

Luke Duncan

Digital Health Assistant Director

SUMMARY OF RELEVANT EXPERIENCE

Luke Duncan has more than 20 years of professional experience in developing software by using open source technology and programming languages such as JavaScript/Node.JS, PHP, Java, Perl, PL/SQL, and JSP. He is an expert in Oracle, My SQL, PostgreSQL, and Informix databases as well as XML, XSL, HTML5, and CSS. He is a member of the Integrating the Health Enterprise (IHE) Information Technology Infrastructure (ITI) committee and has authored profiles using HL7's Fast Healthcare Interoperability Resources (FHIR). He has also worked with Vue.JS, AngularJS, React, Elasticsearch, Kibana, Python, Go, Ruby, and MongoDB. Over the past twelve years, Mr. Duncan led the design and development of the iHRIS suite of software, including its implementation in Uganda, Rwanda, and Tanzania. He also provided technical support to country developers working with iHRIS in customizing the system and maintained public access to all source codes on launchpad.net. Prior to joining IntraHealth, Mr. Duncan was a systems programmer at Infosystems Technology Inc. where he worked with systems and applications administrators to develop and maintain tools to monitor their systems. He also developed and maintained the company's control center website and led the development of tools to help track infected systems.

INTERNATIONAL EXPERIENCE Botswana, Democratic Republic of the Congo, Ethiopia, Ghana, Guatemala, India, Kenya, Namibia, Nigeria, Pakistan, Rwanda, Senegal, Swaziland, Tanzania/Zanzibar, Uganda

PROFESSIONAL EXPERIENCE

Assistant Director, Digital Health, IntraHealth International

May 2017 - Present

Chapel Hill, North Carolina

Manages a team of developers to support iHRIS and other software products. Works with Integrating the Health Enterprise (IHE) on international standards supporting our work: mCSD, CSD, and mACM. Designs and develops the iHRIS software using open source technologies, including iHRIS Manage, iHRIS Qualify, iHRIS Train, and iHRIS Plan. Interacts with iHRIS users and department representatives to ensure product development meets stated functional requirements, system design, standards, and data integrity. Builds web-driven software using Node.JS, MongoDB, PHP, MySQL, and Apache. Supports in country developers working with the iHRIS suite of software with customizations and maintenance. Maintains public access to all source code on launchpad.net or GitHub.

Senior Systems Developer, IntraHealth International

January 2006 – May 2017

Chapel Hill, North Carolina

Designed and developed the iHRIS software using open source technologies including iHRIS Manage, iHRIS Qualify, and iHRIS Plan. Interacted with iHRIS users and department representatives to ensure product development meets stated functional requirements, system design, standards, and data integrity. Implemented and installed HRIS software in Uganda, Rwanda, and Tanzania. Built web-driven software using PHP, MySQL, and Apache. Managed software contributions from a team of developers based on feature requests from technical leaders and in country requests. Supported in country developers working with the iHRIS suite of software with customizations and maintenance. Maintained public access to all source code on launchpad.net.

Systems Programmer, Infosystems Technology Inc.,

2001 –2005

Chapel Hill, North Carolina

Maintained and developed the Control Center website and tools: <http://control-center.unc.edu/>, Cujo, and Service Monitor. Worked with systems and applications administrators to develop and maintain tools to monitor their systems, recognize recurring problems in the monitoring infrastructure, and initiate corrective action. Worked with departmental representatives to resolve, implement, and sign-off approved user requests. Worked with Control Center administrators to build tools for monitoring the campus network and systems and maintain documentation of Control Center policies and procedures. Worked with other groups on campus such as OASIS, Telecom, and the IT Response Center to develop and maintain custom tools.

