The **Digital Initiatives Group at I-TECH (DIGI)**, in the University of Washington's Department of Global Health, delivers innovative, appropriate, and user-centered digital health solutions that improve access to information and support decision-making by health workers, clients, and communities. The current projects and products DIGI supports fall under four of our priority technical areas: Software Design & Development; Health Information Systems Architecture; Evidence-Based Evaluation and Implementation; and, Digital Health Workforce Development.

## Software Design & Development

**Côte d'Ivoire Lab Information Systems (LIS):** For a decade, I-TECH has worked in Côte d'Ivoire in collaboration with the CDC to develop and implement an electronic laboratory information system (LIS) in key laboratories, OpenELIS Global. I-TECH has worked closely with the Ivorian Ministry of Health and Public Hygiene (MSHP)'s *Direction de l'Informatique et de l'Information Sanitaire* (DIIS) to identify, develop, and reinforce the capacity of local professionals to lead and conduct LIS training, deployment, and maintenance activities in anticipation of national rollout of the LIS at 96 general hospital laboratories. In 2018-19, the team reengineered OpenELIS Global to meet supported, hardened Center for Internet Security (CIS) standards and convert the Java framework from Struts I to Spring. The platform also offers a viral load dashboard and key features for the scale up of viral load monitoring for HIV care and treatment (batch entry, study support, and barcoding).

**Zimbabwe Data Governance and Management:** I-TECH Zimbabwe is a PEPFAR direct service delivery partner, supporting HIV testing, linkage, care and treatment services in more than 300 health facilities.  Traditional data collection and management tools and processes have large gaps in data quality and are not optimized for performance monitoring, quality improvement, and reporting.  I-TECH is investing in improved tools and processes for data governance, data capture, and reporting, including mobile data collection.

## Health Information Systems Architecture

**Cameroon HIS Strategic Planning:** National strategies, policies, and governance define the implementation environment for health information systems (HIS), which are recognized as a foundational building block for health system goals, including universal health coverage and control of HIV and other infectious diseases.  I-TECH is supporting Cameroon's Ministry of Health (MOH) to develop a national eHealth strategic plan by September 2019. A goal of the project will be to develop governance structures and processes, which can continue onward beyond the strategic planning process under MOH leadership, for on-going strategic direction, coordination, and oversight of investments in the national health information system.

**OpenELIS Integration:** Digital Square is a five-year, multi-donor partnership between the funders, including United States Agency for International Development (USAID) and the Bill and Melinda Gates Foundation (BMGF), and PATH to mobilize and coordinate digital health resources. The Digital Square aims to identify and accelerate the use of global goods at the country level while supporting development of new technologies. In pursuit of this goal, Digital Square is supporting the integration of the OpenELIS Open-Source Laboratory Information System with leading open-source clinical and logistics information systems OpenMRS and OpenLMIS, respectively. There has been remarkable progress in development and implementation of electronic medical records (EMR), laboratory information systems (LIS), and logistics management information systems (LMIS) in resource-limited settings. However, the siloed nature of many implementations means there is tremendous untapped potential within existing tools. Achieving interoperability of open-source data systems has potential to boost efficiency and quality of front-line clinical services where these systems are used.

**Haiti HIS Architecture:** At the request of the MSPP and the Centers for Disease Control and Prevention Global AIDS Program in Haiti (CDC GAP), I-TECH began developing electronic medical records system called iSanté in 2005.

iSanté is used at over 150 hospitals and clinics around Haiti and includes about1.3 million patient records. The system includes patient care summaries, population-level data dashboards, automated program reports, epidemiological monitoring, and indicator reporting, and is linked to the open-source lab information system OpenELIS, an open source LIS developed by I-TECH and used in multiple countries by numerous Ministries. With demands for nation-wide biometric identification, continuity of care, and the ability to send and receive lab results electronically between clinical and referral labs, I-TECH conducted a national review of the systems and architecture. Current efforts to modernize the system and the overall architecture are underway, rebuilding it on an OpenMRS platform, adhering to the Open Health Information Exchange (OpenHIE) pattern and international health informatics standards. iSantéPlus is currently being rolled out nationwide, with additional modernization efforts scaling up through 2019 and 2020.

**Malawi Case-Based Surveillance Design and Evaluation:** Strengthened surveillance capacities and systems required to measure the population-level impact of HIV interventions as the program strives to attain the UNAIDS 95-95-95 treatment targets. I-TECH collaborates with Malawi Ministry of Health (MOH), Baobab Health Trust, and CDC to develop and implement a secure, electronic, person-level HIV surveillance system capable of supporting case-based surveillance (CBS) and providing business value to MOH. I-TECH is supporting the completion of the CBS system, its pilot implementation, and its evaluation to determine if it meets stakeholder needs and is suitable for scale up.

## Evidence-Based Evaluation and Implementation

**Cambodia Registration Management System Review:** In partnership with FHI360, I-TECH will strengthen data systems on human resources for health in Cambodia. Specifically, I-TECH will help to design and implement a national electronic database for systematic monitoring and management of health care practitioner registration and licensure. In 2019, I-TECH carried out a rapid assessment to determine the extent to which the existing registration management system meets the needs of the Health Professions Council, identify gaps and needs that stakeholders feel should be incorporated into the data system, and clarify requirements for a strengthened HRH registration data system.

**HIS Community of Practice:** I-TECH aims to advance collaboration among OpenMRS implementations to improve OpenMRS functionality in response to PEPFAR needs in five countries through creation of the PEPFAR OpenMRS community of practice. Through the OpenMRS PEPFAR Collaborative, I-TECH will build stakeholder knowledge of open source community practices and foster improved engagement with the global OpenMRS community among five target countries (Haiti, Kenya, Mozambique, Nigeria, and Uganda). The team will enable participants in the OpenMRS PEPFAR Collaborative to share efforts and development resources in order to build agreed upon solutions for OpenMRS products to address gaps in priority functionalities. They will also strengthen collaboration among stakeholders by assisting five target countries to identify areas for collaboration, mentor implementing partner developers on technical solutions for common challenges, and best practices for contributing to shared OpenMRS development projects. Lastly, staff are encouraging increased participation between the OpenMRS PEPFAR Collaborative implementations and the global OpenMRS community.

## Digital Health Workforce Development

**TrainSMART:** The Training System Monitoring and Reporting Tool (TrainSMART) is a web-based data collection system that allows users to track training programs, enter information about trainers and trainees, evaluate programs, and report activities to stakeholders. In addition to capturing training data, TrainSMART has a robust reporting module that allows users to run various automatic reports, as well as create and save customized reports for any time period. I-TECH has supported the deployment of TrainSMART in over 30 countries, working closely with ministries of health to adopt and transition the tool to local ownership.