GOVERNMENT OF THE UNITED STATES VIRGIN ISLANDS DEPARTMENT OF HEALTH

Virgin Islands Health Information Exchange

Strategic & Operational Plan

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Introduction

In October 2009, as part of the Governor's initiative to transform the healthcare system of the Virgin Islands (V.I. or "the territory"), the V.I. applied for the Health Information Exchange (HIE) grant opportunity provided by the Office of the National Coordinator (ONC) under the Health Information Technology for Economic and Clinical Health Act of 2009 (HITECH). The V.I. was awarded $1,000,000 in February of 2010, but ongoing issues with the submitted budget and other documentation prevented release of the funds for the planning portion of the grant until August, 2010. During that time the V.I. appointed a Health Information Technology (HIT) Coordinator, Kai Hendricks, and formed a Steering Committee and Integrated Plan team to oversee the initiative and perform the planning tasks necessary to achieve the objective of the grant: The development of territory-wide HIE capabilities to enable the meaningful use of Electronic Health Records (EHR) among providers and health care facilities. This Strategic and Operational Plan describes the path the V.I. intends to follow to achieve that goal.

The V.I. HIT infrastructure is relatively underdeveloped. The lack of more typical entrenched, heavily invested legacy systems is a result of historically low Federal funding for health care in the V.I. due to its Territorial status, and is correlated to the disparity between the health status of the Territory and that of the mainland. However, that same condition affords a unique opportunity for the integrated development of new systems in the new context created by ARRA funding opportunities and priorities: The various components of a new, advanced HIT infrastructure can be planned, assessed and implemented without the more typical "legacy" system and prior investment constraints seen in most states, and without the typical attachment to traditional silos of information and administration. In short, the V.I. has more to build, but less to accommodate and/or adapt – and thus less legacy investment to lose – than most States.

Therefore, while the current funding needs of the Territory may be proportionally greater than most States when measured by population, the resulting implementations have the potential to be more advanced and better integrated than those of most States.

The infrastructure can be planned, architected and implemented with fewer constraints, more current technology and information, and better alignment with the priorities of the current overall environment. This combination - the relatively greater potential efficiency of this well-planned, "ground-up" implementation and the relatively greater need of the population due to the immaturity of the current environment - means that this initiative can produce, proportionally, more benefit to the V.I. population and yield a higher return on investment, since more will be spent on improvement and less on remediation of existing systems.

However, these factors also make planning and implementation efforts challenging due to a lack of resources, organizational infrastructure, and staff. The V.I. is committed to taking full advantage of ARRA opportunities to undergo a complete HIT transformation, complementing the transformations in health care delivery systems, expansion of Medicaid, and organizational infrastructure that will occur interdependently. The pace of movement on all of these initiatives, though, will be limited by these infrastructural and financial constraints.

Background

The US Virgin Islands is a territory consisting of four islands: Saint Thomas, Saint Croix, Saint John, and Water Island. They are physically located in the Caribbean between the Caribbean Sea and the North Atlantic Ocean just east of Puerto Rico. Due to the location, the islands are prone to damage from hurricanes and storms. The territory's population is approximately 110,000 about 65% of the population is between the ages of 15-64 years of age. The median age is 39.8. Tourism accounts for close to 80% of the V.I.'s gross domestic product (GDP) and employment. It also has one of the world's largest petroleum refineries, operated by HOVENSA, LLC, which is the territory's largest private employer. Other forms of economic activity include rum distilling, textiles, construction, etc. Approximately 29% of the population falls below the poverty line. There are 2 public hospitals, 2 Department of Health (DOH) operated clinics, and 2 Federally Qualified Healthcare Centers (FQHCs). In addition, there are about 180 individual healthcare providers, many of whom collect salaries from the

hospitals or clinics in addition to running private practices. 17 pharmacies and 6 labs have been identified across the three islands.

As mentioned above, the V.I. is engaged in a major transformation of several aspects of its healthcare delivery system. Efforts are underway to transform Medicaid, which in the V.I. is called the Medical Assistance Program (MAP), by updating the state plan, expanding eligibility, acquiring Medicaid Management Information System (MMIS) capability, and contracting with CIGNA for Pharmacy Benefits Management (PBM) for MAP eligible parties. Other initiatives include Medicare rate rebasement, hospital funding reform, and several American Recovery and Reinvestment Act of 2009 (ARRA) health information technology (HIT) initiatives, in addition to this HIE implementation.

To support all of these transformation activities, the governor has formed a Health Care Reform Task Force. The VI HIE will coordinate with that body in its work to help ensure that all initiatives are in synch, minimize duplication of effort, and maximize efficiency and collaboration.

V.I. initiatives related to HIT include

- MMIS procurement

  It is anticipated that a partnership with West Virginia will enable the V.I. to implement a CMS-certified MMIS in 2012, and expected that MAP expansion to 2 to 3 times the current eligibility will occur in the next 10 years.

- EHR incentive program

  MAP is working to implement the necessary administrative structure to support provider incentive payments for EHR implementation through Medicaid. In addition, The Virgin Islands Medical Society(VIMS) is working with the physician/provider community through the Medicare incentive payment plan.

- Broadband Opportunities Technology Program (BTOP) initiative

The V.I. has been awarded grants for Broadband infrastructure planning and implementation. The broadband initiative is expected to ensure that all health professionals will get access to broadband, with 1 Gigabyte-per-second connectivity for 'anchor tenants' to be identified, and a minimum 100 Megabytes-per-second connectivity for all potential EHR/HIE users.

- DOH EHR capability acquisition

  DOH is working to implement certified EHRs in its clinics. They are in the assessment phase, with a projected go-live implementation in June, 2011.

- Regional Extension Center (REC) initiative

  The Ponce School of Medicine in Puerto Rico, which is the Regional Extension Center for Puerto Rico and the U.S. Virgin Islands, has contracted with the Virgin Islands Medical Society (VIMS) as the sub-recipient to the carry out the work of the regional extension program in the U.S.V.I., working to support providers in reaching EHR meaningful use.

The V.I. government is the largest employer in the territory, employing about 12,000 people, and provides health insurance to them through CIGNA, which contracts with V.I. Equicare, the V.I.'s PPO. There are about 8,500 beneficiaries of MAP (the V.I.'s Medicaid program), and expansion models are being considered now which may bring MAP enrollment as high as 30,000 in the next 10 years. In 2009, about 29% of the population was uninsured. The MAP program operates under a waiver of the requirement of freedom of choice of providers in the Medicaid regulations, so all MAP enrollees must receive services in the hospitals or DOH clinics, or receive referrals from those facilities to other MAP providers. Because of this structure, it is likely that few providers in private practices will qualify for EHR incentives under the Medicaid program. Most will qualify for Medicare incentives, and those who are also employed by hospitals or clinics may yield their incentives to the facilities.

US VI DOH Mission

The V.I. Department of Health is committed to providing quality and comprehensive healthcare services to the underinsured and uninsured populations as well as the community as a whole. The mission statement is as follows,

"The U.S. Virgin Islands Department of Health is committed to providing accessible, affordable, confidential and comprehensive, quality health care to all Virgin Islands residents and visitors, educating the community toward the development of positive lifestyles and protecting the environment towards the improvement of health in the U.S. Virgin Islands."

About V.I. DOH

The Department of Health functions as both the regulatory agency and the territorial public health agency for the U.S. Virgin Islands. As set forth by the Virgin Islands Code, Titles 3 and 19, the Department of Health (DOH) has direct responsibility for conducting programs of preventive medicine, including special programs in Maternal and Child Health, Family Planning, Environmental Sanitation, Mental Health, and Drug and Substance Abuse Prevention. DOH also is responsible for health promotion and protection, regulation of health care providers and facilities, and policy development and planning, as well as maintaining the vital statistics for the population.

DOH provides Emergency Medical Services, issues birth and death certificates, performs environmental health services, runs MAP, and conducts health research and surveys. The Department is also responsible for regulating and licensing health care providers and facilities, and assumes primary responsibility for the health of the community in the event of a disaster. The department employs providers and administrators from every aspect of health care, and manages several programs, both federal and local; to meet the needs of the community it serves.

DOH services are administered by 34 activity centers under the following four (4) divisions:

1. Office of the Commissioner
2. Division of Fiscal Affairs

3. Division of Administrative Services and Management
4. Preventative Health Services

The department includes three health care facilities, two district offices and field offices, as well as the central office, located on St. Thomas. The DOH has a primary role in all HIT initiatives in the V.I., and is responsible for planning and implementation of HIE, the EHR incentive program for Medicaid, and the MMIS procurement initiative.

About Public Hospitals

On the island of Saint Croix, the Governor Juan F. Luis Hospital & Medical Center (JFLH) is one of two publically funded hospitals in the V.I. It has 188 beds and offers a variety of medical services to patients, including acute care, emergency care, surgery, pediatrics, obstetrics, and psychiatric care. The Virgin Islands Cardiac Center, part of the Juan F. Luis Hospital, offers a state of the art facility that provides comprehensive cardiovascular services. These services include but are not limited to stress tests, coronary angioplasty, implantation of cardiac defibrillators and heart healthy educational services.

The other public hospital is the Schneider Regional Medical Center, on the island of St Thomas, which houses three facilities that include the Roy Lester Schneider Hospital, Myrah Keating Smith Health Center which is located on the island of St John, and the Charlotte Kimmelman Cancer Institute. The Roy Lester Schneider Hospital is a 169-bed acute care facility which serves primarily the St. Thomas and St. John residents. Because of the wide selection of services they offer, residents of neighboring Eastern Caribbean islands are often referred there for treatment. The Myrah Keating Smith Community Health Center is an outpatient center that provides preventative as well as primary care services. Although St John has a relatively small population of approximately 5000 people, it offers its residents and visitors 24-hour emergency services. The third entity of the Schneider Regional Medical Center is the Charlotte Kimmelman Cancer Institute, which opened in 2005 and provides comprehensive out-patient diagnostic and treatment services, including radiation therapy, chemotherapy,

pediatric oncology, interventional radiology, nuclear medicine, CT scan, mammography, and diagnostic pathology.

