690
3. Bailey-Geraghty EM, Jerant AF, Yeung KW. "Value of decision support software shown to be limited for preclinical medical students." Family Medicine, 2002 October;34(9):639-640.
4. Boone JM, Geraghty EM, Seibert JA, Wootton-Gorges SL. "Dose reduction in pediatric CT: A rational approach." Radiology, 2003 Aug;228(2):352-60.
5. Geraghty EM., Boone JM. "Determination of height, weight, body mass index and body surface area with a single abdominal CT image." Radiology, 2003 Sep;228(3):857-63.
6. Geraghty EM, Boone JM. "Bland-Altman Plot [Letter] Response." Radiology, 2004;231:604-605.
7. Geraghty EM, Boone JM, McGahan JP, Jain K. "Normal organ volume assessment (NOVA) from abdominal CT." Abdominal Imaging, 2004 Jul-Aug;29(4)482-90.
8. Lau D, Seibert A, Gandara D, Laptalo L, Geraghty E, Coulon C. "Computer-assisted image analysis of bronchioloalveolar carcinoma." Clin Lung Cancer, 2005 Mar;6(5):281-6.
9. Geraghty E, Ristow B, Gordon S, Aronowitz P. "Overwhelming parasitemia with Plasmodium falciparum infection in a patient on infliximab for Rheumatoid arthritis." Clinical Infectious Diseases, 2007 May 15;44(10);e82-84.
10. Geraghty E, Franks P, Kravitz RL. "Primary Care Visit Length, Quality and Satisfaction for Standardized Patients with Depression." Journal of General Internal Medicine, 2007 Dec; 22(12):1641-7. PMCID: PMC2219826
11. Leigh, JP, Geraghty EM. "High Gasoline Prices and Mortality from Vehicle Crashes, Reduced Income and Air Pollution." Journal of Occupational and Environmental Medicine, 2008 Mar; 50(3):249-254.
12. Geraghty E, Balsbaugh T, Nuovo J, Tandon S. "Using Geographic Information Systems (GIS) to Assess Outcome Disparities in Patients with Type 2 Diabetes and Hyperlipidemia." Journal of the American Board of Family Medicine, 2010 Jan-Feb; 23:88-96.

D. Research Support

Healthy Youth / Healthy Regions Oct 2008 – Aug 2010
Sierra Health Foundation, The California Endowment
Principal Investigator: Jonathan London, PhD, Role: Co-Principal Investigator

Adapting the I2B2 Architecture to Support Cross-Institutional Clinical Nov 17, 2008-Nov 16, 2010

Translational Research
Principal Investigator: Nicholas Anderson, PhD, MS, Role: Collaborator

Aerial pesticide spraying for West Nile Virus mosquito control and the incidence of health complaints in California — July 2008-June 2011
UC Davis CTSC K-12 Career Development Award
Role: Principal Investigator

Aerial Pesticide Spraying and Health Complaints — Aug 2007-Present
NIH Loan Repayment Grant
Role: Principal Investigator

Primary Care Outcomes Research Fellowship – Training Award — Jul 2005-Jul 2007
Health Resources Services Administration, grant #D55 HP00232
Principal Investigator: Patrick S. Romano, MD, MPH, Role: Trainee

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME	POSITION TITLE
Michael Hogarth	Professor
eRA COMMONS USER NAME (credential, e.g., agency login)	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Texas A&M University, College Station, TX	B.S.	1981-1985	Biomedical Engineering
University of Texas Southwestern, Dallas, TX	M.D.	1987-1991	Medicine
UC Davis School of Medicine, Sacramento, CA		1991-1992	Internal Medicine
UC Davis, Department of Internal Medicine, Sacramento, CA	Resident	1991-1995	Internal Medicine
UC Davis, Department of Pathology, Sacramento, CA	Fellowship	1995-1997	Medical Informatics

A. Positions and Honors

Positions and Employment

1997-2004 UC Davis School of Medicine, Davis, CA, Assistant Professor
2000-2001 Oracle Corporation, Redwood Shores, CA, Clinical Informaticist/Architect
2004-present UC Davis School of Medicine, Davis, CA, Professor

Other Experience and Professional Memberships

Member (appointed by the Vice Provost of Information Technology) - UC Davis MediaWorks Faculty Board
2003 - present Open Source Working Group - American Medical Informatics Association
2003-2004 Member (appointed by Vice Chancellor for Research) - UCD Sun Corp. Center For Excellence Advisory Committee
2005 - present Member - UC Davis Campus Council for Information Technology (CCFIT)
2005 - present Member - Technical Working Group, California Regional Healthcare Information Organization
2005-2006 Co-chair - Technical Working Group, California Regional Healthcare Information Organization
2005-present Member - UCOP Committee on Information Technology and Telecommunications Policy (ITTP)
2003 - 2005 Chair - Academic Senate Committee on Information Technology

Editorial Board

Honors

1995 Internal Medicine Housestaff Teaching Award, UC Davis School of Medicine
1985 Cum Laude, Texas A&M University
1985 Tau Beta Pi Engineering National Honor Society

B. Selected peer-reviewed publications (in chronological order).

1. Gertz M, Satler KU, Gorin FA, **Hogarth M**, Stone J. Annotating Scientific Images: A concept-based Approach. Proceedings of the 14th International Conference on Scientific and Statistical Database Management 2002, 2002.
2. Howell LP, **Hogarth MA**, Anders TF. Implementing a mission-based reporting system at an academic health center: a method for mission enhancement. Acad Med, 78(6): 645-51, 2003.
3. Srinivas PR, Gusfield D, Mason O, Gertz M, **Hogarth M**, Stone J, Jones EG, Gorin FA. Neuroanatomical Term Generation and Comparison Between Two Terminologies. Neuroinformatics Journal, 1(2): 177-92, 2003.
4. Elkin PL, Brown SH, Lincoln MJ, **Hogarth M**, Rector A. A Formal Representation for Messages Containing Compositional Expressions. International Journal of Medical Informatics, 71(2-3): 89-102, 2003.
5. Cardiff RD, Rosner A, **Hogarth MA**, Galvez JJ, Borowsky AD, Gregg JP. Validation: the new challenge for pathology. Toxicol Pathol, 32 Suppl 1: 31-9, 2004.
6. **Hogarth MA**, Gertz M, Gorin F. jTerm: an open source terminology server. AMIA Annu Symp Proc: 861, 2004.
7. Kravitz RL, Neufeld JD, **Hogarth MA**, Paterniti DA, Dager W, White R. The Long Road from Insight to Implementation: Lessons from a Multi-site Trial of a PDA-based Warfarin Dose Calculator. Advances in Patient Safety: From Research to Implementation. Agency for Healthcare Research and Quality (AHRQ): 395-409, 2005.
8. **Hogarth MA**, Turner S. A study of clinically related open source software projects. AMIA Annu Symp Proc: 330-4, 2006.
9. Peter Yellowlees, **Michael Hogarth**, Donald Hilty. The Importance of Distributed Broadband Networks to Academic Biomedical Research and Education Programs. Academic Psychiatry, 30(6): 451-455, 2006.
10. Yellowlees PM, Marks SL, **Hogarth M**, Turner S. Standards-based, open-source electronic health record systems: a desirable future for the U.S. health industry. Telemed J E Health, 14(3): 284-8, 2008.

