



USAID
FROM THE AMERICAN PEOPLE

Digital Liberia and Electronic Government Activity

Final Report

Submission Date: March 1, 2020
Contract Number: AID-OAA-BC-16-00038
Activity Start and End Date: September 30, 2016 to April 15, 2020
Contracting Officer Representative: Laura Garnett
Submitted by: Claire Gowen, Project Management Unit Director
Chemonics International Inc.
1717 H Street, NW
Washington, DC. 2000
E-mail: DigitalLiberiaPMU@chemonics.com

DISCLAIMER

This document was produced for review by the United States Agency for International Development. It was prepared by Chemonics International Inc. for the Digital Liberia and Electronic Government Activity. The author's views expressed in this publication

TABLE OF CONTENTS

- Acronym List ii
- Executive Summary 1
- Section 1. Project context..... 3
- Section 2. Digital Liberia Achievements 3
 - Project Purpose and Scope..... 3
 - Implementation approach..... 5
 - Joint Achievements 3
 - Objective 1 6
 - Objective 2 14
- Section 3. Learning and Adapting..... 25
- Section 4. Summary of Results 27

ACRONYM LIST

AMIS	asset management information system
CCL	Cable Consortium of Liberia
CEO	Chief Executive Officer
CIO	chief information officer
CSA	Civil Service Agency
CSC	County Service Center
CTO	Chief Technology Officer
FY	financial year
GEMS	Governance Economic and Management Support
GIS	geographic information system
GSA	General Services Agency
GOL	Government of Liberia
ICT	information and communications technology
IFMIS	integrated financial management information system
ISP	internet service provider
IT	information technology
ITT	invitation to tender
LAN	Local Area Network
LIXP	Liberia Internet Exchange Point
LRA	Liberia Revenue Authority
LRREN	Liberia Research Education Network
LTA	Liberia Telecommunications Authority
MEL	monitoring, evaluation, and learning
MAC	ministries, agencies, and commissions
MFDP	Ministry of Finance and Development Planning
MIS	management information systems
MNO	Mobile network operators
MM	Mobile money
MOCI	Ministry of Commerce and Industry

MOE	Ministry of Education
MOH	Ministry of Health
MOPT	Ministry of Posts and Telecommunications
NSRC	Network Startup Resource Center
PAC	Project Advisory Council
PDIA	Problem Driven Iterative Adaptation
PMO	project management office
PPCC	Public procurement and concessions commission
RFQ	request for quotation
SOP	Standard operating procedures
UPS	Uninterrupted power supply
VAS	Value-added services

EXECUTIVE SUMMARY

PROGRAM OVERVIEW

The Digital Liberia and Electronic Government (eGov) Activity (henceforth referred to as “Digital Liberia”) is funded by the USAID Global Development Lab (the Lab), in collaboration with USAID/Liberia. The program is intended to build on the momentum started both before and during the Ebola crisis to strengthen the Government of Liberia’s (GOL) Information and Communications Technology (ICT) capacity and improve connectivity to better prepare the GOL to prevent, detect, and respond to potential future health crises. The three-and-a-half-year activity, which began in October 2016, is implemented by two contractors – Chemonics International and IBI – with each firm responsible for one of the objectives and Chemonics providing overall coordination.

The Digital Liberia Activity aims to improve government’s performance and bring government closer to citizens by assisting it to develop its internet and computer technology capability. This is achieved through provision of technical assistance to help improve the connectivity and institutional capacity necessary to provide effective services. The Activity also seeks to increase sustainable utilization of ICT related systems, processes, and procedures at targeted Ministries, Agencies and Commission to improve government decision making and management. By supporting the capacity development of government internet services provision, the Activity works to extend inter-agency connectivity.

TECHNICAL OBJECTIVES

The Lab contracted Chemonics International to coordinate the overall implementation of Digital Liberia and directly implement all work under Objective 2. Objective 2 supported the capacity development of government internet service provisioning. The Lab contracted IBI to directly implement all work under Objective 1 and increase sustainable ICT utilization at targeted MACs to improve government decision-making and management. These two objectives are inextricably linked, and to ensure a one project approach, Chemonics and IBI collaborated, coordinated, and shared information on implementation approaches and best practices. Chemonics and IBI worked together as one project to deliver results. Additionally, both Chemonics and IBI committed to respecting each other’s contractual obligations. As such, the final report that follows represents the joint work of the team and separates specific activities, expected results, and MEL performance by objectives.

IMPLEMENTATION APPROACH

The Problem Driven Iterative Adaptation (PDIA) process used by Digital Liberia required understanding, time, and commitment by all stakeholders within the GOL and USAID. A fundamental component of the process is identifying problems, which those who have the authority are motivated to resolve. While the overarching problem for the project is “connectivity and the related capacity to utilize it effectively,” identifying the interrelated problems that are important to the GOL required time to collectively reflect and allow decision makers to dissect their most critical components. As the PDIA approach is established in our contract, it is important that those reviewing the project performance and results are familiar with the process.

DIGITAL LIBERIA SUMMARY OF ACHIEVEMENTS

Objective 1 achievements include:

- The Chief Information Officer (CIO) Council, being the institutional body responsible for the strategic implementation of the e-Government Strategy, is operational and performing many of its mandated functions with enhanced capacity.
- Weaknesses in GOLs mechanisms to budget for ICT-related expenditures were identified, and improvements to the Chart of Accounts implemented by MFDP.
- The new ICT Policy (2019-2024) was completed by MOPT and endorsed by the President. MOPT has begun taking steps to implement the new ICT policy, working towards a resource mobilization plan, and building capacity to coordinate and monitor implementation.
- GOL deployed a digital help desk system (osTicket) in 4 key areas to centrally manage, organize and archive service requests and responses, helping GOL to provide better customer service.
- MOPT designed and resourced an improved digital solution to administer mail-handling. When completed, it is expected to provide an efficient one-stop customer-centric environment.
- PROs and Communication directors at MACS are now able to directly publish and update information on their websites without the need to request the IT unit's assistance
- The National Legislature approved the deployment of a National Legislature web-portal to improve communication and transparency with constituents, initially by profiling members and showcasing its work.
- MOH (Ministry of Health) successfully migrated the email of 200 key staff from a variety of ad-hoc platforms onto an institutional email and collaboration platform (Google Apps)
- LRA successfully deployed the GSA's digital Asset Management Information System (AMIS) to monitor stock items, tag assets to users, run audit trails, and generate asset records history.
- The eLiberia web-portal (www.eliberia.gov.lr) was launched, providing an intuitive and user-friendly one-stop-shop for stakeholders to access online government services online.
- GOL developed improved, capacity at MFDP, CSA (Civil Service Agency) and 13 MACs to encourage and administer adoption of payment of staff benefits, especially in remote areas, via Mobile Money.
- GOL enrolled an additional 1,824 civil servants onto Mobile Money. 82% of enrollments are teachers and health workers under Ministry of Education (MOE) and Ministry of Health (MOH.)

Objective 2 achievements include:

- Provided strategic guidance and support to Libtelco and CSquared to facilitate the connection of 51 MACs to CSquared fiber. Procured and installed customer provided equipment (CPE) required for fiber connections; trained MAC IT staff on use of equipment.
 - Launched the GovNet platform, a government wide communications network that allows the seamless transfer of information between MACs, offering on-line services to them and the public at minimal cost. Connected 91 MACs to GovNet, which has a demonstrated time savings of more than one minute per IFMIS (integrated financial management information system) transaction and potential cost savings of more than \$400,000 annually.
 - Developed Guidelines for Internet Connectivity for IT Professionals (formerly called the Concept of Operations) and uploaded to the e-Liberia website and PPCC website for use by GOL IT professionals.
 - Developed internet procurement guidelines, standard bidding documents for internet procurement, an Internet Procurement Evaluation Report, and a frequently asked questions brochure for PPCC.
 - Trained 193 GOL employees in internet procurement procedures and supported 161 broadband communications and value-added services procurements
 - Developed the LIXP implementation and pricing plan that provides roles, challenges, and guiding principles for policymakers and stakeholders on the LIXP's maintenance, operation and development.
 - Developed the University of Liberia connectivity roadmap, which provides the plan for network rollout aligned with the overall ICT strategy of the University. Trained more than 30 specialists from 11 institutions in the design and management of campus internet and intranet.
 - Installed high-speed fiber backbones and wireless internet connection points at four University of Liberia campuses: Fendall, Capitol Hill, Medical School at Catholic Hospital, and Sinje.
 - Developed the governance structure to form the Liberia Research and Education Network (LRREN), comprised of eleven public and private universities. Developed the LRREN roadmap to guide its development and implementation. Sponsored a study tour to the Ghana Academic and Research Network (GARNET).
 - Launched a new online platform, ULOnline, and developed 18 Moodle courses in a variety of subjects.
 - Developed the LIXP implementation and pricing plan to present the benefits of a LIXP to key stakeholders.
-

SECTION 1. PROJECT CONTEXT

The effects of Liberia’s fourteen-year civil war cannot be understated. Over seventy-five percent of the population describe themselves as victims of the wars through displacement, destruction of property, direct violence, and/or abduction. An estimated 270,000 people were killed in a nation of only 3.5 million in pre-war population. Much progress has been made in addressing some of the causes and consequences of Liberia’s civil wars since the signing of the Comprehensive Peace Agreement in 2003. There is, however, a pervasive sense that many of the foundational issues, which spurred the protracted civil war, have not been addressed. The recent Ebola Crisis, responsible for the death of nearly 5,000 Liberians, exposed a fundamental fragility in the social contract and the inability of the central government to provide essential services, including information to Liberian citizens.

During the Ebola crisis, better information could have saved thousands of lives and stronger communications and digital integration within the Government of Liberia would have been invaluable in aiding the government in its response. Increased connectivity and digital programs have the potential to strengthen government efficacy to prevent and respond to future shocks, as well as support health, schools and other civil society facilities in accelerating recovery from the epidemic and strengthening their work over the long-term. USAID made a series of supply side connectivity investments in Monrovia to address infrastructure gaps that have resulted in high cost, poor quality internet.

Digital Liberia contributed to USAID/Liberia’s overall governance programs to ensure public resources are managed more accountability and transparently and to Development Objective I in USAID/Liberia’s Country Development Cooperation Strategy: more effective, accountable, and inclusive governance. It also supported improved outcomes in health, education and economic growth. At the start of the activity, the need for improved ICT infrastructure, improved availability and effective usage of ICT services, and a national CIO (Chief Information Officer) regime had been highlighted in both the National Telecommunications and ICT Policy (NTIP) and the Government of Liberia draft e-Gov Strategy. The Head CIO for the Government had been appointed and the Program Management Office (PMO) established; however, neither had been provided with resources or staff sufficient to fully carry out the ICT policy development and ICT services envisioned for the CIO regime. The eGov Strategy document stated that the national CIO regime in its current form is saddled with a number of challenges and requires immediate revamping to make the offices viable going forward. A baseline evaluation conducted by Dalberg highlighted several specific connectivity challenges (see box).