About Federally Qualified Healthcare Centers…

There are two Federally Qualified Health Centers (FQHCs) located in the Virgin Islands: the St. Thomas East End Medical Center on St. Thomas and the Frederiksted Health Center on St. Croix. Both health centers provide a large volume of primary care, dental services, and obstetrical care to MAP eligible and uninsured patients. In addition to the federal funds and reimbursement that they receive from MAP, both centers receive appropriations of approximately $1.5 million per year from the territorial general fund. The Frederiksted Health Center has two service delivery sites: The Ingeborg Nesbitt Clinic Urgent Care Center (FHC/INC) Community Health Center and the St. Croix Educational Complex (SCEC) School Based Health Center (SBHC). The St. Thomas East End Medical Corporation serves the St. Thomas and St. John districts.

Strategic Plan for Territory HIE

General

The territory is taking a phased approach to the implementation of HIE, with three main goals:

1. Enable providers to meet the meaningful use requirements for EHR incentives, beginning with stage one
2. Achieve 100% HIE participation among providers by 2015
3. Create a financially sustainable HIE by 2015

Phase one of the HIE initiative, as per ONC guidance, will focus on the core functionality required to support achievement of stage one meaningful use of EHR by providers, in order to fulfill the goals of the EHR incentive programs of both Medicaid and Medicare. The required HIE capabilities we identify as necessary to fulfill this purpose are the following:

- Provide the ability for providers, labs and consumers to positively, uniquely add and/or identify a patient and view or update demographic data through a **master patient index;**
- Provide the ability for providers, labs and consumers to use a **provider directory** to identify a provider or lab;
- Provide the ability for providers and labs to communicate and exchange files containing unstructured and structured data over **secure transport**, based on those identifications, and
- Provide the ability for authorized providers to **E-Prescribe** through a web portal, based on those identifications.

All of these functions may only be performed securely and by authorized users, so phase one will include a fully functional, HIPAA compliant **authorization layer** with registration, auditing, and administrative functions. In addition, individual privacy and security will be protected by an **opt-out framework** that allows individuals to designate themselves as non-participants.

In order to provide support to providers in fulfilling Stage one Meaningful Use requirements, the proposed USVI HIE will provide secure email for the transfer of structured data files which can be exported from laboratory systems or certified EHRs and imported into the provider's certified EHR system. This will include SSL-secured inboxes so providers can receive Continuity of Care Documents (CCD), structured lab results in ELINCS (HL7) format, or other standard(s) for health information exchange.

Subsequent phases of the VI HIE will build on the core infrastructure developed in phase one. The following are some of the capabilities to be included:

1. Provide standards-based **interfaces** to allow certified EHRs to connect directly to the HIE and exchange structured data;
2. Provide access to **central data storage** that will provide authorized users with EHRs in keeping with CCD standards;
3. Provide a web-based **'EHR light'** for providers or users to interact with the HIE-built EHR;
4. Provide connectivity and data exchange to the **National Health Information Network (NHIN)** through an **NHIN CONNECT gateway**;
5. Provide **interfaces** to various other data sources or health care entities, to collect data and/or exchange data, orders, results or images, including but not limited to
    a. Immunization registry
    b. MMIS data
    c. Health Plans
    d. Labs
    e. Pharmacies
    f. Radiology
6. Provide **record locator services** to enable the gathering of data housed outside of the VI HIE central data storage real-time;

The Virgin Islands Medical Society is the sub-recipient contractor that performs the Regional Extension Center work for the Ponce School of Medicine to support providers in the V.I. in implementing certified EHRs and achieving meaningful use. The HIE team is working closely with that group to identify the necessary interfaces and functionality to ensure that the providers' stage 1 meaningful use requirements are met. All aspects of the HIE will adhere to NHIN standards and Medicaid Information Technology Architecture (MITA) principles, using Service Oriented Architecture (SOA) and focusing on the CCD definition.

Environmental Scan

The environmental scan was mostly conducted in late 2009, in order to establish a baseline assessment of HIE implementation and preparedness. Interviews were conducted with the two hospitals in the Virgin Islands, Juan F. Luis Hospital on St Croix and Roy Schneider Hospital on St Thomas, each of the DOH clinics, both FQHCs, and five key stakeholders within the healthcare community as it pertained to HIE. The feedback helped to create a comprehensive provider questionnaire called the Electronic Health Record Capability Survey. This survey was distributed by VI Equicare, the V.I. Preferred Provider Organization (PPO), to approximately 180 physicians territory-wide. The survey and full tabulated results are included in this document as Appendix A. Their membership includes the majority of the physicians, facilities, and allied healthcare practitioners practicing in the islands of St. Croix, St. Thomas, and St. John. In addition, existing information from the 2009 Virgin Islands Health Insurance Survey which assessed health insurance rates and coverage amongst the population within the US Virgin Islands was used. It is important to note that the one-on-one meetings with the hospitals, key stakeholders, and providers were well received and they were very enthusiastic about the prospects of the HIE project. Also, a recent survey was done by phone of the labs and pharmacies in the V.I. to assess their current state of HIT adoption and HIE readiness.

Provider Scan

Thirty-six providers (about 30%) responded to the survey conducted in November 2009, and the results show that very few providers are using Electronic Medical Records (EMR), and many are not even using practice management systems. There is no current HIE capability. However, the majority of providers are planning EMR/EHR implementations of some kind, and in our stakeholder discussions with providers we observed enthusiasm for EHR and HIE.

Table 1 shows the percentage of selected EMR capabilities among respondents:

Table 1

Aspects of EMR/EHR	Not Planned	Planned	Partly Implemented	Fully Implemented
Patient Demographics	19%	26%	13%	42%
Notes	22%	41%	0%	38%
Lab Reports	22%	38%	9%	31%
Drug Allergy Alerts	30%	40%	0%	30%
Radiology Reports	31%	34%	9%	25%
Discharge Summaries	36%	39%	0%	24%
Lab Orders	32%	41%	6%	21%
Medications	32%	38%	9%	21%
Radiology Orders	34%	41%	6%	19%
Radiology Images	47%	28%	9%	16%

The top two factors providers cited as barriers to EHR implementation were cost-related, with purchase and implementation costs first and ongoing costs second. Notably, 'trust' issues such as data security and inappropriate disclosure of patient information were among the survey options least cited as perceived barriers to EHR implementation. Therefore we don't anticipate significant stakeholder issues with centralized data storage. The full tabulated survey response summary is included in Appendix A.

Because of the Medicaid free choice waiver system described above, few if any private providers will qualify for Medicaid EHR incentives; those providers seeking these incentives will apply through and possibly yield their incentives to their respective clinic. The VIMS estimates that 80% will apply for Medicare incentives.

Pharmacy Scan

The 17 pharmacies identified on the islands are all listed as participants by SureScripts, although few providers are e-prescribing currently and several of the pharmacies are not accepting e-prescriptions. The V.I. has mandated that all providers have e-prescribing capabilities by 12/31/2011. To complement the provider EHR incentive program, we plan to provide an e-prescribing portal as part of the EHR-light HIE interface.

Lab Scan

One of the 6 labs reports using Schuylab and one reports using Care360; we have not yet reached the other 4. Planning for phase one HIE implementation will include completing this survey and identifying the necessary interfaces to allow participation by all of the labs.

The Pharmacy/Lab survey tabulation is included as Appendix B.

Hospitals and Clinics

The two hospitals in the Virgin Islands, Juan F. Luis Hospital on St Croix and Roy Schneider Hospital on St Thomas, both use Meditech independently, with no interconnectivity. The DOH clinics currently have no EHR capabilities; an initiative is under way to acquire EHR capabilities for both and HIE planning will coordinate with that project to ensure that the selected EHRs are supported. The Integrated Plan team has met with the principals of that initiative and expects to engage in full collaboration with the hospitals and clinics as they work to meet meaningful use requirements and implement full EHR capabilities. The Regional Extension Center plans to begin working with the hospitals to help determine their path to EHR meaningful use in the first quarter of 2011.

Federally Qualified Healthcare Centers (FQHC)

The Frederiksted Health Center on St. Croix has just completed implementing NextGen in their facilities, and the St. Thomas East End Medical Center on St Thomas

has selected NeoMed and will begin implementation in the first quarter of 2011. The VIMS is working with both health centers to support their path to meaningful use.

HIE Development and Adoption

The V.I. will develop the core functionality of its territory HIE as a centralized system that enables participants to uniquely identify patients, find providers, and securely exchange information and files. It will include role-based user authentication to ensure that patient information is kept appropriately secure, and an opt-out process to ensure that patient participation is strictly voluntary. The initial implementation phase, designed to support stage one meaningful use by providers, will be hosted by the V.I. Bureau of Information Technology (BIT) under an Interagency Agreement with DOH, which will be initially responsible for its operation, with transparent and extensive collaboration with the HIE Steering Committee which includes extensive representation of the stakeholders.