C. Research Support

Ongoing Research Support

IA 04-35764 08/01/2005 - 12/31/2014
California Department of Health Services (CA-DHS)
California Electronic Death Registration System (CA-EDRS)Maintenance and Operations:Interagency Agreement
A contract to operate and manage the California Electronic Death Registration System (CA-EDRS) for California. The project also entails providing training and introducing the system to 61 local jurisdictions in California.
Role: Principal Investigator
Effort: 50%

Miller (PI) 05/01/2008 - 06/30/2009
Center Award, UC Davis Center for Clinical and Translational Science (CTSC)
A Biospecimen Repository Infrastructure for UC Davis
The goal of this project is to establish a biospecimen repository for serum samples and foster an institutional set of guidelines for management of biospecimens and biospecimen management systems
Role: Co-Investigator:

Effort: 5% in kind.

28XS197 Dr. Laura Esserman (PI) 9/08 - 3/09
National Cancer Institute
Subaward 5355sc - Translational Informatics System to Coordinate Emerging Biomarkers, Novel Agents, and Clinical Data
The purpose of TRANSCEND is to develop a clinical trials information management infrastructure in support of adaptive clinical trials involving novel therapeutic agents in breast cancer treatment
Role: Co-Investigator
Effort: 25%

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
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NAME	POSITION TITLE
Wasyl Malyj, Ph.D.	Founding Faculty Assoc Director of Research & Technology
eRA COMMONS USER NAME (credential, e.g., agency login)	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
University of California, Davis	Ph.D.	06/96	Biomedical Engineering

A. Personal Statement

As one of the founding faculty members of the Health Informatics Program in 1998, I have been deeply involved in the program for over a decade. I have taught MHI209, Clinical Data Acquisition & Analysis, MDI289A, Advanced Topics in Clinical Data Acquisition & Analysis, MHI207, Clinical Decision Support, and MHI299, Research in Health Informatics. I also mentor students and serve on thesis committees. In addition, I pursue research in instrumentation and algorithms in support of personalized medicine and nutrition, and genomics and proteomics. I consult to the Division of Personalized Nutrition and Medicine at the FDA and to VISN 23 of the Veterans Administration. I have been extremely pleased with the growth of our program in recent years and with its ability to attract capable and motivated graduate students. I have invited many of our students to join me in my work, and we have jointly presented our work in venues such as the American Medical Association Annual International Conference.

B. Positions and Honors

Professional Appointments:

*July 2007 – present. Director, Health Informatics Division, Novici Biotech, Vacaville, CA:*Direct discovery, development and implementation of health informatics products and algorithms in personalized clinical and home healthcare medical applications.

*June 2005 – January 2006. Director of Informatics – Predictive Diagnostics, Vacaville, CA:*Responsible for the strategic and tactical development and implementation of PDI's proprietary BAMF biomarker discovery algorithms in clinical medicine applications focused on cancers and autoimmune diseases.

*January 2003 – July 2008. Director & Chief Informatics Scientist - Bioinformatics Shared Resource Core - NIH NCMHD Center of Excellence in Nutritional Genomics, UC Davis:*Performed and directed research and development of high-performance informatic systems. A major focus was the development and application of new nonlinear dimensionality reduction algorithms which discover low-dimensional manifolds imbedded in high dimensional data from microarrays and mass spectra. The Bioinformatics Shared Resource Core team supported the multi-institutional NIH Center of Excellence headquartered at UC Davis, and involved the USDA Western Health Nutrition Research Center (WHNRC), Children's Hospital Oakland Research Institute (CHORI), Ethnic Health Institute (EHI), and UCD Medical Center.

April 2001 – December 2007. Senior Research Fellow & Consultant, Large Scale Biology Corporation, Vacaville, CA: Developed strategic plans for R&D and deployment of high-performance informatic systems.

1998-present. Founding faculty, Health Informatics Graduate Group: **Teach MHI209, a core course in Data Acquisition and Analysis; teach MHI207, a core course in Clinical Decision Support systems, teach MDI289A, an elective course in Advanced Topics in Data Acquisition and Analysis; and supervise Graduate Research in Informatics, MHI299. Mentor and direct students and serve on thesis committees**.

August 1997-2001 Chief, Computational Science & Advanced Technologies & Associate Director, Veterinary Genetics Laboratory (VGL), UC Davis: Led the design, implementation, and development of informatics and

instrumentation support and research covering all facets of sample handling, preparation, archiving, testing, and analysis involved in the service and research operations of the Veterinary Genetics Laboratory. Designed and directed informatic software development for pattern recognition and classification of STR (short tandem repeat) genomic markers.

1992-1997. DNA Team Leader & Chief Development Engineer, Veterinary Genetics Laboratory, UC Davis: Planned, designed, and led the initiation and implementation of DNA testing at VGL to supplant the forty-year-old bloodtyping tecnology. Led teams in genetic marker discovery, selection, and production development; in implementation of sample collection and archiving techniques; in production marker genotyping; and in informatics infrastructure development. Recruited international collaborators from academia and industry and generated consensus for an open-source array of genomic markers. Guided an informatic team in evaluation, development, and implementation of next-generation leading edge technologies for acquisition of biomedical data, classification and categorization of images and genomic sequences, frequency domain transformation, compression and archival storage of multi-dimensional data, and development of nonlinear approaches for data processing and analysis.In January of 1995, the new technologies were deployed and rapidly demonstrated their superiority. By 2000, VGL had become the leading Veterinary DNA testing facility in the world.

1991 Computerworld-Smithsonian Science Award Finalist: An international award recognizing five finalists for "heroic achievement in the application of Information Technology to the advancement of mankind." The award was given for my work in applying frequency-domain transforms and adaptive nonlinear systems to biomedical image understanding and classification problems. The other finalists were: NeXT Computer, Inc.; Project Center for Supercomputing, ETH Zurich; University of Maryland; and Wistar Institute-European Molecular Biology Laboratory. Semi-finalists included the Jet Propulsion Laboratory, Lockheed Missiles and Space Corporation, National Energy Research Supercomputer Center, Technical University of Munich, University of Chicago/Argonne National Laboratory, and others.

1983-1992. Chief Development Engineer, Veterinary Genetics Laboratory:

*1977-1983 Chief Development Engineer, MED: Human Physiology:*Designed and fabricated thin-film sapphire substrate and thick-film hybrid microelectronic biomedical telemetry hardware and associated computer systems for data acquisition, analysis, and simulation for the UC Davis School of Medicine, Department of Human Physiology. The thick-film hybrid used micropower digital logic and analog silicon microchips bonded directly onto the substrate. Powered by 30 microwatts supplied by silver-oxide button cells, this hardware multiplexed 20 channels of temperature data along with a pulse proportional to EKG QRS width. Pulse-interval modulation gated a crystal-controlled, narrowband RF output stage with a range of 50-100 meters. The received data was digitized and analyzed on microcomputers using Microsoft Fortran, Assembler, and Forth.

1972-1976 Assistant Development Engineer, MED: Human Physiology: Developed telemetry instrumentation to monitor breast and vaginal temperature in humans; developed non-invasive instrumentation to monitor core and skin temperatures, heat flow, EKG and blood pressure in exercising humans.

*1969-1971 Electronic Technician, MED: Human Physiology :*Designed and fabricated plethysmographic instrumentation, transducers, and signal conditioning hardware for monitoring peripheral blood flow and interface circuitry for fourteen-channel 1" FM analog tape recorder.