<p>Key Dalberg Baseline Findings</p> <ul style="list-style-type: none">• Access to internet is not primary connectivity barrier: 64% of individuals, 70% of businesses and 38 of 39 MACs (ministries, agencies and commissions) assessed have access to the internet• Businesses and MACs cannot typically afford adequate fixed line internet connections, and rely heavily on mobile data for their business needs• Households, businesses and MACs...appears to [have] latent demand for connectivity to allow use beyond the “everyday” tasks• Affordability and quality of internet services in Monrovia hold back use

SECTION 2. DIGITAL LIBERIA ACHIEVEMENTS

JOINT ACHIEVEMENTS

Project Advisory Council

Digital Liberia supported the early formation of a Project Advisory Council (PAC) to create structures for increased ownership and sustainability of Digital Liberia activities. Comprised of key ICT stakeholders in the GOL, the PAC provides Digital Liberia with guidance on GOL priorities and authorizes areas for project support. Members included leaders from the MoPT (Ministry of Posts and

Telecommunications), MFDP (Ministry of Finance and Development Planning), PPCC (Public Procurement and Concessions Commission), Liberia Telecommunications Authority (LTA), Libtelco, Office of the President – President’s Delivery Unit, Governance Commission, and Cable Consortium of Liberia (CCL). In fiscal year (FY) 2019, representatives from the Civil Service Agency and University of Liberia joined the PAC, reflecting the expanded project scope.

SNAPSHOT

BREAKING DOWN SILOES IN GOVERNMENT IT SYSTEMS: LIBERIA’S NEW CIO COUNCIL

IT professionals from across the government now find efficiencies through collaboration and shared services.



An instructor trains IT professionals as part of the CIO training course held from March to July 2019

“The heads of IT at the [ministries, agencies and commissions] are now focused on leveraging existing GOL ICT systems to make their MACs more innovative, efficient and responsive. This is a remarkable improvement”.

- *Hon. Sekou Kromah, Chief Information Officer, Republic of Liberia*

Liberia’s new Chief Information Officer (CIO) Council sets standards and coordinates IT initiatives across government – saving money through efficiency and improving services to citizens.

Prior to support provided by USAID under the Digital Liberia and eGovernance activity (Digital Liberia), each Government of Liberia entity pursued its own IT initiatives without coordination with others. The result was a splintered, siloed and duplicative set of systems that were wasteful and inefficient.

Digital Liberia supported a new coordination body – the CIO Council – that convenes IT officials from across government to address this problem and build centralized competency for e-government. The council has created government-wide standards and procedures for new IT systems. Digital Liberia also provided an intensive CIO training course that was successfully completed by 46 government IT specialists. The result of these interventions has been significant improvements in the government’s use of technology to work efficiently, deliver services and engage with citizens.

One example of such an improvement is in the area of IT help desks. In the past, each ministry tried to buy and maintain its own system for responding to IT support requests. These often failed due to budget shortages and turnover of trained personnel. The CIO council addressed this problem by creating a centralized help-desk platform shared by all ministries. The platform is a single point of contact where users from various MACs and working with online government services can log their issues. This helps save time and efforts as the users do not have to login to different applications for different issues.

CIO Council

Digital Liberia also established the eGov Technical Working Group, comprised of senior ICT practitioners from across the GOL, to offer technical guidance to the PAC, operational alignment of project activities to national priorities, assist in coordination, and accelerate the adoption of standards across all ICT initiatives in government. MOPT demonstrated ownership of the eGov Technical

Working Group and led its transition to the Interim CIO Council and now CIO Council. Members include senior-level ICT professionals from the Ministry of Posts & Telecommunications, Liberia Revenue Authority, Ministry of Finance and Development Planning, Cable Consortium of Liberia, Ministry of Health, General Audit Commission, Ministry of Education, National Elections Commission, Ministry of Agriculture, Liberia Telecommunications Authority, Liberia Telecommunications Corporation and Ministry of State - President's Delivery Unit. Digital Liberia assists with change management, project management, and capacity development support, as a necessary step to help the Council to understand and perform its role. In FY 2019 the Council, in collaboration with Digital Liberia, completed a three-month CIO training program for 46 IT heads and practitioners from 30 MACs to build the senior level capacity in MACs for implementation of e-Government initiatives. Digital Liberia considers the CIO Council critical to the sustainability of ICT activities.

Broader connectivity

Digital Liberia provided support to the broader USAID Connectivity portfolio by providing support to MoPT and Alliance for Affordable Internet to revise and finalize the ICT Policy. Digital Liberia held 2 workshops with MOPT to develop a resource mobilization plan for the approved GoL ICT policy. MOPT has taken ownership of this process activity, leading the sector to organize a stakeholder meeting where industry players and stakeholders, including the private sector, engaged in discussions around the above outlined four pillars of the resource mobilization plan. The Ministry is also making plans to refresh the e-Government Strategy (2019-2024) to align with the new ICT policy.

Metro fiber provider - CSquared

In 2016, USAID entered an agreement with CSquared, a private sector company that builds metro fiber and Wi-fi networks in Africa, to provide approximately 200 km of secure fiber around Monrovia, to the port and University of Liberia Fendall campus about 30 km from Monrovia. Digital Liberia nurtured the relationship and liaison role between CSquared, MOPT and Libtelco. The project facilitated meetings with MOPT and Libtelco to agree on roles and responsibilities as well as to resolve relationship challenges.

PROJECT PURPOSE AND SCOPE

The Digital Liberia and Electronic Government (eGov) Activity (henceforth referred to as “Digital Liberia”) was funded by the USAID Global Development Lab (the Lab), in collaboration with USAID/Liberia. The program intended to build on the momentum started both before and during the Ebola crisis to strengthen the Government of Liberia’s (GOL) Information and Communications Technology capacity and improve connectivity to better prepare the GOL to prevent, detect, and respond to potential future health crises. The three-and-a-half-year activity, which began in October 2016, was implemented by two contractors – Chemonics International and IBI – with each firm responsible for one of the objectives and Chemonics providing overall coordination.

Digital Liberia worked to improve government’s performance and bring government closer to citizens by assisting it to develop its internet and computer technology capability. This was achieved through provision of technical assistance to help improve the connectivity and institutional capacity necessary to provide effective services. The Activity also sought to increase sustainable utilization of ICT related systems, processes, and procedures at targeted Ministries, Agencies and Commission to improve government decision making and management. By supporting the capacity development of government internet services provision, the Activity worked to extend inter-agency connectivity.

IMPLEMENTATION APPROACH

Recognizing the challenges in creating a sustainable ICT culture, Digital Liberia relied on the Problem Driven Iterative Adaptation (PDIA) process to break down the complex problem of poor connectivity in

Monrovia to identify root causes of the problem, entry points for interventions, and possible solutions. Opportunities for reflection are built into the process, creating feedback loops that helped the project team adapt and change course when necessary. The PDIA process required understanding, time, and commitment by all stakeholders within the GOL and USAID. A fundamental component of the process was to enable key policymakers to identify their own problems and priorities related to ICT utilization and connectivity. This approach provided Digital Liberia the opportunity to build acceptance by guiding GOL policymakers through the process of questioning the existing way of doing things, which includes not just looking at symptoms of problems but also identifying the root causes. The next step is identification of 'Good' problems – those problems that are urgent, relevant, can often be readily addressed and if not, a ready commitment exists to tackle them over a longer time frame. While the overarching problem for the project was “connectivity and the related capacity to utilize it effectively,” identifying the interrelated problems that were important to the GOL required time to collectively reflect and allow decision makers to dissect their most critical components.

To implement the PDIA approach, Digital Liberia supported the GOL in ‘problem construction’, which involves gathering key stakeholders in working groups to answer five questions: ‘What is the problem?’, ‘Why does it matter?’, ‘To whom does it matter?’, ‘Who needs to care more?’ and ‘How do we get them to give it more attention?’ Defining the problem is key. Good problems give everyone focus and energize collective effort. Solutions, and the change associated with them, require that the reformers have the necessary authority and power to engage, acceptance by the participants, and ability to drive change. The working group considered these factors in deconstructing the problem and finding realistic and actionable solutions.

The PDIA process is time consuming. It was difficult to go down a path that may not lead to a ‘YES’ answer as Digital Liberia used project time and resources, considered project outcomes, and monitoring, evaluation, and learning (MEL) targets. Additionally, GOL partners sometimes grew impatient with deconstructing problems that they felt were already defined by USAID. However, taking that path demonstrated to partners that their priorities were respected. Ultimately, the PDIA approach built trust and ensured decision makers were committed to changes that brought about sustainable results.

PDIA Key Learnings and Achievements
<ul style="list-style-type: none"> • Despite significant demand for improved internet connectivity, few GOL partners were interested in changing how internet was procured; • PDIA allowed Digital Liberia to identify those with authority, influence, and change space, and to detect when those dynamics shifted (e.g., new administration inauguration in January 2018); • PDIA allowed Digital Liberia to change course and focus on GovNet when CSquared implementation was delayed; • Allowed to shift more responsibility to the PAC (Project Advisory Council) and let the influence of PAC to support the Ministers in exercising their authority.

OBJECTIVE I

The overarching goal of Objective I was to increase sustainable ICT utilization at targeted MACs to improve decision-making and management by building ICT Capacity, infusing change management throughout eInitiatives, and assisting GOL to develop effective mediums of communicating its eGovernment agenda and activities. Expected Results under Objective I included:

1. Strengthened Capacity of Targeted MACs to use ICT to improve Government Decision Making and Management;
2. Strengthened Implementation of Prioritized Systems Reforms in targeted MACs;
3. Improved availability of timely, accurate and transparent information to support better decisions and resource management.

The initial criterion for selection, and ultimately implementation of eInitiatives, included: strategic fit with GOL eGovernment strategy; authorization by the stakeholders to proceed with the eInitiative; acceptance by the stakeholders that it is a desired change; and the ability of the stakeholders to sustainably implement the eInitiative. In charting the path forward, these conditions must either exist or show a possibility of being built.

Under Objective I, Digital Liberia implemented approved e-initiatives from FY 2017 and FY 2018. The Government of Liberia also identified new e-initiatives, which the project advisory council approved for the project's support. Most e-initiatives produced results across more than one of the categories defined by the project results framework.

Expected Result 1: Strengthened capacity of targeted MACs to use ICT to improve government decision making and management

Develop Programs to Build Capacity in Key Skills. In FY 2017, the project advisory council authorized Digital Liberia to explore ways to pool government ICT resources to help implement e-initiatives. The project team conducted an online survey of more than 100 ICT employees in various government MACs in order to identify existing ICT skills and then determine the possibility of using these existing resources to build the capacity of the CIO office and eLiberia project management office (PMO). Additionally, the project identified and fielded four short-term experts, namely: a management information systems (MIS) implementation specialist, a public sector finance specialist, a communications specialist, and a project management capacity development specialist.