Chief Technologist, Catalogue.com

1997 –2000

Chapel Hill, North Carolina

Developed and maintained e-commerce and dynamic web sites using Perl, ASP, PHP, and Server-Side JavaScript with an Informix database back end. Developed and maintained administrative web applications to manage dynamic web sites. Assisted with system administration duties. Managed team of developers working with Java and JSP. Identified potential threats and vulnerabilities, assessed the risks of these to the organization, and implemented appropriate corrective or preventative action.

Lead Programmer, Ventana Communications Group

1994 –1997

Research Triangle Park, North Carolina

Provided the underlying system platform programming support on which applications are developed and deployed. Developed and maintained website for informational purposes and an online sales catalogue. Managed rewrite of e-commerce site using Netscape Enterprise server and Server-Side JavaScript. Investigated, designed, and implemented new features for the Oracle database server environment, develop OM Policies and other monitoring components, and assist monitoring specialists in the application support areas in doing the same. Responsible for system administration and backups of Solaris servers and applications. Converted published books to HTML for reading from CD and having online updates.

SELECT PUBLICATIONS

Abdoulaye Diedhiou, Kate E Gilroy, Carie Muntifering Cox, Luke Duncan, Djimadoum Koumtingue, Sara Pacqué-Margolis, Alfredo Fort, Dykki Settle and Rebecca Bailey. Successful mLearning Pilot in Senegal: Delivering Family Planning Refresher Training Using Interactive Voice Response and SMS, Global Health: Science and Practice, 2015

Duncan L. Official Netscape Server-Side JavaScript for Database Applications, Ventana Communications Group, 1997.

Duncan L, Alan Wyke. The Perl 5 Programmer's Reference, Ventana Communications Group, 1997.

Duncan L, Sean Michaels. Official Netscape Technologies Developer's Guide: All Platforms Ventana Communications Group, 1997.

Duncan L, Sean Michaels. Official Netscape ONE Book: Create Integrated, Platform-Independent Web Applications. Ventana Communications Group, 1997.

Duncan L, Gareth Branwyn, Sean Carton, Tom Lichty, Shannon Turlington, et al. Internet Roadside Attractions: Sites, Sounds, and Scenes along the Information Superhighway. Ventana Communications Group, 1995.

Richard Stanley, PhD, MSc
Senior Technical Advisor, Digital Health

SUMMARY OF RELEVANT EXPERIENCE

Dr. Richard Stanley manages product development for data science, analytics, and interoperability to support the digital transformation of health systems. He has worked in technical leadership roles across 30 countries over the course of his 24-year career. As the global lead for real-time information systems at UNICEF and innovation lead in Afghanistan, he led the first pilot for RapidPro, an easy-to-use tool to create text messaging-based applications. He is proficient in Python and Stata and has a background as a Unix systems administrator. Richard has a PhD in Politics from the University of Oxford and has conducted quantitative research on the impacts of climate change and conflict on child survival. He was a Fulbright Fellow in Sierra Leone and National Science Foundation Graduate Research Fellow.

EDUCATION

Doctor of Philosophy, Politics, University of Oxford, Oxford, UK, 2013

Master of Science, African Studies, University of Oxford, Oxford, UK, 2006

Bachelor of Arts, Political Science, University of California, Berkeley, CA, 2005

INTERNATIONAL EXPERIENCE

Afghanistan, Ghana, Sierra Leone, South Sudan, Sudan, Uganda

PROFESSIONAL EXPERIENCE

Senior Technical Advisor, IntraHealth International

May 2017 - Present

Washington, DC

Digital health product management and global technical leadership, including international health interoperability efforts for the OpenHIE community of practice, and for the iHRIS community. Create data science analytics, services and training for USG-funded projects and for internal staff. Support critical projects for persons living with HIV in Tanzania, volunteer community health workers in Uganda, and the health workforce management in Kenya.

Web Application Developer, Freelance

August 2016 – February 2017

London, UK; Kensington, Maryland

Built prototype software products for undervalued problem domains, including an Amazon Alexa skill for medication reminders as part of a larger effort to enable safer living for seniors and others with limitations due to illness or disability. Created a chatbot that finds the latest journal articles and preprints to promote scientific research. Prototyped solutions to overcome slow networks and to make it easier to deploy web applications in legacy data centers. Contributed data science expertise to an open data platform for civic engagement.