Other Professional Activities:

Consultant to: Division of Personalized Nutrition & Medicine, FDA; Office of the Attorney General, State of California; Battelle Memorial Institute, Richland, WA; Large Scale Biology Corporation, Vacaville, CA; Intel Corporation, Santa Clara, CA and Beaverton, OR; Bell Laboratories, Holmdel, NJ; Hewlett-Packard, Corvallis, OR; IBM, Palo Alto, CA and Danbury, CT; Los Alamos National Laboratory, Los Alamos, NM; Science Applications International Corporation, San Diego, CA; Ariel Corporation, Highland Park, NJ; Motorola Corporation, Austin, TX; Portland State University, Portland, OR; Mississippi State University, State College, MI; The Jockey Club, New York, NY and Lexington, KY; Northern Natural Gas Corporation, Omaha, NE

Review editor for *Computer Programs and Methods in Biomedicine*

Professional Memberships:

1977-2004 Charter Member, Society for Advanced Medical Systems (SAMS), now known as the American Medical Informatics Association (AMIA) - Genomics Working Group; Primary Care Working Group; Knowledge Discovery & Data Mining Special Interest Group; Natural Language Processing Special Interest Group; TeleHealth Special Interest Group

1991-present Member, Institute of Electrical and Electronic Engineers (*IEEE*) - IEEE Computer Society; IEEE Engineering in Medicine and Biology Society; IEEE Computational Intelligence Society (formerly Neural Networks Society); IEEE Signal Processing Society

1986-2006, American Association for the Advancement of Science (*AAAS*)

2002-present, International Society for Computational Biology *(ISCB)*

C. Selected Publications:

Malyj, W., **United States Patent: 6,601,050;** *Trainable adaptive focused replicator network for analyzing data,* July 29, 2003.

Malyj, W., **German Patent 60007333.5-8**, December 17, 2003; Malyj, W., **United Kingdom Patent 1212727**, December 17, 2003; Malyj, W., **Australian Patent 768581**, April 1, 2004; Malyj, W., **EPO Patent 1212727**, December 17, 2003.

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Kaput, J; Anderson, K; Csik, G; Flores, J; Fuentes, S; Johl, H; Gonzales, M; Khalsa, M; Pannu, P; Pisk, P; Tandon, S; **Malyj, W**: Personalized Nutrition and Medicine: A Venue for Long-Term, High-Precision, Heart Rate Variability Capture Augmented with GSR and Accelerometry; AMIA San Francisco 2009.

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Zoukhri, D; Singh, M; Kublin, C; Papas, A; Rawe, I; Dawson, K; Haddon, W; White, E; Hanley, K; Tusé, D; **Malyj, W**.*Biomarkers For Sjögren's Syndrome Detected In Saliva Using High-Resolution Mass Spectrometry And Bioinformatics.* 5th International Conference on the Tear Film & Ocular Surface: Basic Science and Clinical Relevance. Taormina, Sicily, Italy, September 5-8, 2007

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Dawson, K, Rodriguez, R.L, **Malyj, W**: *Gene Expression and Proteomics Data Analysis in Cancer Diagnosis and Prognosis Using Isomap, a Non-Linear Algorithm.* Sacramento, CA, Breast Cancer Research, 5(Suppl. 1), 2003.

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Malyj, W., *DNA Testing in the Equine,* Veterinary Clinics of North America: Equine Practice, Volume 11:3 December 1995.

El-Sharkawy, M., Bansal, A., Analoui M., **Malyj, W.,** et al, *A Fast Pruned Image Classifier*, International Journal of Computers and Their Applications, August 1995.

Malyj, W., *Simplifying Diffraction Pattern Sampling,* Lasers & Optronics, Volume 11:13 December 1992.

Malyj, W., A. Agnello, D.P. Mannion, S.S. Hughes, E. Dey, *Integrated High-Performance Dual-DSP-Based Image Classifier.* International Digital Signal Processing Conference, Berlin, Germany, October 30, 1991.

Malyj, W., D.P. Mannion, S.S. Hughes, Generating *Compact Image Vectors for Image Classifiers.* Motorola Tutorial Session and Demo, IEEE International Conference for Acoustic, Speech, and Signal Processing (ICASSP'91), Toronto, Canada, May 1991.

Malyj, W., D.P. Mannion, and R.E. Smith, *Extracting Information-Dense Vectors for Neural Network Classifiers.* SAIC Tutorial Session and Demo, International Joint Conference for Neural Networks, San Diego, June 1990.

Malyj, W. and D.P. Mannion, *Neural Network Classifier for Antigen-Antibody Biomedical Reactions.* SAIC Tutorial Session and Demo, International Joint Conference for Neural Networks, Washington, DC, January 1990.

Malyj, W. and D.P. Mannion, *Biomedical Imaging: A Neural Network Classifier for Analyzing Red Blood Cell Antibody Reactions.* SAIC Tutorial Session and Demo, International Joint Conference for Neural Networks, Washington, DC, June 1989.

Smith, R.El. and **W. Malyj**. *Scope of microcomputers in clinical science and medicine: A current and future perspective.* In Microcomputers in Medicine, edited by M.J. Geisow and A.N. Barrett, Elsevier Science Publishers B.V, pp 1-23, 1987.

Malyj, W., R.E. Smith and R. S. Clark. *Extracting Maximal Performance from the 8087 Math Chip.* 2nd International Conference on Computers in Science, Washington, DC, 1984:20.

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Malyj, W., R.El. Smith, J. Horowitz. *New directions in scientific computing: Impact of advances in microprocessor architecture and system design.* Computer Programs in Biomedicine 1984:149-162.

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Malyj, W., P. Ransil and R.El. Smith. *Enhancing the power of 8086/8088 based microcomputer systems.* Proc. 34th ACEMB, 1981:321.

Malyj, W. and R.El. Smith. *Twenty-channel temperature/heart-rate telemetry transmitter.* Proc. 32nd ACEMB 1979:203.

D. Research Support

Division of Personalized Nutrition & Medicine, NCTR, FDA 4/1/08 - present

Completed Research Support:

NIH 1 P60 MD00222-02 $6,250,000 1/01/03 – 1/14/08. Rodriguez, R, PI; Malyj, W, Co-PI; et. al., *NIH NCMHD Center of Excellence in Nutritional Genomics, UC Davis*

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME	POSITION TITLE
Odor, Alberto	Associate Adjunct Professor
eRA COMMONS USER NAME (credential, e.g., agency login) ALBERTOODOR	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
National Autonomous University of Mexico	MD	1972-1978	Medicine
Hospital Espanol de Mexico	Internship	1978-1979	Medicine
National Institute of Medical Sciences	Residency	1979-1981	Internal Medicine
	Residency	1981-1984	General Surgery
	Residency	1984-1986	Transplantation Surgery
National Autonomous University of Mexico,	Masters	1984-1986	Clinical Research
National Autonomous University of Mexico,	PhD	1986-1988	Clinical Research
Oregon Health and Sciences University, Portland	Masters	2002-	Biomedical Informatics
National Autonomous University of Mexico	MD	1972-1978	Medicine

A. Personal Statement.

I have been working in Medical Informatics since 15 years ago, first in Mexico City and for the last four years at UC Davis. During the last three years I have been the I.O.R. for "Seminars in Health Informatics" and "Electronic Health Records" and will have a third class on "Simulation and Virtual "Reality". I have research interest in Clinical Health Informatics and Virtual reality and will soon start some research projects which will benefit from the presence of graduate students.