EXHIBIT I: E-INITIATIVES CATEGORIZED BY STRATEGIC FIT AND USAID EXPECTED RESULTS

Code	Description	eGovernment Strategic Fit										eGov Invest Criteria (Lo=-1/Med=0/Hi=1)					Obj. 1 Contract Results															
		Vision					Outcomes					Criticality			Feasibility		SUMMARY	1: Sustainable institutionalized ICT systems	2: More timely, accurate, transparent info	3: ID of systems to digitize	4: CM protocols in place at MACs	5: Build ICT technical capacity										
		Citizen-Centred	Efficiency	Productivity	Infrastructure	Governance	Online Govt Services	Diversified Civil Service Channels	Standardised Govt Admin Processes	Connected Govt	Strengthen ICT Education	Increase Private-Sector participation	Expand nationwide ICT infrastructure	Digitalized Community	Establish eGov governance	Establish eGov reg & legal framework							Strategic Fit	Visibility	Cost Saving / Revenue Generation	Performance Improvement	Market Readiness	Operational Readiness	Dev & Sustainability Cost	Leveragability	Duration of Implementation	
AMS	Deploy Asset Management Info System (AMIS)	Y	Y			Y	Y										1	1	1	1	4	1	0	0	1	1	3	Y	Y	Y	Y	Y
COUNCILC	Build ICT Council capability	Y	Y			Y								Y			1	1	1	1	4	1	-1	-1	1	1	3	Y	Y	Y	Y	Y
LRAAMS	Assist LRA adoption of AMIS	Y	Y				Y	Y									1	1	1	1	4	1	0	0	1	1	3	Y	Y	Y	Y	Y
PMOC	Build eLiberia PMO capability	Y	Y				Y	Y	Y								1	1	1	1	4	1	0	1	0	0	2	Y	Y	Y	Y	Y
EGOV	Mainstream eGov Strategy	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1	1	1	1	4	1	1	0	1	1	4	Y	Y	Y	Y	Y
C2M	Project Support to cSquared rollout	Y	Y		Y						Y						1	1	1	1	4	1	1	1	1	1	5	Y	Y	Y	Y	Y
PORTALS	Improve eLiberia portal	Y	Y	Y			Y	Y	Y	Y							1	1	0	1	3	1	1	0	1	1	4	Y	Y	Y	Y	Y
KEYICTS	Develop a register ("Yellow Pages") of key GOL ICT assets	Y				Y			Y					Y			1	-1	1	1	2	-1	0	1	1	1	2	Y	Y	Y	Y	Y
HANDS	Develop improved ICT Handbook	Y	Y			Y	Y	Y	Y	Y				Y														Y	Y	Y	Y	Y
TLDM	Rollout of TLD across institutions	Y				Y	Y	Y	Y	Y	Y			Y	Y		1	1	1	1	4	1	-1	0	0	-1	-1	Y	Y	Y	Y	Y
ICTAMC	Secure ICT assets during transition	Y				Y	Y	Y	Y	Y				Y			1	1	1	1	4	0	1	0	1	1	3	Y	Y	Y	Y	Y
SKILLSC	Develop capacity building programs for key skills			Y						Y				Y			1	1	1	1	4	1	-1	0	-1	1	0	Y	Y	Y	Y	Y
HELDPD	Rollout of Service/Help Desk	Y	Y	Y			Y	Y	Y	Y	Y						1	1	0	1	3	1	1	1	1	1	5	Y	Y	Y	Y	Y
WEBC	MAC PROs to publish web content	Y	Y	Y			Y	Y	Y	Y							1	0	0	1	2	1	1	1	0	1	4	Y	Y	Y	Y	Y
GISCAP	Improve GOL GIS capability		Y	Y			Y	Y	Y	Y	Y			Y			1	1	1	1	4	1	1	0	1	0	3	Y	Y	Y	Y	Y
POL18	Complete ICT Policy 2018 development					Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1	1	1	1	4	1	1	1	1	1	5	Y	Y	Y	Y	Y

The experts conducted a four-day training workshop in e-government change management, project management, communications, MIS, and public budgeting for ICT. Workshop participants included ICT heads across government MACs, as these individuals were to participate in the CIO Council. Digital

Liberia trained 39 people in e-government communications, 31 in public sector budgeting processes, 39 in e-government MIS, 36 in project management, and 37 in change management.

In collaboration with the government, CIO Council, the Ministry of Posts and Telecommunications (MOPT), and Libtelco, Digital Liberia completed a three-month CIO training program for 46 information technology (IT) heads and practitioners from 30 MACs. Launched Quarter 2 of FY 2019, the training program aimed to build senior-level capacity in MACs to implement e-government initiatives.

Mainstreaming ICT Policy and e-Government Strategy. As part of mainstreaming the acceptance and adoption of the e-government strategy, in FY 2017 Digital Liberia fielded a short-term expert to assess and make recommendations on ICT financing in government. The expert identified a critical shortcoming in the government chart of accounts: there were only two codes for ICT expenditure, making it impossible to budget for and differentiate critical items. The expert recommended creating new line items to facilitate disaggregation of ICT expenditures by type. In Quarter 2 of FY 2019, the Ministry of Finance and Development Planning informed Digital Liberia that these recommendations were enacted and would be available for the government's FY 2019/2020 budget cycle.

In Quarter 1 of FY 2019, Digital Liberia assisted MOPT to improve the draft policy (ICT Policy 2019-2024) by identifying possible gaps, mistakes, and omissions. The project also recommended how to address these issues and adapt the policy to ensure it reflected best practices aligned with the GOL's development agenda. In Quarter 4 of FY 2019, the government formally adopted the ICT policy.

The new policy guides ICT developments in the Government of Liberia. Together with the e-government strategy, it helps ensure that the government correctly allocates scarce resources to ICT initiatives, aligned with government priorities. MOPT is the custodian of the new policy and is responsible for ensuring its implementation. As ICT activity occurs across MACs, MOPT needs to ensure that each institution accepts and understands the plan and its implementation; the ministry must also track progress in this regard. The ICT policy and e-government strategy provide a scaffolding to guide the ministry's efforts to lead and monitor the policy execution. In Quarter 1 of FY 2020, Digital Liberia worked with MOPT to better understand these roles and responsibilities and helped convene an initial workshop with the ICT sector and MACs that have committed to implement key initiatives. This initial capacity building effort will guide the ministry's commitment to conducting regular coordination and monitoring activities to encourage implementation of ICT policy across the government.

Digital Liberia assisted the ministry's new administration to hold its first government ICT sector stakeholder meeting to review the outcomes of the e-government strategy and set new priorities. At the meeting, stakeholders recognized the government's achievement of significant progress toward reaching many of the goals and priorities established in the ICT policy, the e-government strategy, and during the Ebola response. However, the meeting also noted significant challenges to sustained progress.

Key to sustainability is the government's ability to marshal the necessary resources to maintain existing investments and deliver new initiatives. In FY 2019 Digital Liberia helped to raise the awareness in the ministry of the role of a plan for ICT resource mobilization, as outlined in the new ICT policy. The plan should help the government to identify and access sources of funding and support, including internal sources, such as through budget requests and applications to the Universal Services Fund, and through external sources such as the private sector and donor community. Digital Liberia undertook a variety of workshops and supporting activities to explain the plan's purpose, benefits, and modalities, and to encourage the ministry to allocate the necessary human resources and attention to design and execute the plan. In Quarter 1 of FY 2020, the project held the final workshop with the minister and his team, leaving the ministry with the information and know-how to implement the plan.

As part of government efforts to mobilize resources, Digital Liberia helped the ministry plan for an envisaged ICT Donor Working Group, which would provide an important forum for the government

and donors to collaborate to improve funding and increase the effectiveness of ICT investments. In the group, the government would share its development plans and strategies, and donors would be encouraged to align their investments appropriately and coordinate efforts to avoid duplication of effort, address gaps, and gain efficiencies.

Deploying an Asset Management Information System (AMIS). The Liberia Revenue Authority (LRA), with support from Digital Liberia and the General Services Agency (GSA), successfully deployed the GSA's asset management information system (AMIS) application software, Hardcat. The LRA fixed asset management unit uses the system to monitor stock items, tag assets to users, run audit trails, and generate asset records history.

Ministry of Health Corporate Mail Adoption. Digital Liberia provided change management and communication support to the Ministry of Health on how to ensure a smooth and complete transition of the ministry's email and calendaring systems from personal internet accounts and ad hoc arrangements to the cloud-based Google Apps suite. The Ministry of Health reports that it successfully migrated 200 mail accounts, which are active and administering all institutional email. The ministry now plans to extend the functionality to calendaring and document management.

Civil Service Agency Biometric and Payroll Database Synchronization. The Civil Service Agency has an ambitious institutional digital development plan, with intentions to reform and digitize many of its functions. To support this agenda, Digital Liberia assisted the agency with project planning and change management techniques. The project team helped CSA identify areas where they already have the necessary authority, ability, and acceptance to proceed. The agency determined a starting point — to clean up gaps in national payroll data — and has begun working efficiently toward this goal.

In Liberia, lack of financial, human, and material resources constrains the government's ICT capacity. In addition, most ICT units are relatively inexperienced and at a low position in the administrative hierarchy. Further, introducing disruptive reforms and improvements into the inertia of bureaucracies poses a challenge. These constraints can overwhelm planners and reformers into inactivity. Digital Liberia's change management support used problem-driven iterative adaptation to guide teams on how to proceed in challenging circumstances. Local leadership has been essential to ensure that individuals with the best understanding of the context and possibilities, and the ability to marshal and sustain support, are identifying and guiding efforts. Digital Liberia encouraged project teams to take a stepwise approach — to identify and pursue smaller, near-term, realizable goals using available resources. This encouraged teams to build knowledge and confidence, learn by doing, and adapt to their circumstances. The process of digitizing government services involves experimentation, failure, and setbacks, as well as shifts in direction. The government understands that in order to build an e-society, it must try different approaches and learn from its mistakes.

Digital Liberia identified the functional support required to complete most initiatives, being Project Governance, MEL, Change Management, Communications, Capacity Development, Resource Mobilization and Specialist Services. Project Management covers many of the above functions and can be seen as foundational requirement. Digital Liberia recognized this and adapted its service offering to provide capacity development in Project Management across most initiatives. Digital Liberia endeavored to bolster Project Governance and MEL through support to the CIO Council. Specialist services should be provided by the eLiberia PMO. Resource mobilization is a critical gap. Most MACs have weak internal ICT capability. If ICT-driven reforms are to meet their objectives, necessary skills need to be sourced to fill all roles. The eLiberia PMO office, if properly staffed, can play a role in providing part of these skills. The CIO Council and communities of practice are alternate sources. Also, incentives to encourage private sector supply should be developed

The 2014 Ebola outbreak disrupted the government's progress in the ICT sector. While technology is moving on to cloud computing, artificial intelligence, and the internet of things, many government IT practitioners are stuck in the "old" IT practices of repairing hardware, installing software, and laying cables. While the focus should be on services, the government has a lot of repairers, network engineers, and in some cases systems engineers, but few MIS, project designers, and implementers.

Digital Liberia identified this gap early on. In response, the project developed frameworks in change management, communication, project management, and MIS, providing formal and informal training to government IT practitioners on how to design an IT project, build a business case, and execute it. The project provided intensive training to government IT professionals on enterprise architecture, ICT for development, and IT service management, among others, to build their capacity to fulfil the CIO role in their MACs.

Expected Result 2: Strengthened implementation of prioritized systems reforms in targeted MACs.

Deploying a Centralized IT Service Desk. Digital Liberia supported CSA, MOE and Ministry of Gender, Children and Social Protection to roll out the government's open-source shared-service help desk system (osTicket) to centrally manage, organize and archive support requests and responses leading to better customer support. The system is hosted on the local cloud server at Libtelco.

SNAPSHOT

LOCAL OWNERSHIP AND TECHNOLOGICAL INNOVATION BRING CHANGE TO LIBERIA

Using asset management technology to reduce costs and improve transparency.