Global Product Manager, Senior Technology Specialist, UNICEF

May 2015 – April 2016

Kampala, Uganda

Owned the global roadmap, strategy, execution, and growth of real-time information systems. Provided high-level technical product support for youth engagement (U-Report), polio eradication, digital health, education, and child protection. Grew mobile application adoption for government interventions in more than 30 countries, with over 200 million sent messages. Supported launches in Brazil, China, India, Thailand, Pakistan, and a dozen African countries, a \$3 million program. Ensured agile project management with globally distributed vendors to deliver features including Android-based data collection, and channels for voice, USSD, and Facebook Messenger integration. Built the capacity of in-country stakeholders on how to forge partnerships with regulatory authorities and mobile network operators. Drove the development of the Kolibri platform for offline learning in refugee camps.

Innovation Lead and Program Manager, UNICEF

April 2013 – April 2015

Kabul, Afghanistan

Led innovation for UNICEF programs in health systems strengthening, polio, and education. Launched the first mobile application initiatives in conflict areas to reach out-of-school children and improve polio campaigns. Conducted and contracted the first global pilot for RapidPro, an easy-to-use tool to create text messaging-based applications. Designed the technical architectures, trained government and technical staff, and managed mobile network operator contracts.

Director of Research and Innovation, Forcier Consulting

December 2012 – April 2013

Juba, South Sudan

Managed the production of high quality research and rapid data analytics for monitoring and evaluations in Somalia, South Sudan, Uganda, Egypt, and Sudan. Directed the first national survey in South Sudan enumerated with smartphones. Supervised 19 field staff and mentored early career researchers. Managed the relationship with the national statistical authority. Authored evaluation reports, grant proposals, and rapid data analytics.

Field Research Manager, Institute for Development Studies

February 2011 – July 2011

Khartoum, Sudan

Managed a Darfur-wide household survey of nutritional status, exposure to conflict and gender-based violence, migration, and livelihoods. Supervised 50 field staff in conflict areas across Darfur. Coordinated with stakeholders including ECHO, FAO, WFP, and UNICEF.

Data Analyst and Statistician, Freelance

May 2008 – June 2013

South Sudan, Sudan, Liberia, Sierra Leone, UK

Statistical, monitoring and evaluation, and data consultant. Highlights:

- War Child, Sudan: Designed a randomized controlled trial for a digital education project for displaced persons.
- Population Council, South Sudan: Created analytics for a DFID-funded policy planning and decision support tool.

- Norwegian People's Aid, South Sudan: Supervised the data entry and created analytics for a UNHCR/UNFPA survey on gender-based violence and conflict. Managed 15 data entry staff.
- WHO Barcelona Office for Health Systems Strengthening: Devised methodologies for tracking out-of-pocket spending on healthcare and published articles.
- Department of Economics, University of Oxford: Statistical analysis on conflict, trade, and foreign aid.
- UN Country Team, Sierra Leone: Researched the impact of rising fuel prices on poverty reduction and led authorship of a report for FAO/WFP.

Fulbright Fellow, US Department of State

February 2008 – November 2008 Freetown, Sierra Leone

Field research in public health about the impacts of foreign aid and the civil war on the health system and health outcomes. Analyzed raw census data and all available household surveys (DHS and MICS). Revised mortality rate and nutritional status estimations given seasonality.

Unix Systems Administrator, Identity Engines

July 2006 – October 2006 Mountain View, California

Provided Unix systems administration support for a defunct security startup. Created multi-platform (UNIX and Windows) solutions for enterprise network integration. Upgraded infrastructure for engineering teams.