B. Positions and Honors

Positions and Employment

1987-1988 Associate Researcher “C”, National Institutes of Health, Mexico, D.F., Mexico
1988-1989 Staff Researcher “A” National Institutes of Health, Mexico, D.F., Mexico
1989-1991 Chief, Department of Experimental Surgery, National Institute of Medical Sciences
1991-2001 Professor of Medical Informatics, Anahuac University, School of Medicine, Mexico, D.F., Mexico
1992-1996 Chief, Basic Research Division, National Institute of Medical Sciences, Mexico, D.F., Mexico
1994-2000 Coordinator, Institutional Committee for Animal Research, Research Division, NIMS-Mexico, DF
1996-2000 Chief, Electronic Visualization and Publications Department, NIMSc-Mexico, DF
2000-2006 National Investigator in Medical Sciences “E”, National Institutes of Health (Mexico)
2000-2006 Chief, Research Division; Chief, Experimental Surgery; National Rehab. Center, Mexico, D.F.
2006-2008 Visiting Assistant Professor, Department of Anesthesiology, SOM, University of California, Davis
2008- Associate Adjunct Professor, Dept. of Anesthesiology, SOM, University of California, Davis

Other Experience and Professional Memberships

1988-1997 National Researcher, National Research System - Mexico
1988-1989 Program Coordinator, Master's and Doctor's Degrees in Medical Sciences, Graduate Division, Faculty of Medicine, National Autonomous University of Mexico
1989-2000 Member, Medical Informatics Committee, National Institute of Medical Sciences
1989-2005 Academic Tutor, Master's and Doctor's Degrees in Medical Sciences, Graduate Division, Faculty of Medicine, National Autonomous University of Mexico
2007- Member, Graduate Group in Health Informatics. UC Davis School of Medicine.

Honors (selected)

1985 HONORIFIC MENTION in the Examination to obtain the Degree in General Surgery

Dissertation: "Surgical Aspects of Continuous Ambulatory Peritoneal Dialysis"
National Autonomous University of Mexico

1986 First Prize, Free Communications, South Central Section, American Urological Association "Non-invasive Method for Renal Mass Determination".

1987 Gabino Barreda Award and Medal Office of the Dean, National Autonomous University of Mexico. Awarded for having the highest grades during the graduate studies in General Surgery

1989 International Guest Scholar, American College of Surgeons

1989 Honorary Fellow, Graduate Division, University of Minnesota, School of Medicine

2006 Visiting Professor Fellowship – UC-MEXUS – UC Davis

C. Selected Peer-Reviewed Publications (last 39 years of 45 total)

1. Odor MA, Chávez Peón MF, Mendoza VA, Bordes AJ. *Selección de Receptores Para Trasplante Utilizando una Computadora Personal.* Rev Inv Clin (Mex) 37:171-176; 1985
2. Odor MA, Alessio Robles LLP, Leuchter IJ, Mendoza VA, Bordes AJ, Wadgymar RA and Chávez Peón MF. *Surgical Experience With 150 Consecutive Permanent Peritoneal Dialysis Catheters in Patients on CAPD.* Perit Dial Bull 5(4):226-229; 1985
3. Mendoza VA, Gabilondo NF, Odor MA, Feria BG, Bordes AJ, Kasep BJ, Sánchez G, Peña JC, Elías DJ. *The Impact of Renal Donation: Long Term Follow-up of LivingDonors in a Single Center in Mexico.* J Urology 135:195A; 1986
4. Campollo O, Dibildox JM, Odor MA, Amieva RI, GilS, Pedroza J, Uribe M. *Effect of Lactose Perfusion on the Intestinal Transport of Electrolytes, Colonic pH, and Blood Amonia Levels.* Hepatology 6(5):1151; 1986
5. Odor MA, Castorena AG, Jimeno C, Peña JC, Bordes J, de la Rosa LC, and Chávez Peón MF. *Hemodialysis or Continuous Ambulatory Peritoneal Dialysis Before Transplantation: Prospective Comparison of Clinical and Hemodynamical Outcome.* Transplan Proc 19(1):2197-2199;1987
6. Bordes AJ, Odor MA, Dib KA, Gabilondo NF, Kasep BJ, Peña JC, Herrera AJ, Chávez Peon MF. *Randomized Clinical Trial of Cyclosporin or Donor Specific Transfusions in High Risk LRD Kidney Transplantation.* Transplantation Proceedings 9(1):2276-2277; 1987
7. Mendoza VA, Gabilondo NF, Odor MA, Feria BG, Bordes AJ, Kasep BJ, Sánchez J, Sánchez SG, Peña JC, and Elías DJ. *The Impact of Renal Donation: Long Term Follow-up of Living Donors in a Single Center in Mexico.* Transplantation Proceedings 19(1):1500-1502; 1987
8. Odor MA, Chávez MT, Franco BR, Zurita M, Chávez Peón MF, and de la Rosa LC. *In Vivo Thromboxane Production by Different Organs in the Rat. Its*
9. Odor MA, Chávez MT, López RM, Fernandez M, Chavira ES, Campuzano FM, and de la Rosa LC. *In Vivo Thromboxane Production by the Pancreas in Normal and Diabetic Rats.* Dig Dis Sci 32(10):1179; 1988
10. Santillán DP, Odor MA, Selman M, Gaxiola M, López MR, Chavira ES, de la Rosa LC, and Villalba CJ. *Urinary Thromboxane B2 as an Indicator of Acute Rejection in Lung Allotransplantation.* Transplantation 45(5):852,1988
11. Odor MA, López MR, Chavira ES, Chávez PT, Franco BR, Chávez Peón MF, and de la Rosa LC. *Inhibition of Thromboxane Production by the Pancreas in Response to High Glucose Levels. Protective Role of Hyperglycemia in Pancreas Transplantation?* Diabetes 38(Suppl 1):256-257; 1989.
12. Odor MA, López GC, Rodríguez SLC, López MR, Chavira ES, de la Rosa LC, and Chávez Peón MF. *Urinary Immunoreactive Thromboxane B2 as Early Indicator of Pancreas-Allograft Rejection Jejunal Loop Interposition for the Drainage of Segmental Pancreatic Allografts to the Bladder in the Dog.* Diabetes 38(Suppl 1):227-228; 1989
13. Murphy AC, Odor MA. *La Comunicación Científica y el Procesador de Textos.* Bioquimia 13(2):19-21; 1988.
14. Herrera HM, Odor MA, Chávez MT, Reyes E, Gonzáles S, Cortés GR, de la Rosa LC. *Tromboxano B2 Urinario Inmunoreactivo en Trombosis Mesentérica Experimental en Perros.* Rev Inv Clin (Mex) 41(2):123-127; 1989