Since providers cited implementation and operation costs as the biggest barriers to EHR adoption and meaningful use, incentives to participation are key to our approach to the HIE. Therefore, we will be driven by the following priorities for the phase one and subsequent implementation phases:

Phase one:

- Provide opt-out framework for patients, and secure. reliable and accurate authentication of users, to ensure that privacy and security requirements are met;
- Ensure that phase one meaningful use requirements are supported, so that providers can receive federal incentives to ameliorate concerns over cost;
- Provide E-Prescribing capabilities via the HIE with SureScripts so that providers can meet the territory E-Prescribing mandates by the end of 2011;
- Provide secure communication with the V.I. labs so that providers can send orders and receive results as a demonstrable value to their practices.

Subsequent phases:

- Provide central data storage of hospital and pharmacy data to enable providers to access an electronic health record geared toward continuity of care;
- Provide direct interfaces with labs, hospitals, and EHRs so that providers and other participants can directly exchange structured data, including orders, results, images and notes;
- Provide a web-based EHR-light interface so that all authorized providers can access EHRs and submit data regardless of their standalone EHR implementation status;
- Interface with the Immunization Registry and any other public health data sources that have data exchange capability;
- Implement a CONNECT gateway to allow interoperability with the NHIN;
- Implement a record locator service to allow for real-time integration of data that cannot be stored centrally;
- Receive and integrate medication history into EHR data;
- Interface with the new MMIS;
- Integrate image storage and exchange; and
- Expand functionality and data storage to include all elements of the Continuity of Care Document (CCD).

The relatively small number of providers, labs and clinics in the V.I. allows planning to focus on ensuring interoperability with specific interfaces and requirements, and we have worked with the DOH and the Regional Extension Center (REC) and the Virgin Islands Medical Society (VIMS) designated to support V.I. providers in identifying the existing and planned EHR and clinical systems that will need to be supported. While the HIE will be vendor neutral and interfaces will be standards-based, the limited number of actual certified EHR implementations in the V.I. will allow specific testing and interface development to the actual needs of V.I. providers. Our Steering committee includes representatives from each hospital, and FQHC, the largest labs and

pharmacies, the main Health Plan, and the two main provider groups (Virgin Islands Medical Society and Virgin Islands Medical Institute).

HIT Adoption

The environmental scan shows that HIT adoption in the V.I. is low compared to the mainland. The biggest barrier to HIT adoption among providers is cost of implementation and operation. The HIE planning is being approached as a necessary incentive to provider HIT adoption by providing the infrastructure to add value to HIT, as well as by enabling incentive payments for EHR implementation by supporting meaningful use.

Medicaid Coordination

The Medical Assistance Program (MAP), the V.I.'s Medicaid program run by DOH, is currently engaged in MMIS procurement through an inter-jurisdictional agreement with the state of West Virginia. MAP currently has no MMIS and processes claims on paper, and MMIS capabilities will not be implemented before 2012. MAP is represented on the HIE Steering Committee and extensive collaboration is planned between the HIE initiative and the MMIS initiative, to ensure interoperability between the MMIS and the HIE.

MAP is in the process of contracting with CIGNA for pharmacy benefit management (PBM) services. CIGNA currently provides insurance for V.I. government employees and is represented on the HIE Steering Committee.

MAP is currently studying expansion models that will be made possible by ARRA and Affordable Care Act (ACA) funding and by MMIS capability acquisition. MAP anticipates a major expansion to its eligibility, which is currently fewer than 10,000. The MMIS project will enable MAP to become an important data source for the VI HIE beyond phase one, and extensive collaboration is intended to ensure interoperability and efficiency of implementation, as well as to identify possible funding opportunities.

Coordination with the Nationwide Health Information Network

The VI HIE intends to achieve NHIN connectivity after phase one, by implementing a NHIN gateway utilizing CONNECT standards. Phase one implementation will comply with all NHIN standards in anticipation of that gateway.

Coordination of Medicare and Federally Funded, State Based Programs

The VI HIE intends to leverage the NHIN gateway to achieve connectivity with Medicare. The Department of Human Services (DHS) is responsible for administering some federal programs, and DHS is represented on the Steering Committee. Planning and implementation beyond phase one will involve identification, prioritization and implementation of connectivity with all public health data sources in the V.I.

Participation with Federal Care Delivery Organizations

The two FQHCs in the V.I., Frederiksted Health Center and St. Thomas East End Medical Center, are partially funded by territorial appropriations and are represented on the Steering Committee. They are both in the process of acquiring EHR capabilities and will be integral stakeholders in the EHR interface implementation following phase one.

Coordination of Other ARRA Programs

EHR Incentive Programs

MAP is in the process of drafting the State Medicaid HIT Plan (SMHP) and HIT IAPD to administer the Medicaid EHR incentive program to providers. Because of the MAP waiver of free choice, it is likely that few, if any, providers will have high enough percentages of MAP patients to qualify for Medicaid incentives, and the primary focus will be on the hospitals, clinics and FQHCs. The V.I. HIE planning will coordinate with MAP as this effort, which is dependent on the MMIS procurement, proceeds. The REC and its local partner VIMS will play a large part in guiding providers to meaningful use for both Medicaid and Medicare incentives, and the VI HIE is working and will continue to work closely with them throughout its planning and implementation. The HIE

planning strategy is exactly aligned with the stage one EHR incentive meaningful use requirements, and phase one implementation goals are defined by those requirements.

Regional Extension Center (REC)

The V.I. HIE Initiative will work in close collaboration with the REC for Puerto Rico and the Virgin Islands being administered under a Notice of Grant Award by the Ponce School of Medicine. The PSM Health Information Technology Cooperative Regional Center (PSM REC) is dedicated to promoting the adoption and meaningful use of certified electronic health records to Priority Primary Care Physicians (PPCP's) in Puerto Rico and the U.S. Virgin Islands. The PSM REC has targeted 4,038 priority primary care physicians. The PSM REC works with a multi-institutional Consortium which includes the Virgin Islands Medical Society (VIMS), the College of Physicians Surgeons of Puerto Rico (PRCMS), the Puerto Rico Primary Care Association (PRPCA), as well as Academic institutions and Universities in PR and the VIMS to provide outreach, education and technical assistance to eligible providers in the Region. Beyond the scope of work of the REC funding, the Ponce School of Medicine has embraced the broader mission of supporting EHR adoption and meaningful use among all Providers who are eligible for the Federal Incentives under the Medicare and Medicaid Programs. The following are key programmatic service areas offered by the REC:

Outreach, Educational and Technical Assistance Services to Eligible Professionals

In coordination with other Consortium members, the REC provides outreach and education through continuing medical education programs, seminars and workshops, as well as written and electronic communications. Education to Eligible Professionals includes educating participating primary care providers and offering technical assistance and practice support on involving practice EHR readiness assessment, workflow re-design, and EHR Vendor/Product Selection. Specific programs in the V.I. have been conducted in collaboration with CMS and ONC to Eligible Professionals in St. Thomas and St. Croix, in conjunction with the Virgin Islands

Medical Society (VIMS). Plans for 2011 involve the development of an outreach and program where with the participation of the V.I. HIE and the REC Teams to jointly present information and presentations on both ONC-funded programs to the V.I. Provider Community. In coordination with the PSM Continuing Education Programs, participating providers will have the opportunity to obtain Continuing Medical Education Credits for participating in in-depth educational programs on Health Information Exchange, EHR Adoption, and Meaningful Use. As part of the coordination of activities with the REC, Eligible Providers will be oriented regarding Federal Incentives and will be provided technical assistance to support the attainment of meaningful use of their certified records in order to qualify for the incentives.

EHR Vendor Review and Selection

The PSM REC has established an independent process of EHR Vendor/Product Review Process managed by MAXIMUS Federal. The process has involved a rigorous and systematic review of vendor qualifications, and the negotiation of preferred pricing, Service Level Agreements, Performance Guarantees, and other Terms and Conditions which are beneficial to the Provider Community in Puerto Rico (PR) and the V.I. In addition, the REC has negotiated Group Purchasing discounts for hardware to assist participating providers in minimizing costs of acquisition and installation of required infrastructure. The REC is able to offer deep Group Purchasing discounts and negotiations for reduced license and Service payments making these alternatives highly affordable for physician groups. The REC has negotiated other preferred terms and conditions which require selected vendors to connect with the proposed V.I. HIE at no additional cost to the providers. Please refer to the following Table with a listing of Certified EHR Vendors which have negotiated contracts with the REC and which will be supported by the REC for PR and the V.I. Only NextGen and NeoMed are known to be currently used in the V.I.

Table 2

LIST OF CERTIFIED EHR PRODUCTS WHICH ARE SUPPORTED BY THE REC FOR PUERTO RICO AND THE V.I.

Vendor	Product	Certification
Abel Health Group	ABELMED	Complete
CureMD	CureMD	Complete
E-Health Partners	EHRez	Complete
Greenway	PrimeSuite*	Complete
HITS	McKesson*	Complete
Infomedika	Sage Intergy	Complete
iPatientCare	iPatientCare	Complete
NCG Medical	Perfect Care	Complete
NEODeck	NeoMed	Complete
TU Record	TU Record	Complete
Medirec	MDREC	Complete
NextGen	Nextgen	Complete
SmartHealth	Vista++	Complete

Practice Support on EHR System Installation, Training, and Attainment of Meaningful Use

The PSM REC provides practice-specific support to participating providers to assist them in the full continuum of services from installation of Certified EHR software to the attainment of meaningful use. This process involves dedicated Staff Members and Teams who work with assigned practices from the EHR Go Live Phase to the actual implementation and utilization of system functionalities and reporting to meet the M.U.

Stage 1 Criteria. Specialized teams are designated and assigned to work with providers in PR and the V.I. Dedicated local teams will also be working with Federally Qualified Health Centers in the Islands of PR, St Thomas and St Croix. The REC will also support EHR Adoption strategies being undertaken by the V.I. Department of Health (DOH) among its Clinics in St. Thomas and St. Croix.