Software QA Engineer and Unix Systems Administrator, Freelance

February 2001 – January 2006 Berkeley, California

Engineering and Unix systems administration in the high technology sector. Highlights:

- UC Berkeley: Programmed Perl and shell utilities to maximize network and storage resources.
- LSI Logic: Wrote a comprehensive testing harness in Perl and shell scripts for company products.
- Hitachi Global Storage Technologies: Created and conducted the full spectrum of tests for fiber optic products.

GIS Applications Specialist, Centre for Remote Sensing and GIS

October 2004 – January 2005 Legon, Ghana

Volunteer GIS analyst for a research institution. Designed the telecommunications architecture for a monitoring system for all development activities in Ghana. Wrote a grant proposal for Buduburam Liberian refugee settlement for water and sanitation issues.

Unix Systems Administrator, Sun Microsystems

May 1996 – January 2001 Cupertino, California

Provided enterprise IT support for the Java engineering division and built capacity across the company in advanced systems administration. Maintained an environment with 1,900 clients and servers. Trained Solaris system administrators across North America.

SELECT PUBLICATIONS

Adhvaryu, Achyuta, Prashant Bharadwaj, James Fenske, Anant Nyshadham, and Richard Stanley, 2016. Dust and Death: Evidence from the West African Harmattan. Working paper. Oxford: Center for the Study of African Economics.

Stanley, Richard, 2013. Micro-macro paradoxes: The effects of conflict and aid on child survival. PhD diss., University of Oxford.

Markova, Nora and Richard Stanley, 2011. Behind the estimates of out-of-pocket spending on health in the former Soviet Union. Copenhagen: WHO Regional Office for Europe.

Stanley, Richard, 2010. Supporting democratic institutions and clean and peaceful elections. Working paper. Oxford: Center for the Study of African Economics.

Stanley, Richard, Eitor Briggs, Suhrid Patel, and Lansana Wonneh, 2008. The severe impact of the food crisis: A situational assessment of the food crisis in Sierra Leone. WFP and FAO.

Stanley, Richard, 2007. Why are civil wars in Africa more difficult for governments to win? A quantitative study of civil war outcomes. World Bank.

Brian Lamb, MSc

Senior Full Stack Developer

SUMMARY OF RELEVANT EXPERIENCE

Brian Lamb is a versatile software engineer with over 8 years of software development experience. He has a passion for coding and building complex web applications using modern web technologies and languages, such as Vue.JS, Node.JS, PHP, Java, Python, and C++. Mr. Lamb has worked closely with product owners during his time at Research Square to create and implement customer facing applications, most often involving a dynamic frontend interfacing with apis designed support built by external parties, designed to aid clients in their research. He is currently upgrading the iHRIS software, IntraHealth's flagship human resources for health solution, to utilize modern JavaScript frameworks to maintain systems interoperability and usability. He conducts source code reviews to assure quality and functionality and optimize site code for maximum speed and scalability. Mr. Lamb provides technical support to junior developers, across IntraHealth's 31-country global portfolio, to build high-quality open source software that interoperates with other Open Standards software.

EDUCATION

Masters of Science, Computer Science, Wake Forest University, Winston-Salem, NC, USA, 2006

Bachelors of Science, Computer Science, Wake Forest University, Winston-Salem, NC, USA, 2005

PROFESSIONAL EXPERIENCE

Senior Full Stack Developer, IntraHealth

April, 2019 - Present

Durham, NC

Oversee the development of iHRIS 5.0, an open source human resource information system being utilized in 27 countries. Convert mockups of iHRIS 5.0 to a workable code to ensure continued leadership in health information systems and maximize interoperability. Interface with FHIR, PostgreSQL, and MySQL databases. Maintain an open line of communication with managing practitioners of current iHRIS software in multiple countries. Partner with engineers, designers, and program staff to manage the full software development process, including requirements definition, prototyping, design, coding, testing, deployment, bug fixes, site improvement, and enhancements.