15. Odor MA, López MR, Larriva SJ, López GC, Rodríguez SL, Luque LE, Campos BL, de la Rosa LC, Chávez-Peón MF. *Urinary Thromboxane-B2 (TxB2) as an Indicator of Pancreatic Allograft Rejection in Nonimmunosuppressed Dogs.* Transplant Proc 21(4):3646-3649; 1989
16. Santillán DP, Odor MA, Villalba CJ, Jasso VR, Sotrés VA,Santibanez A, López MR, Gaxiola M, de la Rosa LC. *Thromboxane-B2 (TxB2) and Lung Transplantation: Correlation of Rejection with Levels Detected in Bronchoalveolar Lavage (BAL).* Transplant Proc 21(4):3650-3652; 1989
17. Odor MA, López MR, Luque LE, Chavira ES, Sotres VA, Larriva SJ, de la Rosa LC, and Chávez-Peón MF. *Urinary Amylase, Urinary Insulin, or Urinary Thromboxane: Which is the Best Predictor of Pancreatic Allograft Rejection in the Dog.* Transplant Proc 22(2):709-711; 1990
18. Herrera HM, López KX, Rivero SE, Odor MA, de la Garza VL. *Esplenectomía en Púrpura Trombocitopénica Idiopática.* Rev. Inv. Clin. Mex. 42(1):14-17;1990
19. López MR, Ponce PJ, Varela FG, Chavira ES, Orozco JC, and Odor MA. *Extensive Decrease in Isulin Secretion By the Pancreas Preserved for 24 Hours in UW1 Solution.* Transplant Proc 23(1):1676-1678, 1991.
20. Odor MA, López MR, Varela FG, Ponce PJ, Luque LE, Larriva SJ. *Increased Thromboxane Production by the Pancreas After 24 Hours Preservation in UW-1 Solution.* Transplant Proc 23(1):1643-1644, 1991.
21. González OA, Herrera HM, Torres MG, Odor MA, y de la Garza VL. *Resultados de la Participación de Médicos Residentes en el Tratamiento Quirúrgico de la Litiasis Vesicula*r. Rev Invest Clin 43(4):338-345, 1991.
22. Fernández del Castillo C, Díaz SV, Varela FG, Odor MA, López MRM, Robles DG. *Testosterone Biotransformation by the Isolated Perfused Canine Pancreas.* Pancreas 6:104-111, 1991.
23. Odor MA. *Unidad de Investigación Experimental. Información General.* Rev del I.N.N.S.Z. 2:2-6, 1991
24. Odor MA. *Nueva Infraestructura Para la Investigación Médica. Instalaciones Optimas Para Trabajar con Animales.* Gaceta Facultad de Medicina 17:8-9, 1991.
25. Santillán DP, Jasso VR, Sotres VA, López MR, Santibañez A, Arreola JL, Olmos R, Villalba CJ, and Odor MA. *Urinary Thromboxane B2 Excretion During Acute Rejection in Cyclosporin Treated Experimental Lung Allotransplantation.* Transplant Proc 24:2022-2023, 1992.
26. Herrera HFM, López KX, Rivero SE,Odor MA, de la Garza VL, Vargas VF. *Esplenectomía en Púrpura Trombocitopénica Idiopática. (Carta)* Rev Inv Clin (Mex) 44:283, 1992.
27. Campollo RO, Gutiérrez M, Cortés GR, Odor MA, Muñoz R. *Effect of Sodium Benzoate, Lactulose and CH-1, on Amonia in Rats with Portocaval Shunt.* Hepatology 16:248, 1992.
28. Arteaga D, Odor MA, López MRM, Contreras G, Pichardo E, García E, Aranda A, Chávez E. *Impairment by Ciclosporin A of Reperfusion Induced Arrhythmias.* Life Sciences 51:1127-1134, 1992.
29. Ibarra A, Kretschmer R, Guizar SG, Salgado CH, Grijalba J, Flores MF, Castañeda HG, Odor MA, López MRM, Franco BR, Espitia AL, Madrazo I. *Acute Spinal Cord Injury Alters Bioavailability of Oral and Intraperitoneal Cyclosporine-A in Contused Rats.* J Neural Transplantation & Plasticity 3(4):317-318, 1992.
30. Gutiérrez M, Cortes GR, Odor MA, Muñoz RM, Campollo RO. *Efecto del Benzoato de Sodio y Lactulosa Sobre la Concentración de Amonio en Ratas con Anastomosis Portocava*. Rev Gastroenterol Mex 57:288, 1994.
31. Campollo RO, Cortes GR, Gutiérrez M, Muñoz RM, Odor MA. *Sodium Benzoate and Lactulose for the Treatment of Hepatic Encephalopathy.* J Hepatol 21:1444, 1994
32. Ibarra A, Espitia AL, Madrazo I, Kretschmer R, Guizar SG, Salgado CH, Flores MF, Castañeda HG, Odor MA, López MRM, Franco BR. *Alteration in the Bioavailability of Cyclosporine-A, after Experimental Acute Spinal Cord Injury.* Journal of Neurotruma 13:267-272, 1996.
33. Franco BR, Guízar SG, García GA, Odor MA, Alvarez A, Esquivel F, Rodríguez S. Retinal Vulnerability to Glutamate Exitotoxicity in Canine Glaucoma: Induction of Neuronal Nitric Oxide Synthase in Retinal Ganglion Cells. Proc West Pharmacol Soc 41:201-204, 1998.
34. Odor MA, Lopez R, Smith W. Digital Edition Laboratory and Web Services for Continuous Medical Education in Rehabilitation. Technology and Health Care 12(5):381, 2004.

35. Odor MA, Almazan A, Cruz F, Cano L, Lopez R, Smith W. Development of a Portable Electronic Medical Record (PEMR) Modifiable Through a Web Interface. Technology and Health Care 12(5):378, 2004.
36. Odor MA, Lopez R, Barriguete A. Internet-Based Corporal Image Modification in Patients with Anorexia Nervosa and Bulimia. Technology and Health Care 12(5):380, 2004.
37. Odor MA, Lopez R. Internet-Based "Lip Reading" Education for the Hearing Impaired. Technology and Health Care 12(5):379, 2004.
38. Odor MA, Mercado O, Lopez R, Zaldivar L, Cruz F, Almazan A. Development of a Database-Driven Internet Telemedicine System Using Open Source Software. Technology and Health Care 12(5):381, 2004.
39. Almazan A, Miguel A, Odor A, Ibarra JC. Intraoperative incidents and complications in primary arthroscopic anterior cruciate ligament reconstruction. Arthroscopy. 2006 Nov;22(11):1211-7.
40. Odor A. High resolution 3D Models for the Teaching of American Sign Language. Stud Health Technol Inform. 2009; 144:82-6
41. Yelowlees P, Odor A, Burke M, Iosif A, Haught K, Hilty D. Asynchronous Telepsychiatry: A Feasibility Study of a Novel Method for the Provision of Psychiatric Consultations. Psychiatric Services. 2010. (Accepted for Publication).

D. Research Support

Current Research Support

Grant PY Yelowlees (PI) 9/1/09-5/30/10
Walter Reed National Military Medical Center
A Pilot Study of Store and Forward Telepsychiatry in Military Settings.
University of California Davis Medical Center
Role: Co-investigator FTE: 0.30

Grant PYBSF01 Yellowlees (PI) 5/1/07-8/31/09
The Blue Shield Foundation of California
Store and Forward Tele-psychiatry: A Cross Cultural Validation Study in Rural California
To validate the use of store & forward telemedicine for psychiatric consultations in rural California, for Spanish speaking and English speaking patients.
Role: Co-Investigator FTE: 0.61

Grant CCRWJ02 Carter (PI) 4/1/07-3/30/11
The Robert Wood Johnson Foundation
Early Detection and Intervention for the Prevention of Psychosis Program (EDIPPP)
To reduce the terrible toll that psychotic illnesses take on young people and their families.
Role: Co-Investigator FTE: 0.09

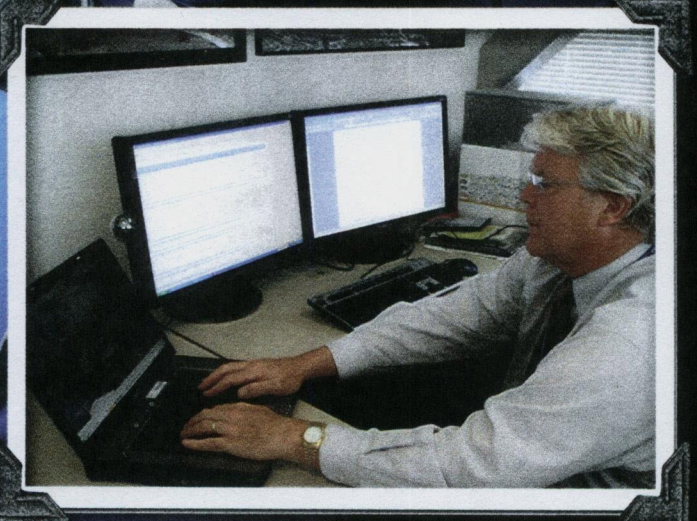
Grant ADMF500 Meyers (PI) 5/1/07-4/31/10
American Cancer Society
Spanish-language educational program for Latino cancer patients and their caregivers.
To help monolingual, Spanish-speaking patients improve their coping skills and quality of life.
Role: Co-Investigator FTE: 0.07