Czegarr Joseph, Fixed Assets Supervisor, Liberia Revenue Authority and Ransford Mensah, Digital Liberia Change Management Advisor, discussing the benefits of the AMIS.

“When there is a transition period, a lot of government assets are destroyed, people take them away without any accountability. But with this system, I can tell you and show you at that point in time, what was the status of the asset.”

- Joseph Czegarr, Fixed Assets Supervisor, LRA

The Liberian government is making better use of scarce resources and improving transparency through the use of technology to manage its physical assets.

USAID's Digital Liberia project supported Liberia's General Services Agency (GSA) to identify software that could serve as a government-wide system for asset tracking and management, communicate the benefits of such a system, and, most importantly, empower Liberian government agencies to implement it.

The Liberia Revenue Authority (LRA) successfully deployed the Asset Management Information System (AMIS). AMIS stores and organizes information on when an asset was purchased, at what price, what its estimated lifespan is, its current depreciation stage, and maintenance. The LRA uses the system to monitor stock items, tag assets to users, conduct audits, and generate asset records history.

Prior to the introduction of the AMIS, the LRA used Excel spreadsheets that were incomplete and inadequate for decision making. Prior to the AMIS, LRA records listed 1500 items. With adoption of the new system, it now shows information for over 3000 assets.

Other ministries have taken note of AMIS. The Ministry of Finance and Development Planning, Ministry of Education, and the Public Procurement and Concessions Commission have declared their intention to adopt the system.

Improving eliberia.gov.lr portal. In Quarter 4 of FY 2018, the Government of Liberia launched the eLiberia portal (www.eliberia.gov.lr) as an intuitive and user-friendly access point for government services. The portal serves as a one-stop-shop to access government services online. The MOPT's PMO developed the portal with support from Digital Liberia.

Digital Liberia adopted the approach of distributed ownership and support of essential e-government systems as a sustainability concept. In this concept, MACs host systems for which they have the strongest technical competency and support. For example, GSA is custodian of the AMIS and has the capacity to deploy to other MACs; MOPT as the custodian of help desk system has the capacity to set up the software at the MACs. Digital Liberia then provided standardized procedures for these systems. Eventually, migration of the system to a centralized e-government data center and/or server in the long-term will be seamless and transparent to all users.

Through the project advisory council, the government guided Digital Liberia's efforts. The CIO Council, which Digital Liberia helped develop from the initial e-Government Technical Working Group, was also required to endorse efforts and ensure alignment with government priorities and technical standards. The sector ministry, MOPT, the IT units across government, and members of the project advisory council and the CIO all saw the government's e-government strategy as a credible guiding plan and framed the Digital Liberia support around that strategy. Digital Liberia helped the government to better understand and execute the e-government strategy, developing tools to guide the identification, tracking, and management of initiatives from concept through implementation. A component of the approval phase requires the classification of initiatives by dimensions within areas including how e-government fits within the government's strategic vision, and investment criteria, such as criticality of purpose and feasibility of solution.

Digital Liberia helped the government to evaluate whether to digitize a system or procedure. Using the problem-driven iterative adaptation framework, the government broke down larger ambitions into smaller and realizable steps, with frequent pauses for evaluation and reorientation. Under the framework, stepwise stage definitions with performance targets guide implementation of e-initiatives. The government sets incremental milestones as the project proceeds, working toward a larger goal. If a performance target is not met, the PIT defines a new stage, with performance targets, to work around the impediment. This approach has proven to be effective, especially in the AMIS and legislative portal initiatives where the PIT and PMO often needed to define new stages and targets in order to progress. It also allows for initiatives to be paused indefinitely or abandoned in the face of inadequate progress toward the larger goal.

Reforms require people to change practices and behaviors. The few MACs implementing e-government initiatives before the project exhibited a poor understanding of change management. The focus was on processes and technology, and not people. Digital Liberia developed a change management plan to guide the rollout of e-initiatives, conducted training on the plan, and integrated it into all efforts with ongoing on the job training. The change management plan, integrated with project management, communications, MIS, and capacity development plans, helped to increase the likelihood of e-initiatives delivering the intended results and outcomes. For example, the successful development of the help desk at the Ministry of Health provided a proof of concept for the government to deploy the system centrally for all MACs. The plan provides a practical and hands-on guide for project implementation teams. It encouraged a structured approach to implementation. For each e-initiative, Digital Liberia formed a project implementation team, consisting of key stakeholders and implementers, who then defined realistic and attainable goals adapted to local circumstances and feedback.

Mobile money salary payments to Civil servants at additional ministries. Digital Liberia, working with CSA and the MDFFP Mobile Money Unit, provided capacity development support to build institutional systems for enrolling civil and public servants onto mobile money at MACs, including Ministry of Education (MOE),

MOH, Ministry of Youth and Sports, Ministry of Commerce and Industry (MOCI), Ministry of Internal Affairs, Liberia Institute of Statistics and GeoInformation Services, Internal Audit Secretariat, Ministry of Justice, Monrovia Consolidated School System, Liberia National Police, GSA, and Ministry of Foreign Affairs. Digital Liberia helped GOL to integrate the Mobile Network Operators (MNOs) into the CSA/MFDP enrollment teams. 1,824 additional civil servants were enrolled during the period, 82% of which are teachers and health workers.

Digital Liberia supported 13 MACs to develop recruitment and administration capacity and trained 72 persons at CSA and MFDP in mobile money related areas, with an additional 80 persons from the 13 MACs trained by trainer-of-trainers.

CSA leads the improvement of institutional capability in encouraging and administering mobile-money channels for payment. MACs are constrained by inadequate resources to print and transport forms up-country to be completed and returned to the head office in Monrovia for processing. To address this, Digital Liberia worked with the MNOs for them to facilitate the movement of forms through their agent networks. This proved very successful

In 2019 GOL embarked on a payroll harmonization exercise that impacted mobile money activities, with confusion over payment methods quanta. If and when the harmonization takes full effect, CSA will effectively manage and process civil servant payroll, as well as “allowance” employees, under one payment scheme, leaving the new MFDP unit without a payroll support purpose. A dedicated CSA mobile money unit has been proposed and accepted by both MFDP and CSA through an MOU (memorandum of understanding). The MOU commits both government agencies to specified targets to be achieved over the next year.

SNAPSHOT

SUPPORTING LIBERIA IN BRINGING MOBILE MONEY PAYMENTS TO SCALE

Liberia’s government and its employees are saving money by using mobile money to pay salaries. As a result, more resources are available for providing government services.

Use of mobile money is growing quickly in Liberia, and with USAID support, the government is increasingly making mobile payments, especially to civil servants in remote parts of the country. More than 5,000 civil servants are currently paid through mobile money. Under the USAID-funded Governance Economic and Management Support (GEMS, 2011-2016) project, the CSA and the Ministry of Finance laid the technical foundation for mobile money in Liberia. The project supported needed changes to the regulatory framework for e-payments and initiated a series of pilots to understand costs and benefits. Later, the USAID-funded Mobile Solutions Technical Assistance and Research project helped the government offer mobile money salaries to teachers and health workers across the country.

USAID supported mobile money expansion under Digital Liberia. The project works closely with the CSA, Ministry of Finance, and mobile network operators to improve salary payment procedures, expand the mobile money network, and develop technical capacities to scale up the use of mobile payments. Liberian government institutions and civil servants now realize the significant benefits of mobile money payments, and USAID is continuing to support governance innovations in this area.

Expected Result 3: Improved availability of timely, accurate and transparent information to support better decisions and resource management

National Legislature Portal. In Quarter 1 of FY 2019, Digital Liberia supported the PMO to develop a framework and project initiation document for an online web-based portal to provide a digital platform to extend public engagement for the national legislature. In FY 2019, Digital Liberia assisted MOPT to advance this initiative with the legislature through the important foundational and inception stages.

MAC Public Relations Officers to Publish Website Content. In Quarter 4 of FY 2019, Digital Liberia supported MOPT PMO to train 40 public relations officers and IT experts from 34 MACs to conduct a two-day workshop on the use of a content management system. The training provided public relations officers and communications directors at the various MACs with the necessary skills to publish and update information on their websites without IT assistance. An example of such a website is the new Ministry of Health (MOH) website: <http://moh.gov.lr>.

Artisanal Mining Registration System. Digital Liberia demonstrated a proof of concept for a mining registration system designed to track approved class-C mining license holders, diggers, brokers, inspectors, mining agents, and coordinators. The Ministry of Mines accepted the first version as a good, sustainable solution to meet its needs.

Mail Process Automation. Digital Liberia assisted the MOPT with efforts to review the current mail (envelope and parcel) handling processes at the ministry to streamline the processes and identify areas of automation using ICT. The solution deployed uses a QuickBooks Desktop Point of Sale system. The e-initiative also includes exploring alternative payment channels, such as the ability to accept payments electronically using mobile money, credit cards, and other electronic payment options.

Improve the Government of Liberia's GIS Capability. Digital Liberia helped convene a roundtable event to allow government MACs, donor projects, and other stakeholders that use geospatial information to showcase various systems and share achievements and challenges. At the forum, the MOPT presented the e-Government Strategy. Participants discussed the suitability and possible mechanisms to coordinate and harmonize efforts to improve sustainability and efficiencies. Digital Liberia formed a geographic information system (GIS) technical working group under the CIO Council to develop and oversee a pragmatic, and actionable roadmap to identify and secure valuable government data and information assets, and to develop sustainable local capability.

Local Cloud. Digital Liberia supported Libtelco to coordinate activities related to running and maintaining the local cloud, which hosts applications and data in an effective local IT environment. The MOPT's PMO is responsible for the applications hosted on the system. As more government services come online, it is expected that the local cloud will host them, resulting in cost savings for the government and reducing siloed systems across the MACs.

Many gaps in institutional and human capacity hinder government ICT efforts. The government has developed plans to operate within these constraints and create centralized capabilities to provide government-wide services. Identifying and pooling limited human and institutional resources provides opportunities to generate efficiencies and reduce the vulnerabilities of peripheral institutions. In response, the Government of Liberia, working with Digital Liberia, identified the primary e-initiatives to build the eLiberia PMO office's capacity and develop programs to build capacity in scarce ICT skills. Although the government has not been able to retain key staff in the PMO, it has developed capacity in MACs and in the CIO Council.

The Digital Liberia mobile money initiative faced several challenges including opposition to mobile payments at CSA and MFDP. In addition, the primary factor limiting the success of the project was finding a way to reach civil servants in rural areas and encourage their enrollment. The MACs

complained that they lacked resources to facilitate the movement of enrollment forms from Monrovia to the fields and back. The team discovered the effectiveness of partnering with private sector partners, in this case,

Lonestar/MTN and Orange, to facilitate enrollment activities through agent and point of sale networks throughout the counties. Similar projects should consider private sector partnerships to achieve shared goals.

SNAPSHOT

BUILDING THE IT CAPACITY OF PUBLIC RELATIONS OFFICERS FOR BETTER GOVERNMENT COMMUNICATION AND TRANSPARANCY

At a workshop organized and facilitated by USAID Digital Liberia, Government IT professionals trained Public Relations Officers in the use of a content management system (CMS).



IT experts and Public Relations Officers work directly together for the first time.

“Citizens can now look forward to being better informed through government websites,” said Mr. Nalon Kaine, Head of the the Project Management Office at MOPT.