Senior Web Developer, Network Merchants

October, 2017 – March, 2019

Roselle, IL

Integrated the Network Merchants systems with multiple payment processors. Worked closely with the product managers to determine what features would prove to be most beneficial to customers. Worked with team members, as part of an architecture focus group, to test new software that could be integrated in the system. Assisted in the upgrade of legacy code in an effort to move the code base to PHP 7.

Backend Developer, Star2Star Communications

May, 2016 – October, 2017 *Sarasota, FL*

Responsible for the implementation of a unified dial plan, which allows customers across multiple locations to use the same prefix when connecting phones to their system. Upgraded the main application from PHP 5.1 to PHP 5.6. Introduced modern coding practices to a legacy system, improving the overall maintainability of the application.

Software Engineer Team Lead, Research Square

September, 2010 – March, 2016 *Durham, NC*

Managed a team of 7-8 developers. Oversaw resource assignment, project management, and individual development planning. Coordinated the effort to build a peer review management application which allowed customers to purchase a report outlining any problem areas in their manuscript. Constructed an Elastic search engine that is being utilized by multiple applications to search over 40 million publications. Primary project was to develop a social media network for researchers to connect and share publications

Web Programmer, J. Craig Venter Institute

August, 2007 – June, 2010 *Rockville, MD*

Restructured the main website from a static version to a dynamic content management system which brought more traffic to the site. Modified corporate intranet to allow interdepartmental collaboration between researchers. Spearheaded a project to develop a series of PHP and Perl scripts that could be shared across multiple teams and multiple projects.

Computer Programmer I, Duke University

January, 2007 – July, 2007 *Durham, NC*

Developed a Java GUI application for a database management program used in protein fabrication automation which enhanced the functionality of a Tecan Genesis Freedom liquid handling robot. Redesigned and maintained the laboratory website.

Senior Web Programmer, Knowledge2Work

January, 2002 – January, 2007 *Winston Salem, NC*

Worked with clients to build websites that suited their various business needs. Built an e-commerce site for Wake Forest University that allowed parents to register and purchase items for homecoming. Developed the website for the local art museum, Reynolda House.

Emily George Nicholson, MPH

Technical Advisor

SUMMARY OF RELEVANT EXPERIENCE

Emily Nicholson brings more than 10 years of experience in digital health and global health, leading and supporting solutions that include mHero, iHRIS, DHIS2, and OpenMRS, and serves on the leadership team of the OpenHIE community. As a well-rounded professional, Ms. Nicholson uses her experience to serve as a business analyst, liaising between national governments, technical experts and implementers of health systems to ensure a common understanding of requirements and expectations among stakeholders and systems developers. In this role she has also overseen the development of technical requirements documents, product roadmaps and user manuals, and applies the principles of digital development and user-centered design to ensure that the user experience aligns with business needs. Ms. Nicholson is a proven project manager with extensive experience in strategic planning, monitoring and evaluation, work planning, budgeting, project start-up and closeout, and training.

EDUCATION

Master of Public Health, Public Health Leadership, University of North Carolina, Chapel Hill, NC, 2015

Certificate, Human Rights and Humanitarian Law, American University Washington College of Law, Washington, DC, 2006

Bachelor of Arts, Latin American Studies and Political Science, University of North Carolina, Chapel Hill, NC, 2000

INTERNATIONAL EXPERIENCE

Bolivia, Cambodia, Costa Rica, Cuba, Ecuador, Guatemala, Honduras, India, Japan, Kenya, Liberia, Malawi, Mexico, Mozambique, Peru, Sierra Leone, Tajikistan, Tanzania

PROFESSIONAL EXPERIENCE

Technical Advisor, IntraHealth International

July 2018 – Present

Chapel Hill, North Carolina

Leads digital health efforts across a variety of countries in East and West Africa, including the rollout of OpenMRS and a biobehavioral survey (BBS) using ONA forms in South Sudan, the use of biometric devices to track provider attendance at circumcision campaigns in rural Tanzania, and the provision of technical assistance to Ministries of Health in Liberia and Sierra Leone as they build out their health information systems. Provides technical assistance and project management for the Facility Match and the CDC-funded PEPFAR DATIM Project, supporting a team to design tools to enhance interoperability and data-driven solutions, with a focus on user-centered design and thorough documentation. Works closely with stakeholders in ministries of health and other health service delivery organizations to troubleshoot and define digital health needs, gaps, and identify stakeholder goals.