Completed Research Support

#55877 Aguilar-Gaxiola (PI) 11/1/06-2/29/08
The Robert Wood Johnson Foundation
Speaking Together: National Language Services Network
The goal of this study was to improve communication and the quality of care provided to LEP patients and their families across highly diverse inpatient and outpatient settings.
Role: Co-Investigator

Your Health in the Information Age -

How you and your doctor can use the Internet to work together



Peter Yellowlees MD

Example of Model Communities - Structure

College	City	Facility Type	Facility
Butte College	Oroville		
	BUTTE County		
		Indian Health Service	Feather River Tribal Health, Feather River Tribal Health Oroville
		Library	Oroville Branch Library
		Medical and Healthcare Provider	Del Norte Clinics, Inc., Oroville Family Health Center
		Medical and Healthcare Provider	Oroville Hospital
Cerro Coso Community College	Ridgecrest		
	KERN County		
		Library	Ridgecrest Branch Library
		Medical and Healthcare Provider	National Health Services, Inc., Ridgecrest Community Health Center
		Medical and Healthcare Provider	Ridgecrest Regional Hospital
		Public Safety Entity	College Community Services, Ridgecrest
		Public Safety Entity	Kern County (DPH, DMH, KMC), Ridgecrest Clinic - Department of Public Health Services
Columbia College	Sonora		
	TUOLUMNE County		
		Indian Health Service	Maripos, Amador, Calaveras, Tuolumne Health Board, Inc. (MACT Health Board), Sonora Indian Health Clinic (Medical)
		Indian Health Service	Tuolumne Me-Wuk Indian Health Center, Dental Clinic

Example of Model Communities - Structure

College	City	Facility Type	Facility
Columbia College	Sonora		
		Indian Health Service	Tuolumne Me-Wuk Indian Health Center, Health and Wellness Center
		Library	Tuolumne County Library
		Medical and Healthcare Provider	Sonora Regional Medical Center
		Medical and Healthcare Provider	Tuolumne County Behavioral Health, Children's & Older Adult Services
		Medical and Healthcare Provider	Tuolumne County Behavioral Health, Crisis Assessment Intervention Program
		Public Safety Entity	Sonora Regional Medical Center, Forest Road Health and Wellness Center
Mendocino College	Ukiah		
	MENDOCINO County		
		Library	Ukiah Branch Library
		Medical and Healthcare Provider	Mendocino Community Health Clinic, Inc., Hillside Health Center
		Medical and Healthcare Provider	Ukiah Valley Medical Center
		Medical and Healthcare Provider	Ukiah Valley Medical Center, Ukiah Primary Care - So. Dora St.
		Public Safety Entity	Ukiah Valley Medical Center, Ukiah Valley Primary Care - 260 Hosp Dr.
Reedley College	Reedley		
	FRESNO County		

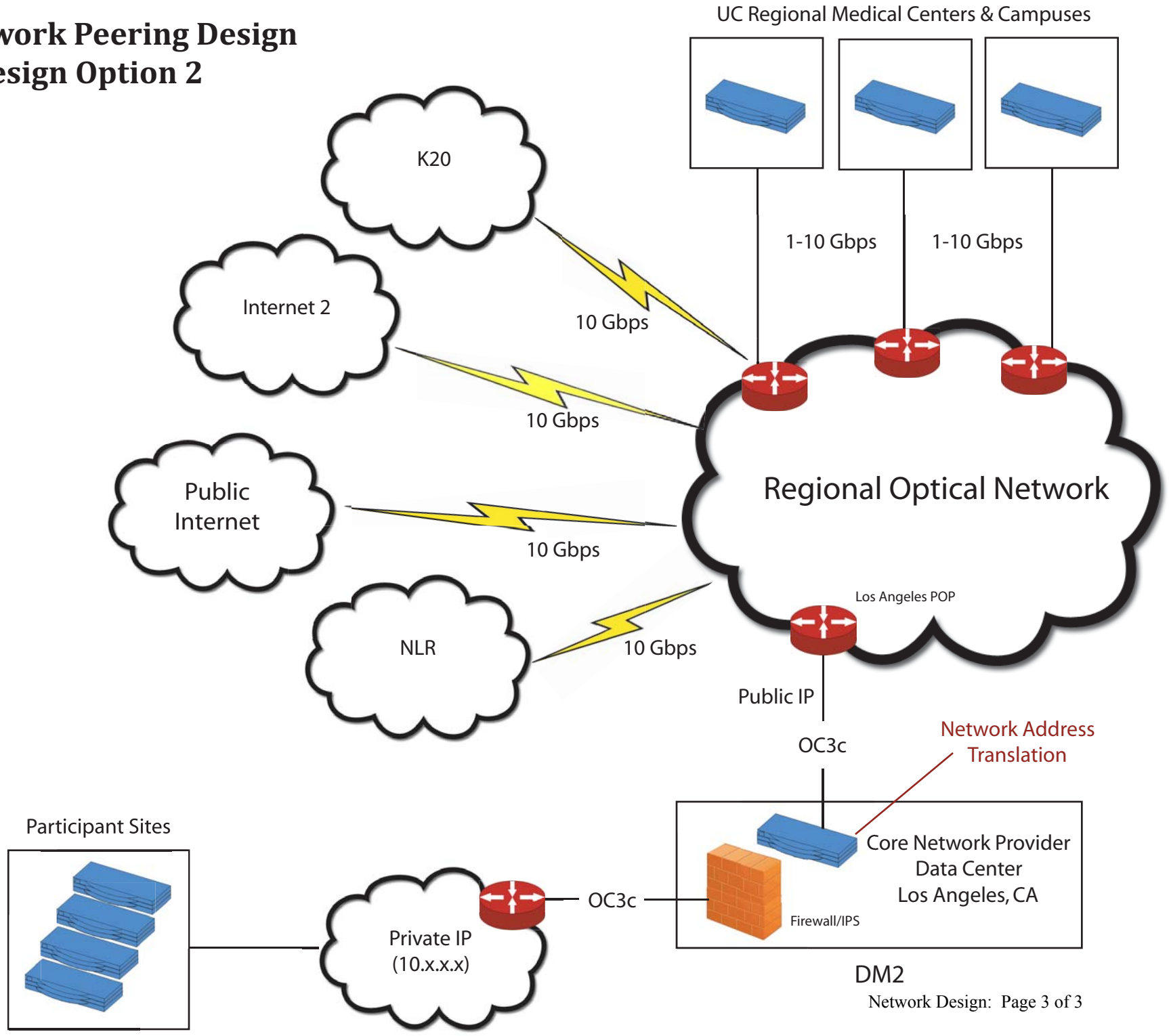
Example of Model Communities - Structure