Workforce Development

The V.I. HIE Initiative and the PSM REC will work together to promote the implementation of workforce development and training programs oriented to building skills to support the transformation of the V.I. Heath system into an electronic environment supported by certified EHR Products and interoperable Health Information Exchange. The PSM REC has already initiated conversations with the University of the Virgin Islands supported by ONC to implement programs pursuant to ONC-funded curricula.

Broadband

The V.I. Public Finance Authority in partnership with the Virgin Islands Water & Power Authority submitted and was awarded a Grant under the American Reinvestment and Recovery Act Broadband Technology Opportunity Program (BTOP). This grant will be used to construct an underground fiber communication ring on St. Thomas and St. Croix and an aerial fiber ring on St. John.

Contracts have been awarded to do the Environmental Assessment (EA) and Engineering for the project. Before actual work can begin and federal funds can be drawn down the EA has to be completed. This EA has to be done on the proposed underground conduit routes and the Facility Access Point (FAP) locations. The goal is to have the EA completed and submitted by the end of January 2011.

The broadband initiative is expected to ensure that all health professionals will get access to broadband, with 1 Gigabyte-per-second connectivity for 'anchor tenants' to be identified, and a minimum 100 Megabytes-per-second connectivity for all potential EHR/HIE users.

Governance

The Virgin Islands Department of Health (DOH) is the Governor's designated entity for the HIE initiative in the V.I. and will be the governing body for the first phase of implementation and operation. During the planning phase, the DOH appointed a HIT Coordinator, Kai Hendricks, and formed a Steering Committee as an advisory body chaired by Commissioner Sheen of DOH. In addition, an integrated plan team was formed. The Steering Committee is comprised of a broad and representative body of stakeholders from the following organizations:

1. Department of Health (DOH)
2. Department of Human Services
3. DOH clinics
4. Frederiksted Health Center (FQHC)
5. St. Thomas East End Medical Health Center (FQHC)
6. V.I. Equicare (PPO)
7. Virgin Islands Medical Institute (VIMI)
8. Virgin Islands Medical Society (VIMS)
9. K-Mart pharmacies
10. Doctor's Choice pharmacy
11. St. Croix Clinical Lab
12. Cranston Clinical Labs
13. CIGNA Health Insurance
14. AARP Virgin Islands
15. University of the Virgin Islands
16. Department of Education
17. V.I. Medical Assistance Program (Medicaid)
18. Bureau of Information Technology (BIT)
19. Office of the Governor
20. Juan F. Luis Hospital
21. Roy L. Schneider Regional Hospital

22. First Coast (Medicare)
23. V.I Cardiac Center
24. HOVENSA, LLC.
25. Alicia Smith and Associates (consulting firm)

Upon ONC approval of this Strategic and Implementation plan, an implementation team will be formed by the HIT Coordinator. This team will be responsible for project management of the implementation, drafting and managing the RFP process and vendor selection, and contract management of the selected vendor for phase one implementation. It will report to the Commissioner of Health and receive guidance from the Steering Committee. In addition, the implementation team will provide reports to the Health Care Reform Task Force formed by the Governor on June 9, 2010, and fulfill all ARRA and other federal reporting requirements.

The Steering Committee and DOH will continue to examine the ongoing governance options as phase one implementation proceeds, and recommend a governance structure for continued operations as the future phases of the VI HIE implementation are planned and the financial model for sustainability is determined.

Finance

A financially sustainable HIE is the goal of this initiative, and the Steering Committee and DOH must continue to evaluate financial models and potential revenue sources for the achievement of that goal. The intention of this plan in its current state is to map a path to phase one implementation, envisioning and anticipating subsequent phases: Phase one implementation will be funded entirely by the funds awarded by this grant, and the Steering Committee, implementation team and DOH officials will work with stakeholders to identify sources of ongoing funding. Given the territory's size and economic context, it is anticipated that ongoing operation of the territory HIE may require continuing general fund appropriations. Models should be considered that may blend all possible sources of revenue, such as:

- Subscription Fees: HIE users pay monthly access fees
- Transaction Fees: HIE users pay based on volume of data exchanged
- Assessment Fees: Facilities and institutions pay based on size and volume of services
- Medicaid/Medicare funding streams
- Grants
- Territory General Fund appropriation

The financial model will adhere to these principles and goals:

- Finance HIE to meet the goals of health improvement and information availability in the V.I. in the most efficient and effective manner possible.
- Ensure fair distribution and equitable allocation of sustainability costs.
- Provide adequate financing to ensure security and privacy of exchanged information.
- Properly develop subscription and/or fee models to minimize the impact of user costs.
- Provide incentives for utilization of services by all users.

The VI HIE will work to demonstrate value to all participants and potential revenue sources, by communicating and demonstrating benefits which will achieve improved health and cost savings.

Benefits to the patient would include:

- Improved safety of patient records
- Better quality of care
- Reduced duplicate tests
- Easier access to centralized clinical records

Benefits to the providers would include:

- Lower administrative costs

- Enhanced communications and interoperability amongst physicians offices, labs, pharmacies, hospitals, and clinics
- Decreased redundant tests
- Audit trail of records
- Easier access to clinical data

Tasks that will be performed concurrent with phase one implementation, in preparation for ongoing operation:

- Creating a sustainable financial model
- Obtaining provider and stakeholder agreements
- Seeking legal guidance for documents
- Developing policies and procedures

Technical Infrastructure

The V.I. has decided on a centralized model for the technical architecture of the HIE. Some of the factors that argue for this approach:

- The size and population of the V.I. is relatively small
- HIT adoption rates are relatively low
- The current health delivery system is dominated by publicly funded and/or operated facilities
- Centralized data will mitigate the potential data access problems that could be caused by the relatively underdeveloped territory infrastructure
- The provider surveys, stakeholder interviews and Steering Committee feedback indicate little suspicion or concern about centrally storing health data
- There is no existing HIE capability to integrate

Given the low level of HIT adoption in the provider community, a centralized storage model will allow the HIE to be functional without reliance on provider technology or existing infrastructure, which will in turn incentivize EHR adoption by the provider community by demonstrating value.

As discussed in the HIE Development and Adoption section above, implementation will be performed in phases, with the first phase designed to provide the minimum functionality required to support stage one meaningful EHR use. The functionality of Phase one will be implemented with an eye to expanding functionality in subsequent phases, and will provide these core capabilities:

- Opt-Out Framework
- Master Patient Index
- Provider Directory
- Secure, HIPAA Compliant Data Transport (hosted, secure email and file attachment)
- User Authorization and Audit capabilities

Subsequent phases of implementation will include these components:

- Centralized Data Storage
- Record Locator Services
- NHIN CONNECT gateway
- Web-based secure access to authorized users (EHR-light)

Specific HIE data sources and requestors that will be supported by standardized interfaces include but are not limited to:

- Meditech
- REC supported EHRs
- DOH clinic planned EHRs
- FQHC planned EHRs
- Immunization Registry
- Surescripts
- HealthPAS MMIS
- Labs
- Radiology

Please see the Operational plan for more details and an architectural diagram.

Business and Technical Operations

The initial implementation and operation of the territory HIE will be performed by the DOH, in cooperation with BIT, under an inter-agency agreement. BIT will host and maintain the hardware and data connectivity utilizing existing and planned infrastructure, and the implementation team will issue an RFP, evaluate proposals, and contract with the selected vendor for phase one implementation, coordinated by the HIT Coordinator with accountability to the Commissioner of Health, and under guidance from the HIE Steering Committee.

The HIE team will collaborate extensively with the REC throughout this process to achieve the following:

- Maximum efficiency of implementation
- Achievement of necessary functionality to support meaningful use
- Interoperability with territory EHRs and other data sources in phase one and beyond
- Performing outreach and providing support to providers in HIE participation and EHR implementation

The initial implementation will be funded by the federal HIE implementation grant. As part of the continued planning process the Steering Committee and DOH will evaluate and select optimal ongoing governance and operational structures, necessary legal authority and financing for ongoing operations, and strategies for further phases of implementation.

DOH has obtained agreement from the V.I. Bureau of Information Technology (BIT) to host and support this core infrastructure and will use the funds from the implementation portion of this grant to purchase equipment and contract with a vendor through a competitive Request for Proposals process for implementation.

Legal/Policy

DOH will work with the appropriate legal resources within the V.I. government to identify, assess and meet all federal and territorial legal requirements, and to develop policies to ensure that security, privacy, and transparency requirements are met. The legal/policy team will determine any necessary legislation, identify

necessary policies and actions, and establish requirements in collaboration with the Steering Committee. Legal and policy considerations include but are not limited to:

- Individual choice
- Access control
- Trust agreements
- Transparency
- Data security
- Data collection

Operational Plan for Territory HIE

General

This Operational Plan is a high level project schedule, timeline, milestones and tasklist for achieving phase one implementation of the V.I. HIE in a way that fully supports stage one meaningful use for providers in a timely manner, and anticipates the direction of the subsequent phases. The Operational Plan will provide practical milestones to achieve the objectives of the Strategic Plan, with the goal of enabling and supporting V.I. providers in achieving the meaningful use of EHR technology in order to enhance the quality and safety of patient care to benefit patients and the healthcare system as a whole. It will provide hospitals, clinics, and providers greater access to patient data at the point of care. The initial operational plan will evolve as the next implementation phases are defined, and will adapt as it is learned what works best for achieving the goals laid out within the Strategic Plan.