Public relations officers in Liberian government entities face challenges in providing accurate and timely content to the public through government websites. USAID’s Digital Liberia project partnered with the MOPT to conduct a workshop for IT professionals and public relations officers from across the government on using content management systems. The training on August 20 and 21, 2019 was designed to enable government entities to publish and update information on their websites without outside IT assistance.

To ensure local ownership, the workshop was conducted entirely by Liberians, for Liberians. The Ministry of Information’s webmaster, Nixon Flomo, led the training. The Ministry of Health’s webmaster, Calvin Coleman, then presented a successful example of the ministry’s use of WordPress, an open-source content management system. At the workshop, for the first time, IT professionals worked together with public relations officers. They now have the necessary skills and contacts to collaborate with their IT colleagues to migrate their websites to WordPress, a simple, user-friendly and free content management system.

Interdepartmental communication will be critical for the sustainability of these improvements.

OBJECTIVE 2

The goal of Objective 2 was to support the capacity development of government internet service provisioning, support connectivity of the University of Liberia and establish a Research and Education Network. Support for government internet services provisioning required procurement support and capacity building to support the connectivity requirements for the GOL to enable the government to best and most efficiently utilize the transformational potential of access to digital information and communications through connection to the internet. Activities expanded efforts to effectively provision, extend, secure, and manage access to a logical government broadband network on behalf of Liberia MACs. Expected Results under Objective 2 included:

1. Government Internet Services Provisioning available to prioritized MACs and their individual facilities
2. Prioritized MACs provisioned with improved connectivity
3. Development of Concept of Operations
4. Development of Standard Operating Procedures (SOPs), Tender Templates, Provisioning Guidelines, etc
5. Broadband Communications & Value-Added Services (VAS) Procurement
6. Design for Shared Services Infrastructure & Application Services
7. University of Liberia Campus Connectivity
8. Improved Access to Education and Research Materials for Prioritized Tertiary Education Institutions in Liberia
9. Progress Made toward Liberia Internet Exchange Point (LIXP) Implementation
10. Improved Internet Connectivity at Prioritized County Service Centers

Expected Result 1: Government internet services provisioning available to prioritized MACs

Although multiple internet services providers (ISPs) provide internet in Liberia, connections are often unreliable, hampering communication among government entities. To address this challenge, the Government of Liberia’s 2017-2021 ICT policy established Libtelco as the government-preferred ISP. The completion of the CSquared Metro Fiber Ring (MFR) — a more than 180-kilometer fiber backbone that provides services to all mobile network operators (MNOs), ISPs, and the government — will expand Libtelco’s services. However, the ISP’s ability to capitalize on the MFR and sustainably provide improved internet services to priority ministries, agencies, and commissions (MACs), however, depends on its viability.

To help the government leverage the improved services and improve Libtelco’s viability, Digital Liberia conducted an organizational review of the ISP, which resulted in a three-year strategic plan with recommendations to restructure and right-size the ISP into a customer-focused, results-driven organization. The plan aims to help Libtelco develop specific services for government and commercial customers and secure the necessary equipment and software to operate effectively. Digital Liberia also helped the Ministry of Posts and Telecommunications (MOPT) and Libtelco refine the list of priority MACs for connection to the MFR.

Complementing these efforts, Digital Liberia developed an internet bandwidth capacity assessment tool to calculate the required capacity for data transfer based on each MAC’s current and anticipated needs. The bandwidth assessment provided necessary information on the readiness of 51 MACs to connect to the CSquared MFR. The internet bandwidth capacity assessment tool enables the MOPT to assess bandwidth needs at other MACs.

To ensure that priority MACs had the required infrastructure to connect to the MFR, Digital Liberia collaborated with CSquared to develop technical specifications for consumer-provided equipment: the firewall, uninterrupted power supply, and racks needed to boost the availability of uninterrupted power

MAC Bandwidth Assessment: Key Findings
<ul style="list-style-type: none"> • Forty-nine of the 50 MACs assessed have bandwidth allocations that are, on an average, 2.5 times less than the required bandwidth for staff to improve their performance using connectivity and ICT • 67 percent of the MACs assessed did not have a complete and structured Local Area Network (LAN) • About 90 percent of the MACs have at least two power sources; however, only about 14% of these have any form of backup to keep core equipment running during power transitions • On average, 25 percent of staff did not have access to internet; some even lack access to computers • MAC technicians graded their overall satisfaction with their current ISP’s performance as 3 on a scale of 1 to 5

and securely store equipment. Digital Liberia procured and installed the equipment at 46 MACs and coordinated training for the MAC IT staff in the use of UPS and extended batteries. Libtelco and Digital Liberia also provided training in the installation and use of the firewall.

Libtelco hesitated to issue orders to CSquared to connect MACs to the MFR due to a reduction in budgetary funding for internet and concerns around the MFDP's ability to pay for the services. Digital Liberia facilitated dialogue between Libtelco, CSquared, and the government; the latter indicated that it would budget for internet and other ICT-related expenditures in the FY 2019/2020 budget. In FY 2019, Libtelco honored its order to CSquared for the connection of 51 MACs. This provisioning made faster, more reliable internet available to the government. To date, Digital Liberia has facilitated the connection of 49 MACs to the CSquared MFR. Unfortunately, the MFDP failed to pay Libtelco for internet connectivity through the MFR. To avoid incurring bandwidth charges from CSquared that it cannot pay, Libtelco shut down the government's connection to the MFR. Negotiations are currently ongoing to resolve this situation.

Expected Result 2: Prioritized MACs provisioned with improved connectivity

Digital Liberia's Project Advisory Council advised the project to consider interagency connectivity a priority for Government. In order to improve MACs' ability to communicate and exchange data with each other, Digital Liberia supported the GOL in the rollout of GovNet, a concept that was included in the GOL's eGov strategy but not operationalized prior to Digital Liberia. GovNet is a virtual managed Wide Area Network that connects MACs and can carry data, voice and video. GovNet facilitates secure and reliable communication between GOL MACs and enables the sharing of existing and future GOL software applications. GovNet will enable the MACs e-initiatives / IT shared services that flow through the GovNet pipe to reach the IFMIS Data Center without utilizing their purchased bandwidth. GovNet provides the GOL with a connectivity speed that is twenty times faster than the previous wireless radios, improving efficiencies in IFMIS and other e-services. The ability of GovNet to operate on top of fiber reduces GOL financial burden and liability by making Monrovia more environmentally friendly with reduction in radiation levels, reduced concern for towers falling in residential neighborhoods, work related risks for maintenance technicians climbing towers and downtime related to weather and other environmental conditions.

Digital Liberia designed a GovNet pilot to establish proof of concept and build acceptance of decision makers. The Minister of Finance and Development Planning agreed to a selection of four IFMIS MACs to be moved from radio link to fiber transmission, for the pilot. Libtelco agreed and their network engineers made the necessary reconfiguration to the network for GovNet to be operational through their Lynch Street termination point. IFMIS data from the MoPT, General Audit Commission, Ministry of Public Works (MoPW), and Ministry of Commerce & Industry (MoCI) began transmission over GovNet, instead of radio wave, in August 2017. The results revealed that all four MACs observed an improvement in transmission after migrating from the radio link to GovNet fiber link. The successful pilot demonstrated the potential benefits to the GOL.

Due to the success of the pilot, Digital Liberia facilitated the rollout of GovNet to additional MACs. To enhance sustainability, Digital Liberia developed a GovNet manual that provides a guideline for connecting a MAC to GovNet and provides a uniform security framework to secure the integrity, confidentiality, and availability of information and information systems, at the Wide Area Network (WAN) level. Once Libtelco staff received the manual, they jointly migrated about 50% of the MACs with Digital Liberia, and then were able to complete the migration of the balance of MACs without assistance. The CPE provided to MACs under Expected Result 1 included a firewall to protect information transmitted over GovNet. In total, Ninety-one (91) MACs that utilize the Integrated Financial Management Information System (IFMIS) for financial reporting migrated to GovNet. GovNet provided demonstrated time savings of more than one minute per IFMIS transaction and cost savings of

more than \$400,000 annually for this eService. The GovNet platform is fully deployed, maintained and managed by Libtelco.

SNAPSHOT

GOVNET BRINGS THE LIBERIAN GOVERNMENT INTO THE DIGITAL AGE

Improving connectivity and efficiency for the Government of Liberia.



Government of Liberia, USAID, and Digital Liberia project staff attend the official GovNet launch in June 2019.

"The creation of GovNet will enhance tax revenue and improved tax administration, enhance budget management and expenditure through the effective use of the IFMIS database, and support the National Biometric Registry among others. This means government ministries will no longer experience internet problems, which slows down employee functions and services delivery systems that continue to cause the government to lose thousands of dollars on a daily basis. In addition, the coming of GovNet will help to save the government of over \$400,000 annually due to the affordability of the platform."

Councilor Cooper Kruah, Minister of Posts and Telecommunications

In 2017, the USAID Digital Liberia and e-Government Activity worked with government partners to design and pilot GovNet, an intranet network that provides a faster, more reliable way for government agencies to share information. Since the pilot, more than 90 ministries, agencies, and commissions have started to use GovNet to reconcile financial transactions with the Ministry of Finance and Development. GovNet saves government employees significant time in conducting their daily duties. For example, it has reduced the time needed to complete a budget execution report by 44%.

Instead of relying on internet, GovNet connects agencies through a secure fiber connection that is 20 times faster than typical wireless connections. GovNet connects agencies by a virtual link, eliminating the need to use standard internet bandwidth, providing significant cost savings.

To ensure sustainability of GovNet, Digital Liberia worked with the Ministry of Posts and Telecommunications and Libtelco to integrate GovNet into existing systems. After the initial piloting and testing phase, Libtelco took responsibility for hosting GovNet, incorporating the intranet into its business as a 'value-added service' to the government. With the introduction of GovNet, government ministries and agencies have the ability to no longer operate in silos. Financial management platforms are already connected over the intranet, while payment systems, asset management systems, and other e-services are currently in the process of being connected.

Government employees are impressed with the speed and reliability of GovNet, reporting higher user satisfaction and network reliability. "GovNet saved me a lot of headache" says Victor Neepto, data center manager for Liberia's Integrated Financial Management Information System. "For the last several years, I had to have a core team worried about connectivity. We're in a country where, if you use radio connection as your primary source of connection, you can expect interruption. GovNet is about having reliability, availability, security."

GovNet is just one of the ways that Digital Liberia is working to advance the government of Liberia's National e-Government Strategy. Through more reliable systems, stronger ICT infrastructure, and digital integration, Digital Liberia is helping government agencies to improve communication, collaboration, and provide better services to Liberian citizens.

While GovNet is an excellent solution for GOLs intranet challenges, it only worked until the MACs were switched over to CSquared fiber and Libtelco disconnected MACs for non-payment. Because GovNet runs over CSquared fiber, it also incurs charges that Libtelco is unwilling to pay without

payment from MACs. IFMIS can therefore no longer function on GovNet. Negotiations are underway to find a sustainable solution to this challenge.