Senior Informatics Officer, IntraHealth International*August 2015 – June 2018**Chapel Hill, North Carolina*

Co-led mHero deployment and scale-up in Liberia and led deployment in Sierra Leone, including development of the mHero Roadmap, configuration of the platform for electronic integrated disease surveillance and response (eIDSR), development of technical documentation, and creation of more than 25 tools to support mHero utilization. Under the CDC P4 Project, spearheaded the development of tools and resources for the implementation of OpenHIE architecture and led Health Worker Registry and InterLinked Registry Communities. Developed training materials and user manuals on interoperability of immunization registries in Tanzania. Managed University of Oslo contract to develop FHIR server-side apps to connect logistic management information systems (LMIS) with DHIS2. Advised ministries of health on the use of open source health information systems (HIS) to meet identified needs around the collection, analysis, and use of health data. Served as a liaison between technical experts and implementers of health systems, translating sequence diagrams and data flows into visual graphics and user stories to ensure common understanding among stakeholders.

Temporary Program Officer, IntraHealth International*May 2015 – August 2015**Chapel Hill, North Carolina*

Reviewed and revised key human resources for health (HRH)-specific M&E tools including HRH M&E Guidelines, Indicator Compendium, and HRH Effort Index. Provided technical inputs and coordination for evaluation of impact of HRIS intervention on service delivery outcomes in India, particularly related to ending preventable child and maternal death (EPCMD).

Graduate Research Assistant and Teaching Assistant, UNC School of Public Health*August 2013 – May 2015**Chapel Hill, North Carolina*

Managed UNC's Residential Global Health Certificate Program for over 50 students annually. Advised students and tracked their progress through graduation. Coordinated Global Health Discussion Speaker Series.

Human Resources for Health Summer Fellow, IntraHealth International*May 2014 – July 2014**Chapel Hill, North Carolina*

Developed HRH indicators and revised existing indicator compendium for global applicability. Assisted with the development of Country Portfolio Management System (CPMS) and user's manual. Documented USAID flagship human resources for health project's efforts to strengthen human resources management among Christian health associations of Africa.

Student Consultant, FHI 360*January 2014 – April 2014**Chapel Hill, North Carolina; Delhi, India*

Utilized PDSA improvement cycle to design and implement systematic changes to a HIV helpline, Sahaay Helpline. Conducted informant interviews and focus groups to identify problems and prioritize solutions. Developed implementation and evaluation plan and final report with recommendations

Program Manager, Honduran Health Alliance

December 2012 – December 2013 Chapel Hill, North Carolina; El Corpus, Honduras

Served as a liaison between UNC and community leaders to build local capacity to advocate for improved access to basic health services. Supervised the operation of a 3-week cervical cancer screening and family planning clinic in rural Honduras. Led multiple program assessments and team building exercises, including end of program participatory evaluation to ensure culturally appropriate delivery of high quality clinical services. Conducted primary research on barriers to care in the Honduran health system. Created a steering committee to oversee the long-term sustainability of the alliance, ensure the needs of the communities are addressed, and foster greater collaboration between local counterparts and UNC.