This Operational Plan covers topics as follows:

- Governance
- Finance
- Technical Infrastructure
- Business and Technical Operations
- Legal and Policy

The V.I. has no existing HIE capability and is in the early stages of planning HIE implementation. The initial implementation will build core HIE functions from the ground up to support stage one meaningful use, and the following is a high level timeline of key tasks to be completed to enable and implement the technical infrastructure for this phase one HIE. The implementation team will develop the detailed project plan and schedule for all domains of HIE during the first 30 days of implementation, as the RFP is drafted and released, describing the necessary tasks for phase one go-live in the areas of governance, finances, business and technical operations, and legal policy to meet the timeline of the infrastructure implementation.

The following shows the high-level implementation timeline for the technical infrastructure, and a high level list of some of the tasks to be detailed in the project plan:

Phase one Implementation Timeline

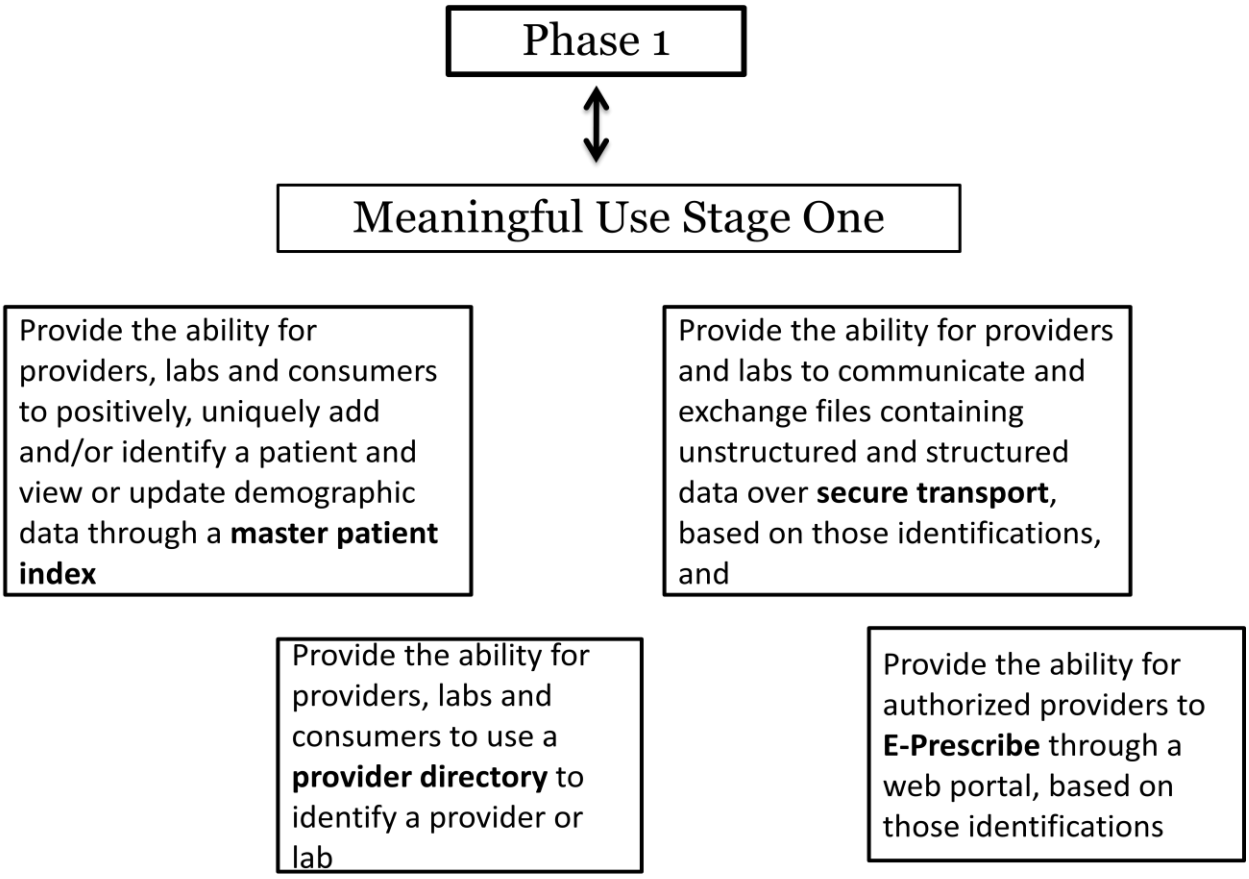
Task/Event	Owner	Initial Timeline Estimate
Formal SOP submission	I.P. team, DOH	1/15/2011
ONC SOP approval	ONC	2/15/2011
Draft and Release RFP	Implementation Team	1/15/11-2/15/11
Draft and execute DOH/BIT agreement	Implementation Team	1/15/11-2/15/11
Receive Proposals	Implementation Team	3/1/2011
Evaluate Proposals	Implementation Team	3/1/11-3/30/11
Contract execution	DOH	4/15/2011
Implementation plan development	Vendor	4/15/11-6/1/11
Implementation plan approval	Implementation Team	6/15/2011
Implementation	Vendor	6/15/11-9/15/11
Testing	Implementation Team	9/15/11-10/1/11
Go-Live		10/1/2011

Some of the high-level domain tasks that the implementation team will be performing during the implementation period include these:

High level domain tasks

Task	Domain
Establish necessary governance charters	Governance
Examine future governance models	Governance
Manage implementation funding	Finance
Examine future financial models and revenue sources	Finance
Plan and coordinate outreach, training and support	Operations
Develop and operationlize individual Opt-Out framework	Operations/Techinical infrastructure/Legal
Draft and execute BIT/DOH agreement	Operations/Legal
Develop and operationalize policies and procedures	Operations/Legal
Draft and execute agreements with providers	Legal
Initiate path towards DURSA	Legal

As per ONC guidance, phase one of the HIE initiative will focus on the core functionality required to support achievement of Stage one meaningful use of EHR by providers, in order to fulfill the goals of the EHR incentive programs of both Medicaid and Medicare. As discussed throughout this document, the required HIE capabilities identified as necessary to fulfill this purpose are as follows:

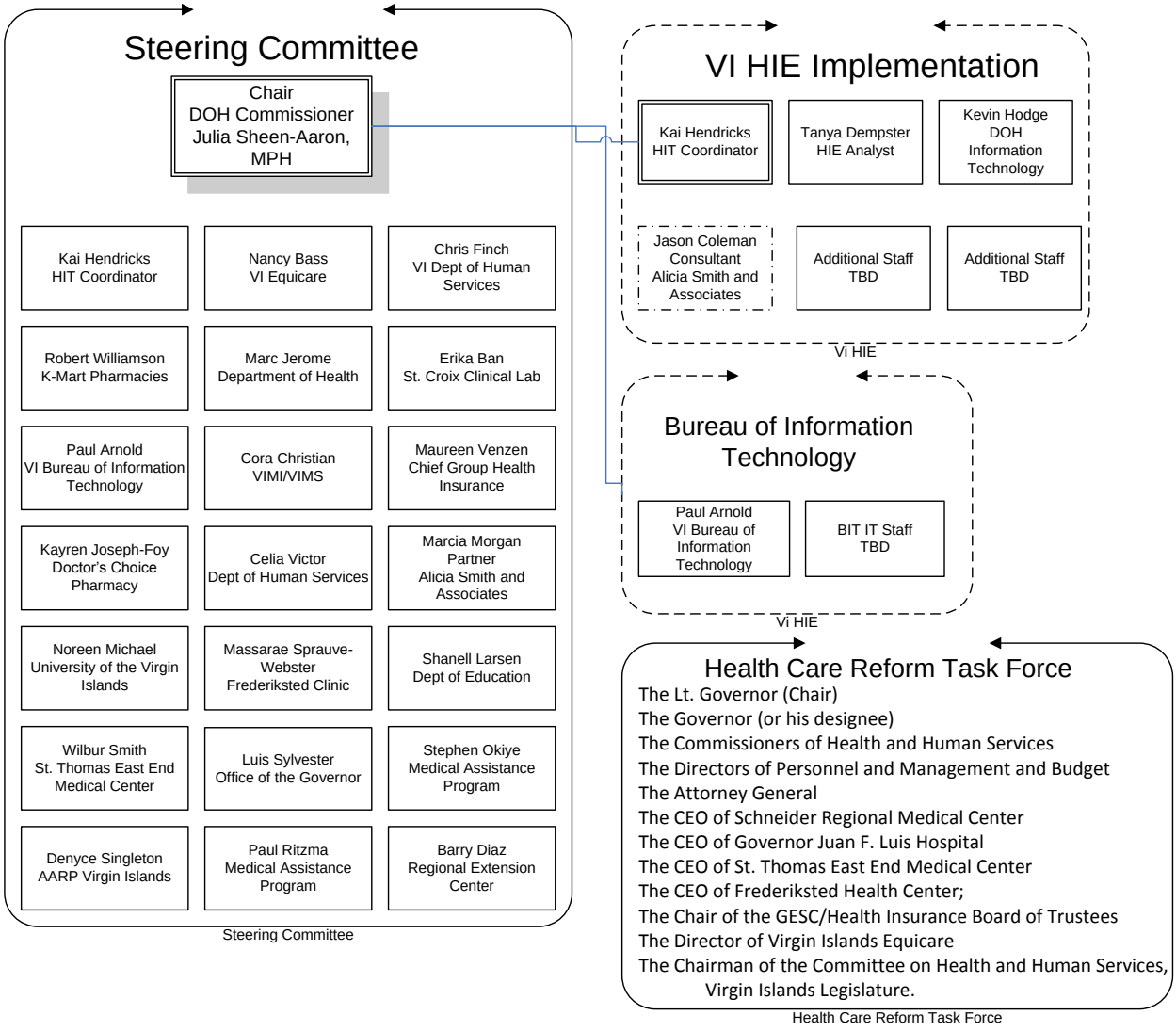


Governance

As stated in the Strategic section of this plan, The DOH is the Governor's designated entity for the HIE initiative in the V.I. and will be the governing body for the first phase of implementation and operation. An Integrated Plan team was formed during the grant application process, led by the HIT Coordinator, and is charged with producing this plan for the Steering Committee's review and approval. Upon ONC

approval an implementation team will be formed by the HIT Coordinator, with the current integrated plan team as its core. The DOH has hired one full-time HIE analyst for this initiative at this point, and other staff and resources will be added to the implementation team as required. The implementation team will develop the phase one RFP and evaluation criteria, perform the evaluation and establish the vendor contract, and perform contract and project management.