Expected Result 3: Development of Concept of Operations

Prior to the Digital Liberia project, the Liberian government did not have an institutional framework governing connectivity in MACs. To address this shortcoming, Digital Liberia developed a Concept of Operations to outline the steps and procedures for provisioning and procuring government internet service across ministries, agencies, and commissions. The guidelines help ensure that the government’s IT staff have adequately assessed their requirements, including all necessary information in the statement of requirements for procurement, and understand how to monitor the performance of the ISP. Digital Liberia finalized the concept in FY 2018, incorporating the Public Procurement and Concessions Commission’s revisions to internet procurement procedures. Responding to feedback that the title “Concept of Operations” was not frequently used in the Liberian context, Digital Liberia changed the title of the document to Guidelines for Internet Connectivity for IT Professionals. Digital Liberia trained IT staff from 46 ministries, agencies, and commissions on how to use the guidelines, which are now available on the e-Liberia website and PPCC website for use by IT professionals in the government.

Expected Result 4: Develop SOPs, tender templates, provisioning guidelines, etc.

Liberia’s PPCC is responsible for ensuring compliance with the Public Procurement and Concessions Act and issuance of any regulations, establishment, and modification of procurement structures, processes, and procedures. Procurement of specialized goods, works, and services such as internet often have separate standard bidding documents to provide additional details, guidelines, and standards that are tailored to the procurement type. The general PPCC standard bidding documents did not address the needs of internet procurement, which was particularly concerning given that some ministries, agencies, and commissions were procuring internet from the government ISP with no competition, through a singular aggregated procurement issued by the Ministry of Posts and Telecommunications and paid through a centralized payment.

PPCC staff had the skills required to ensure government ownership of the tools before Digital Liberia involvement. What they lacked, however, was the ability to draft standard bidding documents and an understanding of how to ensure service quality and adherence to payment procedures. Digital Liberia helped fill this gap by supporting PPCC to develop internet procurement guidelines, standard bidding documents for internet procurement, an Internet Procurement Evaluation Report, and a frequently asked questions brochure (see Exhibit 2). PPCC commissioners gave final approval of procedures in FY 2018.

Additionally, Digital Liberia established the framework for a reserve price from the government ISP to ensure value for money. The framework was necessary as the government ISP has a monopoly for the provision of internet. The reserve price ensures that the prices charged to government are reasonable and fair. Because documents were jointly created in work sessions with key PPCC staff, they understood the documents enough to roll them out to ministries, agencies, and commissions themselves. All documents are available on the PPCC website as common user items.

EXHIBIT 2. EXPECTED RESULT 4 DELIVERABLES

Document	Purpose
Guidelines for Procurement of Internet	Established pricing protections which ensure that charges for services are within the range identified on an annual basis through the PPCC market review of common goods and services procured by the Government of Liberia and posted on their website. Guidelines include the possibility of the government securing pre-negotiated rates with Libtelco on behalf of all entities. These procedures would not modify the process of each entity requesting Libtelco’s provisioning of services based on their institutional requirements in the Statement of Requirements.

Document	Purpose
Standard Bidding Documents	Complete set of documents used by a Government of Liberia entity to request a bid for the provision of internet. The standard bidding documents include: bidding procedures, statement of requirements (detailing technical specifications of speed, media, reliability, availability, latency, service credit, security, response time, etc.), contract terms (general and special conditions of contract), service-level agreement, and installation acceptance agreement
Frequently Asked Questions	Brochure that allows PPCC to respond to the most common issues raised by practitioners. The frequently asked questions document reduces the need for practitioners to contact PPCC directly and increases their confidence when budgeting and monitoring internet procurement.

Expected Result 5: Broadband communications & value-added services procurements

Building on Expected Result 4, Digital Liberia collaborated with the MOPT and project advisory council to help select ministries, agencies, and commissions procure internet and value-added services.

Internet procurement training. Digital Liberia conducted an assessment to establish the required bandwidth for ministries, agencies, and commissions and provide the basis for the statement of requirements for inclusion in procurement requests. To prepare for the FY 2018/2019 procurement cycle, Digital Liberia trained 96 procurement and IT professionals from 42 ministries, agencies, and commissions – those to be connected to the CSquared Metro Fiber Ring – on the standard bidding documents for internet procurement. Digital Liberia also trained the PPCC and MOPT CIO office in the standard bidding documents and guidelines to enable them to roll out the documents to the entire government. To complement this training, Digital Liberia trained the office on issuing a request for quotation (RFQ)/invitation to tender (ITT) to Libtelco for government services. Libtelco and other ISPs were trained in how to effectively respond to the RFQ/ITT and general standard bidding documents as well as understand terms in the draft contract and service-level agreement.

PPCC was reluctant to authorize use of the new procedures to procure Internet until the Ministry of Finance and Development Planning agreed to pay Libtelco, which would allow Libtelco to pay for connection to the CSquared fiber. Digital Liberia’s ability to make progress on certain work plan activities while the government made decisions on others was a critical aspect of successful implementation, as the government sometimes changed course quickly. Once PPCC authorized the new procurement procedures, Digital Liberia quickly supported the procurement process. In FY 2019, Digital Liberia completed a final refresher training on Internet procurement procedures for procurement and IT professionals from MOPT and PPCC so that all participants understood their role in the procurement process. In FY 2019, the Digital Liberia team trained a total of 193 staff in various elements of Internet procurement.

Internet procured for ministries, agencies, and commissions. MOPT implemented centralized Internet procurement on behalf of all ministries, agencies, and commissions connected through the government ISP. Digital Liberia developed the RFQ for Libtelco using the standard bidding documents developed in FY 2018 and guided the MOPT CIO office through on the job training. MOPT issued the RFQ to Libtelco and accepted the resulting quote. Digital Liberia supported MOPT to inform 70 ministries, agencies, and commissions of their bandwidth requirements and amounts for inclusion in the FY 2019/2020 budget for internet. MOPT will enter an agreement with the government ISP on behalf of designated ministries, agencies, and commissions, upon legislative approval of the budget. Due to the delay in the government’s budget preparations, Digital Liberia did not assist with the contracting process.

Value-added services procurement. Libtelco has integrated GovNet as a value-added service to the government. The Public Financial Management Reform Project procured GovNet from Libtelco to transmit integrated financial management information system data from 91 ministries, agencies, and commissions and the Liberia Revenue Authority is negotiating with Libtelco on the provision of this

service. Through the end of FY 2019, Digital Liberia supported a total of 161 procurements, representing 70 for Internet and 91 for value-added services.

SNAPSHOT

GOVERNMENT INTERNET PROCUREMENTS

Government is often slow-moving and resistant to change. However, the USAID Digital Liberia and e-Government Activity has become a catalyst for reform. By working directly with government partners at the policy level, Digital Liberia helped to implement important policy changes and procurement procedures to enhance internet connectivity, improve ICT infrastructure, and advance Liberia's e-government strategy. Liberia's ministries, agencies, and commissions were once responsible for procuring their own ICT infrastructure. Each entity would pay the government's ISP, Libtelco, separately for services. ICT-related expenses, including internet, software, and hardware, were lumped into two budget line items with other expenses, such as mobile phone credits, postage, and general capital equipment. As the agencies exhausted the budget for these other items, Libtelco and other ISPs often did not receive payment for providing internet, leading to inconsistent service.

With the help of Digital Liberia, the Government of Liberia now has a simpler way to procure internet. Digital Liberia helped to develop a centralized procurement procedure with the Public Procurement and Concessions Commission, enabling the Ministry of Finance to issue one monthly payment to Libtelco for all of the government's internet usage, instead of leaving internet payments for each individual entity to prioritize, given resource challenges. Digital Liberia, Libtelco, and Liberia's Ministry of Posts and Telecommunications (MOPT) worked together to assess bandwidth needs for each government entity, enabling each entity to accurately budget for internet. These changes give the government the ability to negotiate a consistent price for all the government's required internet bandwidth and help ensure Libtelco receives payments on a regular basis. Additionally, Digital Liberia led discussions with Liberia's Public Procurement and Concessions Commission to ensure internet procurement guidelines, manuals created were compliant with regulations and encouraged MOPT to take ownership of the ICT procurement process.

Expected Result 6: Design for shared services infrastructure & application services

In Year 1, Digital Liberia's project advisory council determined that connection to the Local Internet Exchange Point (LIXP) was a base requirement for any ISP providing services to the Government of Liberia. The LIXP enables local Internet traffic to be transmitted locally, at a faster speed and without incurring international connectivity rates. The fully operational LIXP will benefit ongoing work in the education and health sectors by linking research and education networks as well as local cloud-based public services at significantly reduced rates. Although Liberia had established an LIXP in 2015 at Cable Consortium of Liberia, maintaining and operating the LIXP had been a challenge due to lack structured funding and administrative mechanisms for day to day running of the LIXP, with the members unwilling to meet to discuss issues.

Digital Liberia facilitated a LIXP stakeholders discussion to address these shortcomings. The team's intervention enabled the MNOs, the LIXP operator, and the sector ministry to agree on a one time plus subsequent monthly recurring payment mechanism for MNOs in support of the LIXP's operations. Digital Liberia also developed the LIXP implementation and pricing plan to present the benefits of a LIXP to key stakeholders through the Liberia Telecommunications Authority. The implementation plan provides roles, challenges, and guiding principles for policymakers and stakeholders on the LIXP's maintenance, operation and development. The pricing plan provides guidance on how to transfer savings from the LIXP to the Liberian Internet ecosystem. Together, they provide a mechanism to assist the Liberia Telecommunications Authority (LTA) and MOPT to effectively liaise with local ISPs and the Cable Consortium of Liberia as they identify challenges, develop definitive steps for implementation and work with stakeholders to operationalize local pricing. To boost usage of the exchange, Digital Liberia convened key stakeholders from LTA, MOPT, and ISPs to agree to install a Google Cache Server and

high-end switch at the LIXP. The server enables Google services to be available locally, reducing latency for users as international transit is not required. Liberia's Google Cache Server became operational in FY 2018. Digital Liberia's status as an independent party helped the process of convening fiercely competitive ISPs to engage in dialogue for improvement of the sector.

SNAPSHOT

CONNECTIVITY AT THE UNIVERSITY OF LIBERIA

Building a 21st century learning environment for Liberia's higher education institutions.

In a survey of 57 University of Liberia students, Digital Liberia found that **82%** of students needed to access education or research materials online **at least a few times a week**. However, **84%** of students responded that they **never** or **rarely** are able to access campus WiFi. Students frequently have to pay for internet use either at an internet café or by using their own mobile data to access needed materials.

"We learned a lot of new things, new things that we can carry with us to our campuses and add value to our work. Most of the [ICT] infrastructure in Liberia is very small, but now we understand how things work, how networks are designed from scratch. With this, we can connect and start to improve our education sector."

*Joseph Ofosu
Participant from United
Methodist University.*

The Liberian education system is in a state of recovery after decades of civil instability. The enduring impact of two civil wars, compounded by school closures during the 2014-2015 Ebola outbreak, exacerbated Liberia's fragile education system and even weaker information and communication technology (ICT) infrastructure. Although information is more accessible than ever before, students and faculty at Liberia's colleges and universities have limited opportunities to plug into today's interconnected world. Internet at universities across the country is expensive and inconsistent, hindering the ability of students and faculty to collaborate, access educational resources, and keep up with modern institutions.