Program Officer, FHI 360

December 2008 – November 2011 Durham, North Carolina; Arlington, Virginia

Backstopped six country offices for the \$26 M USAID-funded TB CARE award, including developing and tracking project budgets, procurement, work planning, and compliance with USG regulations. Oversaw FHI's IDIQ contract with the CDC for technical, business, and training-related services, including partner/subcontractor coordination and award management. Designed process for review of country offices, including creation of guidelines, tools and templates and managed more than five country office reviews per year. Led development and refinement of organization-wide performance standards and assisted in the design and implementation of a capacity building framework (plans, processes, tools) to strengthen country office performance and quality of services, deliverables and staff satisfaction. Coordinated start-up of END Neglected Tropical Disease (NTD) in Africa award.

Associate Program Officer, FHI 360

April 2007 – December 2008 Arlington, Virginia

Developed and managed data and tracking tools for project deliverables, events, contracts & publications. Assisted in the planning and implementation of USAID's IMPACT project closeout event including responsibility for international travelers, event agenda, logistics, and follow-up.

Natural Childbirth Educator, Bradley Method of Husband-Coached Natural Childbirth

July 2007 – July 2011 Arlington, Virginia

Taught 12-week courses for expectant couples focusing on prenatal nutrition and exercise, relaxation methods, stages of labor, birth plans, complications, and postpartum preparation. Conducted research and provided on-call support for expectant couples through birth.

Integrated Education Specialist, United States Peace Corps

May 2002 – July 2004 Saipina, Santa Cruz, Bolivia

Designed and facilitated workshops for public school teachers on health practices, the creation and use of didactic materials, learning environments, self-esteem, gender, and conflict resolution. Served as advisor and treasurer for community Women's Club, conducting self-esteem building activities, introducing bookkeeping methods, managing fundraising events, giving classes on cooking and health.

Past Performance Information

Title, duration: Open Health Information Exchange (OpenHIE) Public-Private Partnership, 04/15-01/2019		
Role: Subrecipient to Cardno Emerging Markets	Budget: \$1,041,072	Funding source: Centers for Disease Control, Cooperative agreement U2GGH0015131
Collaborations: OpenHIE community, Cardno Emerging Markets		
Geographic and population focus: Global community of health experts and open-source software developers		
<p>Main achievements: The Open Health Information Exchange (OpenHIE) is a global community of practice established to harmonize health information systems. With funding from CDC, IntraHealth International supports the development of community, standards, and technology through OpenHIE.</p> <p>To develop the OpenHIE community, IntraHealth serves as the secretariat for the Health Worker Registry and InterLinked Registry communities, by convening community calls, strengthening documentation, providing guidance on implementing governance policies, and making tools and resources available to implementers.</p> <p>To improve interoperability standards, IntraHealth authors and refines standards based on community and country feedback to ensure they meet needs and use cases, IntraHealth has co-authored two international standards through the Integrating the Healthcare Enterprise (IHE) standards development organization: Care Services Discovery (CSD) and the Mobile Alert Communication Management (mACM). The CSD standard addresses the exchange of health worker and health facility information across multiple systems, for example, to interface with insurance platforms to support insurance payment schemes in order to achieve universal health coverage. The mACM standard paves the way for seamless communications between local information-gathering entities—such as nurses in hospitals or even automated monitors—and more distant health workers, administrators, or clients. mACM alerts operate via mobile phones, and can be used for emergency response, patient care reminders, or other communication in low resource settings.</p> <p>To translate these standards into practice, IntraHealth has developed interoperability technology such as OpenInfoMan, an implementation of the CSD profile to find matching services and query for updated services transactions as part of OpenHIE. OpenInfoMan is the engine behind the CSD-compliant Health Worker Registry. IntraHealth is also developing an implementation of the mCSD profile to add Fast Healthcare Interoperability Resources (FHIR) support to the Health Worker Registry, and Global Open Facility Registry (GOFR) tools to support ministries of health as they develop and maintain master facility lists and link them with existing public sources of health facility data. IntraHealth has also developed a deduplication tool to identify potential duplicate records in the interlinked Health Worker Registry according to the CSD standard, and user authentication and authorization tools that enable a user to have a single, secure sign-on ID that is usable across applications.</p>		