The DOH and Steering Committee will continue to examine the various long-term governance options, potential necessary legislation, and funding sources. Until an alternative decision is reached, DOH will operate the HIE in collaboration with BIT under the guidance of the Steering Committee, informing the Health Care Reform task force and reporting to the Commissioner of Health.



Financial Model and Sustainability

The V.I. will be studying financial models and sustainability paths for future operation of HIE. For phase one, funding will be solely through the HIE grant. The financial estimates presented here are a general breakdown based on the estimates from the Guam implementation plan; Guam's strategy is similar to the V.I.'s, and the scale of the implementation is comparable. The implementation team will produce more detailed budget projections as the RFP is drafted and as responses are evaluated.

The phase one implementation strategy will leverage existing infrastructure and staffing resources in BIT for hosting and providing network and hardware support, and existing DOH resources will be applied to the initiative as necessary.

Estimated cost breakdown

		Phase 1 implementation (2011)	Operations and Phase 2 implementation
Capital Expense	Core Infrastructure	$ 150,000	$ 100,000
	Standardized Interfaces		$ 100,000
	Portal Access	$ 75,000	$ 25,000
	NHIN Gateway		$ 100,000
	Hosting, Hardware, etc	$ 20,000	$ 35,000
	Staff and Consulting Assistance	$ 150,000	$ 150,000
	Total	**$ 395,000**	**$ 510,000**

Technical Infrastructure

As described in the Strategic Plan, The V.I. has decided on a centralized architecture, with real-time data request capabilities only when necessary. The core functionality will be hosted by BIT, and will comply with NHIN standards, using MITA-aligned, Service Oriented Architecture (SOA). The phase one implementation will support the exchange-related requirements of stage one EHR meaningful use, which will allow providers to accomplish these actions:

Phase one (See figure 1)

- Identify an existing patient record or add a new patient record, and retrieve, update or add demographic data
- Send secure email and file attachments to participating entities from the provider directory (e.g. patient summary, lab orders, lab results)
- Receive files securely from participating entities (e.g. lab results)

To meet security and privacy requirements, it will support these functions:

- User authentication and audit
- Patient opt-out framework

Opt-Out framework

Provides all individuals with the ability to opt-out of VI HIE participation, and ensures that data is not collected or stored for individuals who opt-out. This may be a flag in the master patient index and should prevent any data other than that necessary to identify the patient from being collected or stored. Providers must have a mechanism to set the flag based on user request.

Role-based User Authentication

Provides user registration, authentication and audit capabilities to control and track access for all users. There must also be an administrative role and interface for creating, tracking and managing users.

Master Patient Index (MPI)

Provides patient identification and demographic information, with a unique identifier for each patient. The MPI will allow authorized users to search for a patient based on various data elements (SSN, name, DOB, etc), with matching algorithms to prevent duplication. It will allow creation of new records for patients that are not found, updating of demographic information for existing patients, and administrative interfaces for correcting duplicated patients.

Provider directory

Provides provider information, with a unique identifier for each provider. This must also contain the necessary routing information for the secure transport service to enable authenticated users to securely communicate and exchange files and structured data with participating providers.

Secure Transport Service

Provides secure email and file transfer services between authenticated users. This will include SSL-secured inboxes so providers can receive CCD, structured lab results in ELINCS (HL7) format, or other standard(s) for HIE.

Beyond Phase one (See figure 2)

Plans for subsequent phases will be developed by the VI HIE team, and will remain aligned with meeting emerging later-stage meaningful use requirements and NHIN standards. The following components are anticipated:

Centralized Data Storage

Houses collected patient data used to populate EHRs as per CCD standards. Data will be gathered from all available sources with the goal of centralizing storage of as much appropriate health data as possible, so that a robust EHR can be created for all users.

Record Locator Services

Contains pointers and routing information necessary to collect data from external sources in real time from sources outside of the VI HIE, or sources that do not agree to pass data into central storage.

NHIN CONNECT gateway

Allows connection between the VI HIE and the NHIN.

EHR-Light web portal

Allows individuals and authorized providers to access EHR information from the HIE directly in a secure web interface.

Interface layer

Allows direct transfer of structured data between authenticated participants and data collection by HIE central data storage. It is expected that this will include providers using certified EHR systems, lab or radiology applications that meet VI HIE protocol standards, and data collection functions to populate the central data storage from external sources like the MMIS or immunization registry.

A chart of currently identified interfaces is included in Appendix C.

Figure 1: Phase One Architecture

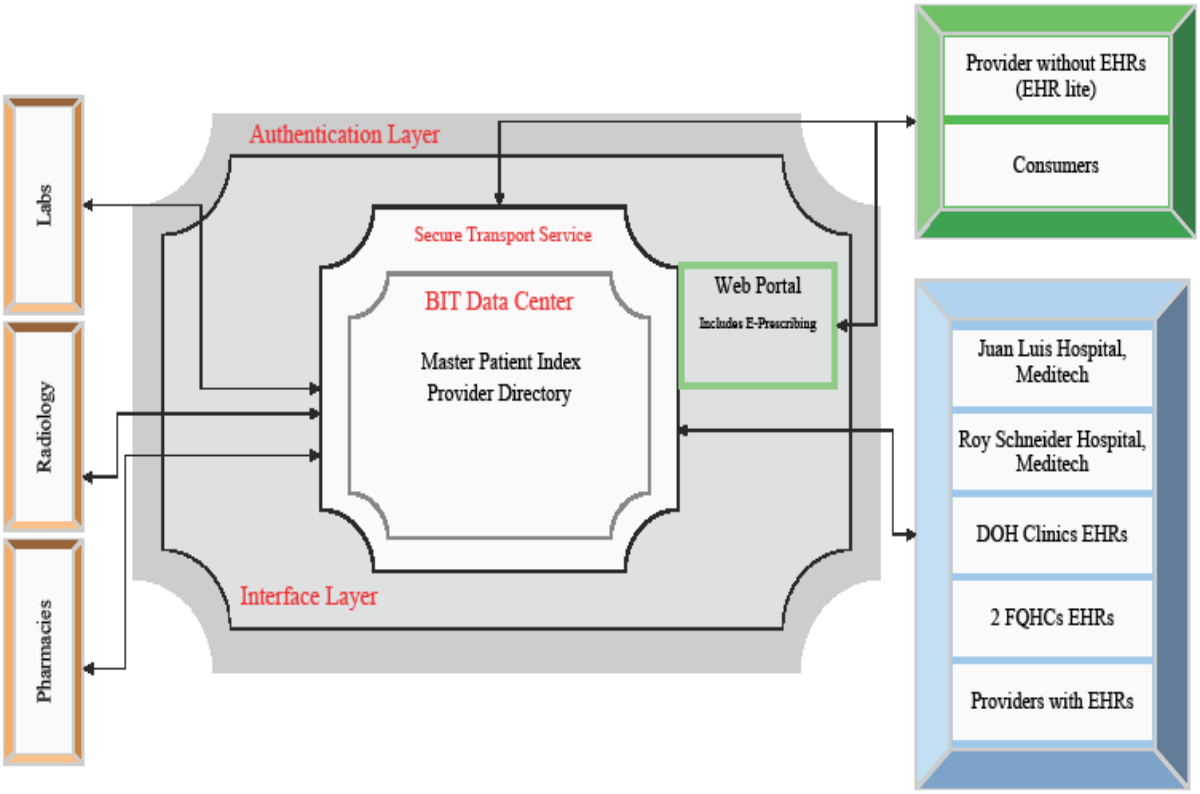
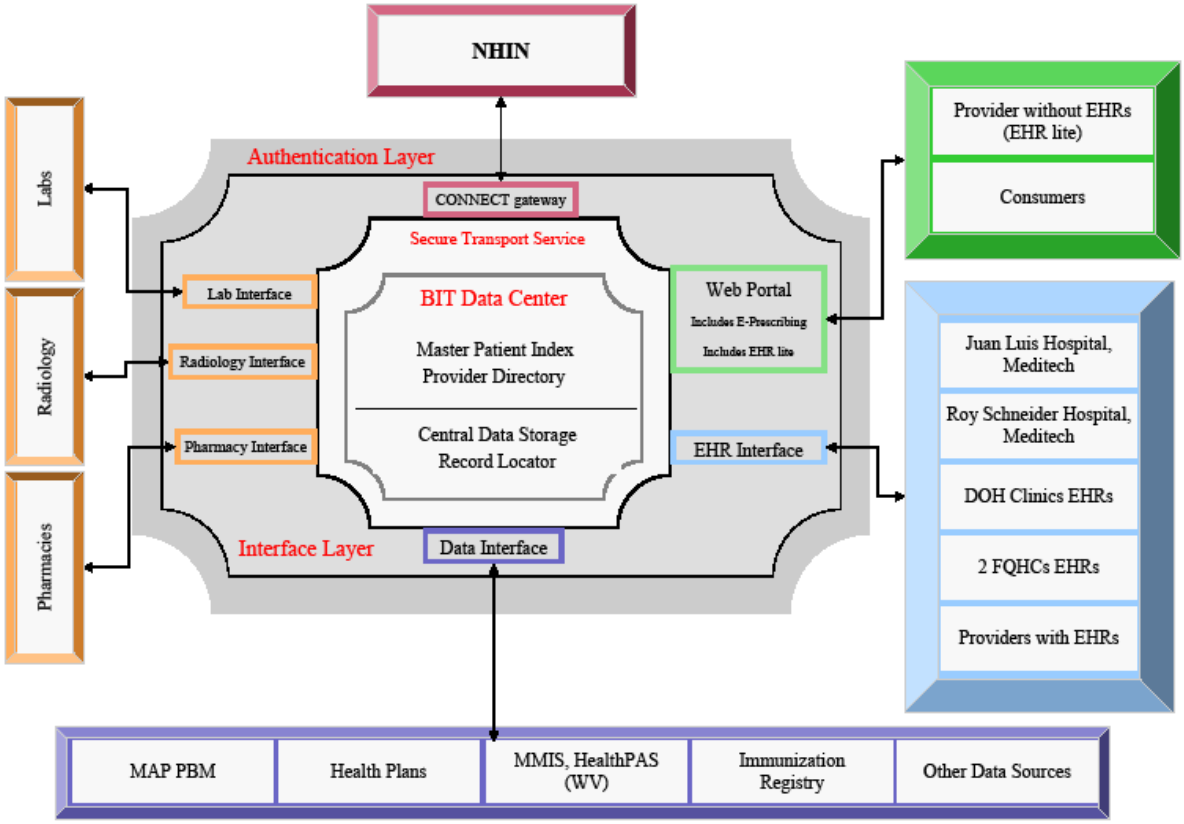