Digital Liberia is addressing these issues by partnering with the University of Liberia to develop a comprehensive connectivity roadmap to guide the university beyond the life of the Digital Liberia project. The project procured and installed Wi-Fi equipment to enable internet access at the university's four campuses. This new IT infrastructure serves as the foundation for the University of Liberia to become a founding member of the Liberia Research and Education Network (LRREN).

To enhance university ICT staff ability to manage campus networks, Digital Liberia hosted an intensive training course for ICT specialists from local colleges and universities. More than 30 specialists from 11 institutions attended the training, learning technical skills for designing and managing campus internet and intranet. Digital Liberia partnered with the Network Startup Resource Center to bring in ICT experts from Ghana, Uganda, and the United States to lead the event, giving participants a technical deep dive into network configuration, security, monitoring and troubleshooting. After the workshop, instructors visited each campus to provide technical assistance and advice on building a structured campus network

With this training, Digital Liberia is helping to build the next generation of Liberia's ICT network professionals. Participants enhanced their technical skills and developed a local community of practice. Participating colleges and universities now have a team of more self-reliant ICT professionals with the capacity to design and maintain their own campus internet and intranet. By training university staff to support their own networks, universities not only reduce the operating costs of their network, but also ensure network sustainability. Participants were excited to apply their new skills. .

Expected Result 7 Improved internet and intranet connectivity at prioritized University of Liberia campuses

Poor internet connectivity on the University of Liberia's four campuses limits the ability of students and the faculty to communicate and connect to educational resources. This also prevents the university from proceeding with plans to develop a research education network (see Expected Result 8), which requires members to have structured networks. In order to improve connectivity, Digital Liberia developed a

comprehensive roadmap for internet and intranet connectivity for the university's four campuses at Capitol Hill, Fendall, the medical school at Catholic Hospital, and Sinji. The roadmap provides a clear plan with roles, responsibilities, and milestones explicitly identified for network rollout.

To support implementation of the campus connectivity roadmap, Digital Liberia engaged the University of Oregon's Network Startup Resource Center (NSRC) to deliver a Campus Network Design and Operations training for 36 IT professionals from nine of the Liberia Research Education Network (LRREN) member universities. As part of the training, participants designed campus networks for their universities. Then, NSRC trainers and the Digital Liberia team visited sites on eight campuses to conduct network assessments to broadly validate the design and identify the specific requirements of each campus for connection to LRREN. None of the universities assessed had an effective campus network.

To improve connectivity at the University of Liberia, Digital Liberia procured equipment for a campus fiber backbone network and supporting power solutions. Installation began in FY 2019 and is expected to be complete in the second quarter of FY 2020. This will significantly enhance teaching, learning, and research, and will facilitate the LRREN's establishment. Digital Liberia's provision of the campus network to the University of Liberia will provide the model for smaller members.

Expected Result 8 Improved access to education and research materials for prioritized tertiary education institutions

To expand educational opportunities as a benefit of improved connectivity, Digital Liberia laid the groundwork to develop the LRREN. The network will enable faculty and students to teach, research, and learn using high-speed, low-cost internet. The establishment of a LRREN is a key component of the government's e-Government Strategy and USAID's objective of expanding the demand for and use of high-quality fiber for internet.

Digital Liberia assisted eleven public and private universities to the LRREN by developing the Constitution and Articles of Incorporation as the basis for registration as a non-profit entity. The LRREN constitution established the governance structure as the general assembly, board of directors, technical advisory committee, the CEO and the secretariat, and details the composition and requirements of each. The LRREN Coordinator (University of Liberia) and Infrastructure Lead (Starz College of Technology) began performing voluntary roles of interim CEO and chief technology officer (CTO), respectively. Digital Liberia developed the LRREN roadmap to guide the network's development and implementation, and NSRC updated and finalized the document. The roadmap details the activities required for a research education network from formulation to full implementation. The task team, university presidents, board of directors, CEO, CTO use the roadmap to guide activities through full implementation. It covers activities in awareness creation/team building, governance, strategic partnerships, resource mobilization, capacity building, regulatory/statutory requirements, technical requirements, and operations.

- | LRREN Founding Members |
|---|
| • University of Liberia |
| • Stella Maris Polytechnic |
| • African Methodist Episcopal University |
| • Tubman University |
| • United Methodist University |
| • African Methodist Episcopal Zion University |
| • Cuttington University |
| • Bluecrest University College |
| • Starz College of Technology |
| • Bomi Community College |
| • Grand Bassa Community College |

Digital Liberia guided the LRREN to submit official requests to the LTA for a special purpose ISP license and to CCL for the allocation of capacity designated for education and health. The LTA has approved both requests at minimal or no cost for the LRREN, and issued an authorization for LRREN to operate as an ISP in April 2020. Digital Liberia also developed a two-year business and financial plan that provides LRREN with informed estimates on unique costs associated with the provision of internet and content services, options for membership fees, revenue sources, operating costs, and equipment requirements.

THE LIBERIA RESEARCH AND EDUCATION NETWORK

Building a 21st century learning environment for Liberia's higher education institutions.



Study tour participants are given a tour of the GARNET server room

“The establishment of LRREN cannot be over-emphasized as it has the potential to impact the learning environment in Liberia in a positive way. The education environment at the tertiary level in Liberia is skewed toward paper-based learning with lesser use of ICT. However, the introduction of LRREN will create a new academic environment that will be more enthusiastic and involving by students and faculty with the use of ICT for research and moreover networking academically.”

*Prosper Browne,
MOPT Deputy Minister Technical*

The University of Liberia's new IT infrastructure serves as the foundation for the University of Liberia to become a founding member of the Liberia Research and Education Network (LRREN). Like similar networks around the world, the LRREN will provide affordable, high-quality internet service for higher education and research institutions across the country. LRREN membership gives students and faculty the ability to access digital libraries, journals, and databases, and to collaborate with other national and regional networks. The LRREN enables universities in Liberia to enhance teaching and learning, paving the way for Liberia to excel in education and research.

In 2019, presidents from 11 colleges and universities in Liberia signed a memorandum of understanding, as founding members of the LRREN. Digital Liberia helped the LRREN establish a governance structure, become a legal entity, and prepare campuses to connect to regional and national networks. Through its support of the LRREN, Digital Liberia has the potential to transform the student and faculty experience in Liberia. The academic community will benefit from more access to information for research and learning, and the LRREN enables Liberia to continue to build a strong educational foundation and connect with the rest of the world.

To enhance the LRREN members' understanding of the necessary conditions for successful functioning of the LRREN, Digital Liberia organized a five-day study tour to the Ghana Academic and Research Network (GARNET), located at the University of Ghana Legon. Participants included nine University of Liberia and Government leaders, as well as network professionals from LRREN members. The study tour provided an overview of the unique challenges of operating and maintaining a research education network along with a clear understanding of the benefits of undertaking the initiative. Participants reported that the study tour was very useful to their understanding, ability to accelerate acceptance, initial operations, and long-term sustainability of the LRREN.

Through Expected Result 7, Digital Liberia provided members with infrastructure requirements for connection to LRREN and guidelines developed for formulation of member ICT policy and governance structures. The University of Liberia provided legal services and financed the cost of registration as well as offered office space for the LRREN secretariat. LRREN also became a member of the regional West and Central Africa Research and Education Network, which will allow member institutions to access content from research education networks both regionally and internationally.

To demonstrate the LRREN's significant potential, Digital Liberia organized a study tour to the Ghana Academic and Research Network situated at the University of Ghana. The nine-person delegation included university and government leaders, along with network professionals from LRREN members. The study tour provided operations and management knowledge of the benefits, peculiar issues, and challenges of a research education network. Participants considered the study tour extremely useful for helping them understand and accelerate acceptance, initial operations, and the long-term sustainability of the LRREN.

To respond to the University of Liberia’s priority of offering online courses to students both within and outside of Monrovia, Digital Liberia conducted a training for 14 faculty and staff to develop online courses. Digital Liberia’s online learning advisor guided participants to develop 18 blended Moodle courses to constitute a pilot online learning platform from March 2020.

SNAPSHOT

EXPANSION OF ONLINE LEARNING AT THE UNIVERSITY OF LIBERIA

Blended learning for more connected studies.



Online learning workshop participants

“[The training] strengthened my desire to keep close contact with my professional colleagues and opened up my mind to the potential of technology in making education more interactive and interesting.”

Workshop participant

Low-quality ICT infrastructure is pervasive throughout Liberia and on its university campuses. Weak or nonexistent campus networks means that the University of Liberia has historically offered few online learning options. Students therefore lack flexibility in learning styles and access to learning and education materials. Digital Liberia helped the University of Liberia expand online learning opportunities for students by engaging online learning expert Philip Uys to launch a new online platform, ULOnline. This included identifying and prioritizing creation of online learning content and training faculty and administrators in the management of the online learning system.

In December 2019, Mr. Uys facilitated two workshops — “Moodle Systems Administration” and “Design and Develop a Blended Course in Moodle” — with 15 and 27 attendees from the University’s Office of Information Technology, faculty and administrators. Moodle is a free and open-source learning management system. At the workshops, university staff learned how to develop, upload, and configure courses on ULOnline to ensure the system could be independently and locally maintained. Additionally, university faculty identified 10 priority subject areas for online learning and created 18 Moodle courses in subjects such as statistics, sociology, chemistry, research methodology, and digital literacy. Faculty were assigned to their respective courses in the online learning system and received e-learning guides on how to use the system as a follow-up to the workshops provided.

Blended learning options give students more opportunities for uninterrupted studies and the flexibility to learn from anywhere in the world. Online learning also fosters connections among the academic community at other Liberian institutions and worldwide.

Expected Result 9: Progress made toward Liberia Internet Exchange Point (LIXP) implementation

In Year 1, Digital Liberia’s project advisory council determined that connection to the Local Internet Exchange Point (LIXP) was a base requirement for any ISP providing services to the Government of Liberia. The LIXP enables local Internet traffic to be transmitted locally, at a faster speed and without incurring international connectivity rates. The fully operational LIXP will benefit ongoing work in the education and health sectors by linking research and education networks as well as local cloud-based public services at significantly reduced rates. Although Liberia had established an LIXP in 2015 at Cable Consortium of Liberia, maintaining and operating the LIXP had been a challenge due to lack structured funding and administrative mechanisms for day to day running of the LIXP, with the members unwilling to meet to discuss issues.

Digital Liberia facilitated a LIXP stakeholders discussion to address these shortcomings. The team’s intervention enabled the MNOs, the LIXP operator, and the sector ministry to agree on a one time plus

subsequent monthly recurring payment mechanism for MNOs in support of the LIXP's operations. Digital Liberia also developed the LIXP implementation and pricing plan to present the benefits of a LIXP to key stakeholders through the Liberia Telecommunications Authority. The implementation plan provides roles, challenges, and guiding principles for policymakers and stakeholders on the LIXP's maintenance, operation and development. The pricing plan provides guidance on how to transfer savings from the LIXP to the Liberian Internet ecosystem. Together, they provide a mechanism to assist the Liberia Telecommunications Authority (LTA) and MOPT to effectively liaise with local ISPs and the Cable Consortium of Liberia as they identify challenges, develop definitive steps for implementation and work with stakeholders to operationalize local pricing. To boost usage of the exchange, Digital Liberia convened key stakeholders from LTA, MOPT, and ISPs to agree to install a Google Cache Server and high-end switch at the LIXP. The server enables Google services to be available locally, reducing latency for users as international transit is not required. Liberia's Google Cache Server became operational in FY 2018. Digital Liberia's status as an independent party helped the process of convening fiercely competitive ISPs to engage in dialogue for improvement of the sector.