College	City	Facility Type	Facility
Reedley College	Reedley		
		Library	Reedley Branch Library
		Medical and Healthcare Provider	Sierra Kings Health Care District
		Public Safety Entity	Central Valley Family Health, Reedley
		Public Safety Entity	Sierra Kings Health Care District, Sierra Kings Family Health Care - Acacia, Children's Health Center
		Public Safety Entity	Sierra Kings Health Care District, Sierra Kings Family Health Care - Carob
Shasta College	Redding		
	SHASTA County		
		Library	Redding Library
		Medical and Healthcare Provider	Mercy (Catholic Healthcare West), Mercy Medical Center - Redding
		Medical and Healthcare Provider	Shasta Community Health Center, Shasta Community Health Center-Main Clinic
		Medical and Healthcare Provider	VA Northern California Health Care System (VANCHCS), Redding Outpatient Clinic
		Public Safety Entity	Shasta Community Health Center, Shasta Community Health Dental Center
Taft College	Taft		
	KERN County		
		Library	Taft Branch Library

Example of Model Communities - Structure

College	City	Facility Type	Facility
Taft College	Taft		
		Medical and Healthcare Provider	National Health Services, Inc., Taft Community Medical & Dental Center
		Public Safety Entity	Kern County (DPH, DMH, KMC), Taft Clinic - Department of Public Health Services
		Public Safety Entity	Kern County Mental Health Department, Taft

External Network Peering Design
CTN Design Option 2



California Telehealth Network (CTN)
Rural Health Care Pilot Program
Sustainability Plan

(Reference: FCC WC Docket No. 02-60)

CALIFORNIA
TELEHEALTH NETWORK

California Telehealth Network

Sustainability Plan

The most critical factor in sustaining broadband adoption is the value of the new network-based services that users are able to access. In the health care arena, the value of these services will be determined by their ability to simultaneously improve quality and improve efficiency, while decreasing costs. In order to ensure the long-term success of the broadband health network it is necessary that, once established, the California Telehealth Network (CTN) be self-sustaining. This Sustainability Plan outlines components, features and capabilities that will facilitate long-term economic sustainability for the CTN.

A. Funding Match (Minimum 15%)

The California Telehealth Network (CTN) has received a $3.6 million pledge from the California Emerging Technology Fund (CETF, a non-profit, state government-chartered company) specifically designated for funding the 15% required co-payment for reimbursable expenditures. This represents 92.3% of the required funding match for the CTN Rural Health Care Pilot Program (RHCPP). The majority of the sites qualify for the California Teleconnect Fund (CTF), a fund administered by the California Public Utilities Commission (CPUC). Reimbursement under the CTF program will amount to approximately eight percent of monthly charges. These sources, combined with other philanthropic support for the CTN more than cover the 15% match required and the operational resources necessary to administer the program.

B. Projected Sustainability Period

Developing diverse revenue sources and a flexible business model will be necessary in order to provide robust and reliable network support. Through the innovative exploitation of highly competitive CalNet 2 pricing benchmarks, the availability of statewide pricing, as well as heavily subsidized services during the first three years of the program, CTN Participants will receive highly cost-effective and affordable data services. The CTN will continue to develop sustainable funding and reimbursement sources to achieve self-supporting status by the end of the RHCPP five-year funding period. Attachment A (Sustainability Projections) outlines the anticipated revenue and expenses for the first five years of the project.

C. Principal Factors

Sustainability will depend on the value of the broadband applications offered over the network, and the degree to which the costs and features of the network create an advantage over alternative options for telecommunications. Our sustainability strategy consists of four key elements:

a. **Reduce the cost of broadband operation through aggregating demand for services while providing a network dedicated to health care applications.** CTN will take advantage of the CalNet 2 pricing program that has been established by the State of California to provide uniform services and pricing for state and municipal government institutions. Pricing under this program was developed through multiple comprehensive competitive bidding processes and represents the best pricing available, based upon over $400 million in annual expenditures. CTN has determined that it will be able to offer equivalent pricing on a uniform statewide basis (postalized rates). Consequently, the underlying costs for network services represents a tremendous financial benefit to underserved and rural customers, since the ultimate costs that will be passed on to them are based upon highly competitive, volume pricing.

   Aggregating thousands of sites into one market will encourage broadband service providers to lower unit costs for service, eHealth application service providers who wish to access this aggregated market will pay CTN for the cost of using the network, thus further lowering costs to CTN and end-users. This network will have advantages over the public Internet because of the

network's superior level of privacy and security as well as the explicit quality of service built into the service level agreements that will be essential to providers of eHealth applications.

b. Maximize the use of existing telecommunications subsidy programs. The majority of sites connected to CTN qualify for subsidized broadband connection rates provided by the California Public Utilities Commission under the California Teleconnect Fund (CTF). Reimbursement under the CTF program will amount to approximately eight percent of monthly charges. In addition, many of the rural sites also qualify for subsidy under the FCC Rural Health Care program. CTN will have a full-time telecommunications policy analyst available to educate users about the subsidies available that will help them further reduce their monthly broadband service fees.

c. Institutionalize the use of eHealth as a core business practice in health care facilities. Technology is increasing its role as a core component of America's health care delivery system. Recent federal policies that provide financial incentives to health care providers to adopt electronic health records are just one example of the central role that eHealth will play in the near future. The ability to capture health care information electronically so it can be exchanged with other providers within communities or across the state is rapidly becoming a requirement to provide quality health care. As a result, access to a fast, secure, and reliable broadband will be a requirement.

d. Reduce health care costs while improving health care quality. The use of telemedicine has already demonstrated the potential to reduce health care costs and increase quality. Examples include: A decrease in the need for patient transfers for critical care increases the savings for regional hospitals and enhances the ability for remote/rural hospitals to generate revenue. Access to healthcare, especially specialty services, is improved via telemedicine, providing savings to providers by decreasing health care personnel travel and time cost.

A number of other benefits accrue to providers, patients and families, and communities. Using broadband technology, providers can partner to ensure that people get access to timely, effective healthcare expertise; patients in underserved areas can gain access to medical resources; and providers can gain access to current medical records as well as consultative services, educational opportunities, and medical networks. Technology enabled health care will help facilitate new, more efficient models of health care delivery and disaster preparedness coordination across the economic and geographic spectrum.

The increased use of health care technology supported by broadband can improve the management of chronic illnesses which account for 75% of health care expenditures nationally. In a technology-enabled model of care, the patient would have an electronic health record (EHR) available to all of his or her healthcare providers. Should the patient experience a severe complication the local emergency physician could consult with a specialist – who had remote access to the EHR – to assist in providing emergency treatment via telemedicine.

These benefits and cost savings will further the incentives for health care providers to utilize eHealth technologies and the broadband infrastructure necessary to support health information exchange.

D. Terms of Membership in the Network

As part of membership in the CTN, all Participants will be required to execute a Membership Agreement (Attachment B). The Agreement will delineate the requirement to pay a reduced subscription fee throughout the RHCPP funding period, followed by a subscription fee sufficient to cover remaining costs after all other payer sources have been applied. The term of the Agreement is initially for one year and

outlines the CTN Participant responsibilities, reporting and technical requirements and the fee terms and schedule.

CTN Membership and other fees are defined by type of service in the CTN Membership Fee Schedule, Exhibit B of the Membership Agreement (Attachment B). Separate fee schedules exist for Pilot Program and Subsidy Members and for Share-of-Cost Members. A description of each follows:

Pilot Program and Subsidy Member
A pilot program and/or subsidy member must be a public and not-for-profit health care provider eligible for participation in the RHCPP pilot.

Share-of-Cost Member
A Share-of-Cost Member is a non-USAC-eligible health care provider or for-profit organization.

E. Excess Capacity

Relationships with community and business partners will be actively explored. The CTN Interim Advisory Board includes senior leaders and executives able to open substantive discussions with a number of industries. A list of the CTN Interim Advisory Board members is included as Attachment C. Industry partners interested in becoming a *Share- of-Cost member* for the purposes of providing commercial services on the network would pay the actual costs of connection including administrative and overhead costs.