Figure 2: Future Architecture



Business and Technical Operations

BIT has agreed to host the VI HIE, and the HIT Coordinator will work with appropriate legal resources to draft and finalize a Memorandum of Understanding (MOU) between DOH and BIT on behalf of the VI HIE. BIT is in the process of moving its operation into a new data center, which will be used for the VI HIE components, infrastructure and connectivity. BIT staff will operate and maintain the technical components of the VI HIE, with specific responsibilities and roles to be described in detail in the MOU. Administrative, legal, policy and procedures, and operational support responsibilities will be with DOH under the interim governance structure. Disaster recovery plans will be developed jointly by DOH and BIT.

DOH will draft and release the RFP for stage one implementation, which will include detailed technical and architectural requirements. The RFP will be issued, proposals evaluated, and the vendor selected and contracted as per territorial law and in compliance with federal laws and regulations by the HIT Coordinator in collaboration with the Property and Procurement department, DOH and BIT. DOH will develop, document and administer standard operating procedures for the VI HIE itself and participation in it, under the leadership of the HIT Coordinator and in collaboration with the REC. A full-time HIE analyst has been hired as the initial staff resource for the DOH tasks associated with this initiative. Further staff will be hired and consultants will be utilized as necessary. Plans for training, outreach, and technical assistance to providers and other VI HIE participants will be developed in close collaboration with the REC.

Further staffing and resource requirements for the implementation and operational phases will be determined over the course of the implementation, and additional staff will be hired as deemed necessary.

Legal/Policy

The implementation team will work to satisfy the legal and policy requirements of the VI HIE, including but not limited to the following areas as determined by the legal/policy study:

- Individual choice
    - Phase one implementation must include an Opt-Out framework that will allow individuals to elect not to participate in the VI HIE, which must prevent any collection or storage of data other than basic and non-protected data for identification purposes. The Opt-Out option and procedures must be published and individuals must be notified of them.
- Access control
    - Registration, authentication and audits of users must ensure that PHI access is limited according to federal and territorial laws and HIPAA.
- Trust agreements

Provider and other entity contracts must be developed and maintained to ensure compliance with privacy and security standards and accountability for any breach.

- Transparency

Outreach and education must be performed to educate individuals and providers about the functionality, security safeguards and obligations, individual choice options, and benefits and risks of the HIE and participation in it.

- Data security:

Physical security policies and requirements must be developed and enforced to ensure the sanctity of the data center and PHI residing there.

- Data collection

Policies must be developed and enforced to ensure that only required and appropriate data is collected and stored, for particular and approved health-related purposes.

Appendix A: Electronic Health Record Capability Survey

Dear Health Care Provider,

Please fill out the attached Electronic Health Record capability survey and return it by mail to

VI Survey

Alicia Smith and Associates

900 2nd st, NE

Suite 221

Washington, DC, 20002

If you have questions or need assistance, please email:

visurvey@aliciasmithassociates.com

Thank you,

Julia Sheen

Commissioner of Health, U.S.V.I

Alicia Smith and Associates, LLC is an authorized data collector for the U.S.V.I. Department of Health

Appendix A: Electronic Health Record Capability Survey

1. Demographic information

	Hospital	Clinic	Physician or Group	Other (Specify)
Provider Type:	☐	☐	☐	
	Yes		**No**	
Medical Assistance Program (MAP) Provider?	☐		☐	
Name:				
Position:				
Organization:				
Address:				
Phone:				
Email:				
# of Physicians:				

% or # of MAP Patients:	
Estimated annual dollar amount charged to MAP:	
% or # of Medicare Patients:	
Estimated annual dollar amount charged to Medicare:	

Any comments or concerns about MAP or EHR, or additional information about your practice you'd like to share?

2. Does your hospital/clinic/practice have a computerized system for these functions?

(Full implementation means the computer system has replaced the paper process)

	Implementation			
	Not planned	**Planned**	**Partial**	**Full**
Electronic Clinical Documentation				
Patient Demographics	☐	☐	☐	☐
Physician Notes	☐	☐	☐	☐
Nursing Assessments	☐	☐	☐	☐
Problem Lists	☐	☐	☐	☐
Medication Lists	☐	☐	☐	☐
Discharge Summaries	☐	☐	☐	☐
Advanced Directives	☐	☐	☐	☐
Results Viewing				
Lab Reports	☐	☐	☐	☐
Radiology Reports	☐	☐	☐	☐
Radiology Images	☐	☐	☐	☐
Diagnostic Test Results	☐	☐	☐	☐
Diagnostic Test Images	☐	☐	☐	☐
Consultant Reports	☐	☐	☐	☐
Computerized Provider Order Entry				
Lab tests	☐	☐	☐	☐

Radiology tests	☐	☐	☐	☐
Medications	☐	☐	☐	☐
Consultation Requests	☐	☐	☐	☐
Nursing Orders	☐	☐	☐	☐
Decision Support				
Clinical Guidelines	☐	☐	☐	☐
Clinical Reminders	☐	☐	☐	☐
Drug Allergy Alerts	☐	☐	☐	☐
Drug-Drug Interaction Alerts	☐	☐	☐	☐
Drug-Lab Interaction Alerts	☐	☐	☐	☐
Drug Dosing Support	☐	☐	☐	☐
Bar Coding				
Lab specimens	☐	☐	☐	☐
Tracking pharmaceuticals	☐	☐	☐	☐
Pharmaceutical administration	☐	☐	☐	☐
Supply chain management	☐	☐	☐	☐
Patient ID	☐	☐	☐	☐
Other Functionalities				
Telemedicine	☐	☐	☐	☐
Radio Frequency ID	☐	☐	☐	☐
Physician use of Personal Data Assistant	☐	☐	☐	☐

3. Please answer regardless of whether or not your hospital/clinic/practice has implemented an EHR system.

If your hospital/clinic/practice has implemented an EHR system, please tell us how much of a barrier each of the following was to implementation.

If your hospital/clinic/practice has NOT implemented an EHR, please indicate how much of a barrier it is to implementation, even if you have no immediate plans to implement a system.

Factor	Major Barrier	Minor Barrier	Not a Barrier
The amount of capital needed to purchase and implement an EHR	☐	☐	☐
Uncertainty about the return on investment (ROI) from an EHR	☐	☐	☐
Concerns about the ongoing cost of maintaining an EHR system	☐	☐	☐
Resistance to implementation from physicians	☐	☐	☐
Resistance to implementation from other providers (e.g., RNs, NPs, Pas)	☐	☐	☐
Lack of capacity to select, contract for, and implement an EHR	☐	☐	☐

Appendix A: Electronic Health Record Capability Survey

Disruption in clinical care during implementation	☐	☐	☐
Lack of adequate IT staff	☐	☐	☐
Concerns about inappropriate disclosure of patient information	☐	☐	☐
Concerns about the legality of donating a system to associated physician	☐	☐	☐
Concerns about illegal record tampering or “hacking”	☐	☐	☐
Finding an EHR system that meets your organization’s needs	☐	☐	☐
Lack of interoperable IT systems in the market place	☐	☐	☐
Concerns about a lack of future support from vendors for upgrading and maintaining the system	☐	☐	☐

4. The table below lists potential solutions for suspected barriers to a hospital's implementation of an EHR.

• If your hospital/clinic/practice HAS NOT implemented an EHR system please rate the impact that the proposed service would have on your hospital/clinic/practice's decision to implement an EHR. Please indicate whether the impact would be positive or negative.

• If your hospital/clinic/practice HAS implemented an EHR, please rate the impact of the proposed service on EHR implementation among hospital/clinic/practices generally. Please indicate whether the impact would be positive or negative.