F. Ownership Structure

CTN is a statewide initiative supported and advanced by a consortium of public agencies, stakeholder providers, and foundations for which UC is the current fiscal agent and managing partner. The next phase of development for the CTN is to become a robust broadband network among participating sites and a viable public-purpose operating enterprise that can be sustained by reliable funding and revenue sources. The current phase of CTN development is intended to prepare for and be consistent with the establishment of a new non-profit governing entity. This new entity will not "own" the network; instead, it will be a 501(c)(3) non-profit governing entity (a public-private partnership) that will manage the contract with the selected telecommunication vendor.

We envision that the transition from management of the CTN by UC to the new entity will be a gradual and incremental process. The CTN will also be engaged in additional activities beyond the RHCPP, including work with new State Regional Extension Centers. The new entity will work closely with the University on these and related efforts.

G. Sources of Future Support

Developing multiple funding sources will be necessary in order to provide for robust, reliable network support. CTN is developing funding sources and reimbursement models that will ultimately lead to a self-supporting network. Three principal sources will provide significant funding:

1. **Eligible rural participants will apply for funding under the FCC Standard Rural Health Care Program.**

   Based upon a preliminary analysis by USAC of the original 900+ Participant sites submitted for the CTN program, it is estimated that 30% of the sites (i.e., possibly up to 300 sites) are eligible for the FCC Standard Rural Health Care Program. Using this figure, as well as the estimated cost to connect each Participant, we derive the following:

Description	Cost
Connection Cost per Participant under CTN RHCPP	$500

Urban T1 Cost (actual quoted cost, Sacramento CA)	$150
(CTN RHCPP Cost – Urban Cost) x 0.6	$210

This will mean that, following termination of the RHCPP, each site will qualify for an approximate $200 per month offset in the cost of participating in the CTN.

2. **California Public Utilities Commission, California Teleconnect Fund will provide as much as 50% reimbursement of eligible telecommunications expenses (subject to state budgets).**

   The CTF will provide 50% reimbursement for remaining telecommunications expenses for eligible health care providers (after all other third-party payer amounts have been deducted). All Participants that are eligible under the RHCPP are also eligible under CTF. During the RHCPP funding period, the CTF will fund 7.5% of the monthly network charges for each of the CTN Participants. For the estimated $500 per month charge, the reimbursement amount would be $37.50, regardless of rurality status. The percentage reimbursement from CTF following termination of the RHCPP would in principal, be greater. We are continuing discussions with CPUC in order to determine the potential funding amounts that will be available to eligible CTN Participants following termination of the RHCPP. Regardless of program funding regulations however, the actual amount available through the program will be highly dependent upon the California State Budget and consequently, cannot be precisely determined at present.

3. **Individual CTN Participants will be required to execute a Membership Agreement that specifies a certain tenure of membership as well as agreeing to pay a monthly subscription fee (see Attachment B, Exhibit C).**

   A monthly subscription fee will be levied against all CTN Participants, beginning with their initial enrollment in the RHCPP and continuing throughout their membership. The subscription fees may be levied incrementally: during the RHCPP funding period, a lower fee will be levied. At the termination of the RHCPP, we estimate a fee of between $200 and $300 per month will be levied. As part of membership in the CTN, all Participants will be required to execute a Membership Agreement. The Agreement will delineate the requirement to pay a reduced subscription fee throughout the RHCPP funding period, followed by a subscription fee sufficient to cover remaining costs after all other payor sources have been applied.

   The Membership Agreement itemizes the principal terms and conditions that circumscribe the joint and individual responsibilities of the CTN and each Participant organization. In particular with regard to sustainability, the Agreement will formalize the requirement that each Participant organization pay a monthly subscription fee as well as adhere to various restrictions on network use as proscribed in the FCC Order.

Foundation and other philanthropic partners in California are aware of the requirements of the launch period of the CTN and are providing modest support for operations during these early years. CTN is also actively seeking additional funding, including funding from non-profit health care funding organizations, as well as for-profit organizations that may pay “fair share” plus an additional increment. A number of innovative business models are under discussion. Commercial and not-for-profit ventures realize the value of a secure, dedicated health network; partnerships with these entities would provide operating revenue to the CTN and will be evaluated. For example, one model under discussion would be to utilize the CTN to deliver health record applications. A high-level executive with extensive business development experience is under recruitment and will guide these discussions..

CTN leadership will continue to examine opportunities proposed by industry partners. Commercial organizations find the CTN, as a dedicated healthcare network, an appealing mechanism for delivery of products directly to the customer. The application service provider (ASP) model offers the CTN a potential revenue opportunity. CTN leadership will carefully evaluate the criteria for, and implications of, this service model.

It is hoped that the CTN can be leveraged as a shovel-ready project for American Reinvestment and Recovery Act (ARRA) funds as well as other funding opportunities. We anticipate that well in advance of the termination of the RHCPP, CTN will have developed effective agreements with state, federal and non-profit as well as for-profit healthcare funding organizations which will provide a significant percentage of the funding needed, with any remaining needs fulfilled via a monthly subscription fee for CTN Participants.

H. Management

In accordance with FCC rules, the University of California (UC) Office of the President and UC Davis serve as the Lead Agency for the Program (CTN-LA). The CTN-LA manages the selection of the telecommunication vendor, the implementation of the network, and the development of a sustainability model. The CTN Interim Advisory Board (see Attachment C) consisting of representatives from the California Public Utilities Commission, the California Business, Transportation, and Housing Agency, the California Telemedicine and eHealth Center, the California Primary Care Association, and other key stakeholder groups meets regularly to provide oversight on the CTN project.

The University of California will continue to lead in gradually transitioning the operations of CTN from management by the University to management by a new non-profit entity beginning in early 2010, but extending over a period of sufficient duration to ensure seamless and uninterrupted service to CTN Participants. Moreover, careful consideration will be given at each step to validate that the transition is compliant with all USAC/FCC RHCPP requirements. This change in governance structure was approved by the CTN Interim Advisory Board earlier this year to provide more flexibility for the CTN to develop and respond to business opportunities designed to sustain the network in the long-term.

The CTN Interim Advisory Board was established to advise the UC Office of the President and the UC Davis Health System on the development, management and implementation of the California Telehealth Network as it transitions to a new governance and management structure. It is recognized that the University of California, as the fiscal agent and managing partner, is accountable and responsible to the UC Board of Regents. Thus, while the Interim Advisory Board formally functions in an advisory capacity, it is important to emphasize that this group continues to provide the active leadership and oversight for both the policy and programmatic direction of the CTN. A list of the CTN Interim Advisory Board members is included as Attachment C. Areas of responsibility for the Board include:

Policy and Programmatic Guidance

- Guidance on governance issues during the transition of the CTN from UC to a non-profit entity including comment on strategy and direction of the by-laws and tax-exempt document submission;
- Facilitation of productive working relationships with stakeholders;
- Advice and guidance regarding key, collaborative state-wide initiatives, including Health Information Exchange and Regional Extension Centers;
- Identification and recruitment of additional project partners and new network subscribers;

Technical Guidance

- Guidance regarding the technical aspects of the network;

Financial/Business Guidance and Oversight

- Provision of guidance and assistance in securing funding for approved activities and needed investments for the project;
- Advice and support regarding development of business planning strategies and sustainability models.

UC executive leadership will remain involved in the new governance structure through participation at the Interim Advisory Board level. To ensure that all of the contractual obligations of any program operated by CTN -- including the FCC RHCPP program -- are maintained, the University will not transition any CTN management or operational functions until approval is granted by the FCC RHCPP.