Solution	**Positive Impact**	**No Impact**	**Negative Impact**
Published lists of certified EHRs to assure presence of necessary capabilities and functions	☐	☐	☐
Objective evaluations of EHR capabilities and implementation experiences ("consumer reports" for EHRs)	☐	☐	☐
Technical assistance for implementation and process change	☐	☐	☐
Incentives for the purchase and implementation of an EHR (e.g., tax credits, low interest loans, grants)	☐	☐	☐
	☐	☐	☐

Additional reimbursement for the use of an EHR			

Survey Results Summary

Potential Barriers	Major barrier	Minor barrier	Not a barrier	type
Amt of Capital Needed to Purch and Impl EHR	74%	6%	19%	Cost
Concerns about ongoing cost of maintaining EHR	58%	29%	13%	Cost
Uncertainty about ROI from EHR	52%	26%	23%	Cost
Concerns about Lack of Future Vendor Support	43%	33%	23%	Implementation
Disruption in Clin Care During Impl	41%	33%	26%	Implementation
Lack of Adequate IT Staff	37%	30%	33%	Staff
Finding EHR that Meets Org Needs	34%	38%	28%	Implementation
Lack of Cap to Select, Contract for and Impl EHR	27%	33%	40%	Staff
Lack of Interoperable Systems in Market	29%	36%	36%	Implementation
Concerns about Inappropriate Discl of Pt Info	23%	32%	45%	Security
Concerns about Illegal Record Tampering/"Hacking"	23%	33%	43%	Security
MD Resistance to Impl EHR	19%	35%	45%	Perception
Resistance from other Provs to Impl EHR	13%	31%	56%	Perception
Concerns about Legality of Donating System to Associated	3%	17%	79%	Legal
Possible Aids to Implement	**Positive**	**Negative**	**No effect**	**type**
Addtnl Reimb for EHR Use	93%	3%	3%	Cost
Incentives for Purch and Impl of EHR	87%	10%	3%	Cost
Tech Assistance for Impl and Proc Chg	89%	7%	4%	Implementation
Published Lists of Certified EHRs	77%	20%	3%	Implementation
Objective Eval of EHR Capabilities and Impl Experiences	79%	17%	3%	Implementation

Aspects of EMR/EHR	NP - not planned	PL-planned	PT-part	Full	% Planned or Imp
Pt Demographics	19%	26%	13%	42%	81%
MD Notes	22%	41%	0%	38%	78%
Lab Reps	22%	38%	9%	31%	78%
Prob Lists	24%	39%	0%	36%	76%
Med Lists	24%	39%	3%	33%	76%
Diag Test Res	27%	33%	9%	30%	73%
Consult Reps	29%	38%	9%	24%	71%
Drug Allergy Alerts	30%	40%	0%	30%	70%
Nursing Assessments	31%	38%	0%	31%	69%
Rad Reps	31%	34%	9%	25%	69%
Lab Tests	32%	41%	6%	21%	68%
Meds	32%	38%	9%	21%	68%
Consult Reqs	33%	42%	6%	18%	67%
Rad Tests	34%	41%	6%	19%	66%
Drug-Drug Interaction Alerts	34%	38%	3%	24%	66%
Drug Dosing Support	34%	41%	0%	24%	66%
Drug-Lab Interaction Alerts	34%	48%	0%	17%	66%
Disch Summs	36%	39%	0%	24%	64%
Nursing Orders	36%	39%	0%	24%	64%
Clin Reminds	40%	40%	0%	20%	60%
Diag Test Images	41%	28%	9%	22%	59%
Clin Guidelines	41%	41%	0%	17%	59%
Rad Images	47%	28%	9%	16%	53%
Adv Dirs	52%	39%	0%	10%	48%
Pt ID	58%	26%	3%	13%	42%
Rx Admin	70%	20%	3%	7%	30%
MD Use of PDA	70%	23%	3%	3%	30%
Lab Specimens	74%	19%	3%	3%	26%
Telemed	76%	24%	0%	0%	24%
Supply Chain Mgt	77%	20%	3%	0%	23%
Tracking Rxs	77%	19%	3%	0%	23%
Radio Freq ID	90%	10%	0%	0%	10%

Appendix B: Pharmacy and Lab Survey

Pharm/Lab Env. Scan

HIE Environmental		
PHARM W/ SYS		14
TOTAL PHARM		17
LAB W/SYS		2
TOTAL LAB		6
Surveyor		Kai Hendricks
Date		10/20/2010

Name/Number	P/L	Location	E-Presc	E-Lab	Sysname	Interfaced/W	Date Implement	Reason Price,BroadB,Complex	Notes	Sp With
Diamond Pharmacy/719-4626	P	1CL-1CP Estate Diamond C'sted	Y		Surescripts	RX30	2007	Elim. errors	Treasure, Graham,Griffith,; Some are faxed by EMR;Issues w/ Insurance is RX30 (Lifeline/Relay Health)	Rick Werhime/Ph, Owner
Golden Rock Pharmacy/773-7666	P	Golden Rock Sh Ctr C'sted STX	Y		Escripts	McKesson Ph Sys	2007		Pedersen,Graham,Griffith,Manning,; Some are Faxed from HER; Its own set of problems	Chad
Medicine Shoppe/719-6100	P	4500 Sunny Isle Suite 42, Csted	Y		Surescripts	PDX	2007	Ease of use	Prasad, Pedersen, Graham, Griffith, Manning, Lockram, Degraffe Johnson Manually match to local patient. /physician clarification; requires training	Rod Gordon, /Ph.Mgr. *
Mt. Welcome Pharmacy/719-7283	P	2024 Estate Mt.Welcome,	Y		Surescripts	RX30	2007			Bill/Ph
Princesse	P	4040 La Gr.	Y		Escripts	RX30	Jul-10	Save time	Dr. Prasad its working just fine for now.	Colleen Goff Pharmacist
Clinical Laboratory	L	Island Medical Center Ste 6		Y	Schuylab		2004	Save time	Thru the internet and we use it because of hepa and MR Reports	Jessica Coursey lab manager
Juan F. Luis Hospital Clinic	L	Juan F. Luis Hospital, Csted		Y	??	Meditech	2000	Elim. Errors patient safety	Reference Lab/ and for communicating with all Units in the hospital and outpatient bring their requisition which is entered in the computer	Leonor Cedeno -Medical Technoglist
OceanSide Ph./719-1922	P	Plaza Extra, Csted	Y		Escripts	RX30	2010	Elim. Errors & save time	Dr. Graham started this program however Dr. Ricketts, Parsad, Griffith and Treasure are Faxed.	Alicia Wescott - Phar Tech.
Kmart Pharmacy/692-2606 -692-2622	P	Kmart Pharmacy West	Y		pdx		2007	ease to use-save time	DR. LAKE, DR. GRAHAM, DR. PEDERSEN, DR. PRASAD DR. MANNING GRIFFITH	Robert Williamson Pharmacy Manager
Christian's Pharmacy/772-2234	P	5AB Strand St.,Fsted	Y		Escripts	RX30	Sep-10	Elim. Errors	Dr. Graham and Prasad	Maggie Hermas Brown-Pharmacist
Chelsea Drug	P	Red hook	Y		Surescripts	QS1	2009	Ease to use	Intermittent	Don Porter
Chelsea Drug Store/776-4888	P	St. John	Y		Surescripts	QS1	2007	Elim. Errors and easy to use	Dr. Goldmam, Dr. Flood and Dr. Clayton - other Doctor's office also fax and patients walkin with ther prescription.	Paul Pichierri
Doctor's Choice Pharmacy/774-4033	P	Time Center	Y		Surescripts	RX30/ERX	2009	Ease to use		
Doctor's Choice Pharmacy/777-1400	P	Wheatley Center	Y		Surescripts	RX30/ERX	2009	Ease to use		Gary Kirk
Doctor's Choice Pharmacy/774-8988	P	Medical Arts Complex	Y		Surescripts	RX30/ERX	2009	Ease to use		
Drug Farm Pharmacy/776-7098	P	Lockhart Garden	N						Orders called in or faxed in using window based system	Schkil Bait
Drug Farm Pharmacy/776-1880	P	Medical Foundation Bldg	N						Orders called in or faxed in using window based system	
Healthy Living	P	Barbel Plaza	N						Have program but is not currently using it	Miled Boutros
Kmart Pharmacy/777-3854	P	Tutu Park Mall	Y		Escripts	ERX Network	2009	prevent fraud	Almost all the doctors are using it.	Karl Starns/ Pharmacy Manager
CRSM Inc. (Med Shoppe)/776-1235	P	Havensight	N						Received Prescriptsion via written, phone or fax	Amy Duran
Nisky Pharmacy/776-	P	4-D Lindbergh Bay							No answer	
Community Medical Lab/776-7444	L	Paragon Medical Bldg		Y	Care 360	Quest	1996	Save time	Reference Lab for test that they don't do there. However, the patients always bring their requistions.	Esther Henderson-Phar Tech.
USVI Clinical Lab/774-	L	4th Street Estate							No answer	
Dr. Clinical Lab/774-2760	L	VI Medical Foundation Bldg							Phone not working/ also tried the fax number also not working	
Cranston/Dottin	L	Medical Arts		N					Send all results manually.	Angelina/Susan Cr

Appendix C: Interfaces

Entity	Type	Interface
Roy L. Schneider	Hospital	Meditech
Juan Luis	Hospital	Meditech
STT East End Medical Ctr.	FQHC clinic	NeoMed
Frederiksted Clinic	FQHC clinic	NextGen
DOH	DOH clinics	
Labs	private labs	Care360
Labs	private labs	Schuylab
Pharmacies	private labs	Surescripts
Cigna	health plan	
MAP	MMIS	HealthPAS
Private providers	EHR	NextGen
Private providers	EHR	NeoDec
Providers w/out EHR		EHR lite
Immunization Registry	public data	
Vital Statistics	public data	
NHIN	HIE	NHIN CONNECT