Expected Result 10: Improved internet connectivity at prioritized County Service Centers

As part of the Option year 2 modification, USAID requested that Digital Liberia support connectivity efforts at County Service Centers (CSCs) to complement work performed by the Inveneo Rural Connectivity Infrastructure project. However, GOL counterparts were unable to commit to ongoing support for internet connection fees, therefore reducing sustainability of these efforts. As a result, USAID removed this expected result from the Digital Liberia scope of work. Digital Liberia instead delivered a connectivity troubleshooting module in Inveneo's scheduled training for CSC staff and local technical support envoys in Lofa, Nimba, Grand Bassa, Margibi, and Bong counties.

SECTION 3. LEARNING AND ADAPTING

Digital Liberia's implementation resulted in several key project learnings, some of which required the project to shift course and adapt to a dynamic operating environment.

ONE PROJECT, TWO CONTRACTORS

USAID designed Digital Liberia using a unique contracting mechanism – it awarded two separate contracts for a single project. Chemonics International was responsible for overall management of Digital Liberia and delivering Objective 2 expected results, while IBI International was responsible for delivering Objective 1 expected results. Despite the potential for miscommunication and confusion over roles and responsibilities, Chemonics and IBI operated seamlessly, truly embracing the one team approach. A key reason for this ease of operations was the development of a memorandum of understanding between Chemonics and IBI that outlined exactly how the two implementing partners would cooperate to deliver Digital Liberia technical objectives. A cost-sharing agreement also allowed the two contractors to share costs, resulting in savings for the U.S. government. Additionally, several key personnel had previously worked together under the USAID GEMS project. These existing relationships allowed the team to quickly collaborate in a way that otherwise may have taken time to develop through purposeful team building exercises.

STRATEGIC RELATIONSHIPS

The value of an implementing partner serving as a liaison between private sector (CSquared) and public sector (GOL), was fully demonstrated over the life of Digital Liberia. Government decision making requires time, understanding and consensus, while CSquared decision making is vested in their representative, allowing immediate response and action. These differences increased relationship pressures and frustration.

The 2016 MOU between USAID, GOL and CSquared, to provide a fiber ring, was not fully understood by MOPT although they signed and accepted the conditions. Libtelco was not a party to the agreement but would be required to implement. In 2018, the new administration could not identify supporting documentation that provided the justification and requirements of Government and Libtelco for the MOU. This created suspicions within GOL around the basis of the agreement and parties involved. The new administration eventually accepted the MOU as a commitment on Government. Libtelco as the implementor, however, accepted the agreement with considerable reluctance as they could not adequately identify a profitable way forward. As the CSquared relationship had timeframes against which Digital Liberia was aligned, MOPT and Libtelco felt pressured to make decisions when they needed more time to understand the value and implications.

CSquared considered the MOU between themselves, USAID and GOL as the relationships guiding document which compelled Libtelco to comply. The approach, though logical from a purely private sector perspective, was received as coercion from the public sector. In every instance where business challenges arose, CSquared shifted to USAID and MOPT for the solution to bring Libtelco in line. The recognition that MOPT and Libtelco, together, represent GOL was slow in its realization.

Digital Liberia's relationship of trust with the GOL, MOPT, Libtelco and CSquared along with the team's understanding of the development process offered the unique opportunity, convening power and guidance to support the resolution of issues. On several occasions Digital Liberia held one on one meetings as an intermediary between the parties, which helped to provide detailed explanations and increase acceptance of matters needing consensus. Without Digital Liberia's strength as an implementing partner, such Public Private Partnership arrangements would be difficult to implement.

Although challenges remain in the relationship between Libtelco and CSquared that are impacting Digital Liberia's ability to finalize verification of fiber installation at ten remaining MACs, the parties have agreed on a way forward that is monitored by the project. However, as a result of persistent financial constraints (detailed below), MOFD did not pay Libtelco for the MACs' connections to CSquared fiber as it had previously agreed. As a result, Libtelco shut down the fiber connection and MACs are now without internet. The disconnection has also impacted MACs ability to use GovNet.

Similarly, the formation of a Research and Education Network required public and private institutions to work collaboratively on a new concept with many detailed technical and operational requirements. Digital Liberia's ability to catalyze and maintain focus, convene University Presidents, build ownership and progress the LRREN towards actual operations has enabled it to advance faster than other RENs in the region. While the institutions are committed and do not expect financial resources from USAID, they require an external, undistracted promoter to accelerate technical implementation and ensure their staff are trained.

FUNDING FOR AMIS

Funding for licensing and maintenance of AMIS remains a challenge for GOL. In FY17 Digital Liberia supported GSA to secure one-year funding from LRA, which wanted to digitize its Asset Management and agreed to use the GSA solution. The license expired in FY18 Q4. MFDP started processes to renew the software license but while the necessary approvals have been agreed, payment has not been affected and the software expired. The operations of LRA were affected as they have fully migrated their assets to the system and rely on it to generate monthly reports. Digital Liberia assisted GSA to work together with LRA and MFDP to continue bolstering support for payment of the licenses, with motivational letters and lobbying efforts. In attempting to find a solution for the near term, Digital Liberia helped GSA to identify outstanding professional services due from the AMIS software vendor. Digital Liberia facilitated a discussion proposing that the GSA agree to forego the outstanding services and in return the vendor apply their cost savings to reactivate the AMIS licenses for a period. This was accepted by the vendor and software was relicensed.

To ensure GOL develops a sustainable mechanism to maintain the system, Digital Liberia has recommended and motivated to the GOL to include Assets Management in the GOL Public Financial Management Strategy (2018-2021) as a key element of the comprehensive financial management system.

FINANCIAL CONSTRAINTS FOR ICT

Binding financial constraints impact on all GOL plans to improve performance through the use of ICTs. The ICT Policy designates the CIO as a senior post in MACs, reporting to the Minister. No additional resources are provided to fund these proposed senior staff, providing little incentive to attract and retain the necessary skills. Similarly, the e-Liberia/PMO office mandate to provide a pool of effective technical expertise to GOL MACs to assist with improving the ICTs performance remains unfulfilled. For the third year, no additional funding was made available to the ICT sector and support for the CIO cadre, training, internet and software licenses for critical systems remained unavailable.

Digital Liberia has supported GOL efforts to address resource challenges by providing technical assistance to recommend improvements. Technical and organizational reforms in the National budget preparation and allocation were identified as necessary to better understand and support ICT-related budgeting and expenditure. The first step towards the implementation of these reforms is reflected in the GOL 2018/19 budget, with disaggregation of Internet expenditure from Voice expenditure in the Chart of Accounts. However, only 30% of MACs included internet in their FY19/20 budget. Digital Liberia has supported MOPT to identify and improve sources of funding for ICT, including options such as ring-fencing a set-aside from revenues generated by the ICT sector, benefitting from the operation of the Universal Services Fund, and motivating for a reinvestment into the sector of revenues generated, either through divestiture or leasing of capacity, from GOLs considerable stake in the CCL.

ICT LEADERSHIP

Sustained leadership is important at all levels of the e-government and MOPT has been unable to exert its authority in the ICT sector, in part due to resourcing issues mentioned above. Enhanced inter-agency collaboration at the senior level through the ICT Governing Board and the formulation of an ICT Donor Working Group will help address this ongoing challenge.

GOVERNMENT SALARY HARMONIZATION

The GOL decision to harmonize salaries through the reduction of salaries by as much as 60%, for many civil and public servants, along with other payroll challenges has impacted their ability to retain and incentivize the technical and operational staff. Many staff had their salaries reduced and were not paid for several months. The result has been a trickle-down effect on the operations, effectiveness and sustainability of service delivery and operations across Government.

SECTION 4. SUMMARY OF RESULTS

Exhibit 3 illustrates progress against MEL targets over the life of the Digital Liberia project.

EXHIBIT 3. MEL INDICATOR PROGRESS

Performance Indicators (Indicator No. and Title)		FY 2017 Baseline	Life of Project Target	FY 2017 Achieved	FY 2018 Achieved	FY 2019 Achieved	FY 2020 Achieved	Life of Project Achieved
Objective 1: Increased sustainable ICT utilization at targeted MACs to improve government decision making and management								
<i>Cross-Cutting</i>								
AO1	# of MACs using new/improved ICT systems (Cumulative)	0	6	4	4	7	N/A	15
AO2	# of new/improved ICT systems introduced and adopted by MACs (Cumulative)	0	7	4	4	5	N/A	13
<i>IR/ER 1: Strengthened Capacity of Targeted MACs to use ICT to improve Government Decision Making and Management</i>								
IR1.1	# of MACs that have improved their institutional and human resources capacity (Cumulative)	0	8	4	4	4	N/A	12
<i>Sub IR/ER 1.1: Government-wide ICT and eGovernment Enabling Environment Improved</i>								
IR1.1.1	% changes in the stages of adoption of the foundational governance frameworks & methodologies (stages include): 1. Centralized governance bodies convened 2. Initiative selection criteria and performance management accepted 3. Change & Project management framework accepted 4. Communications framework accepted 5. ICT Finance and MIS frameworks accepted	0	100%	100%	100%	100%	100%	100%
<i>Sub IR/ER 1.2: Strengthened Human Resource Capacity to implement reforms</i>								
1.2.1	# of training sessions conducted (Incremental)	0	10	6	6	34	N/A	46
1.2.2	# of Information Sessions, Conferences, Workshops (Incremental)	0	18	0	18	7	N/A	25
1.2.3	# of ICT Personnel receiving capacity-building training/ information sessions (result in training units: 1-person training on 1 subject = 1 training unit) (Cumulative)	240	TBD	138	0	594	N/A	732
1.2.4	% of people trained who report use of skills from training (from post-training survey) (Cumulative)	0	60%	N/A	N/A	46%	N/A	46%
<i>IR/ER 2: Strengthened Implementation of Prioritized Systems Reforms in targeted MACs.</i>								
<i>Sub IR/ER 2.1: ICT Initiatives to support reforms are being identified and prioritized in line with the GOL eGovernment Strategy</i>								
2.1.1	# of e-Initiative Concept Notes developed (Incremental)	0	20	9	8	5	N/A	22
2.1.2	# of e-Initiatives approved (Cumulative)	0	20	13	3	4	N/A	20
<i>Sub IR/ER 2.2: ICT Initiatives are planned and implemented in a sustainable manner</i>								

	Performance Indicators (Indicator No. and Title)	FY 2017 Baseline	Life of Project Target	FY 2017 Achieved	FY 2018 Achieved	FY 2019 Achieved	FY 2020 Achieved	Life of Project Achieved
2.2.1	# of e-Initiatives implementations guided by the Change Management Plan (Cumulative)	0	16	7	8	12	N/A	27
<i>IR/ER 3: Improved availability of timely, accurate and transparent information to support better decisions and resource management</i>								
<i>Sub IR/ER 3.1: MACs are undertaking and progressing ICT Initiatives to improve timely, accurate and transparent information</i>								
3.1.1	# of e-Initiatives progressing (Cumulative)	0	16	6	9	12	N/A	37
3.1.2	# of MACs implementing e-Initiatives (Cumulative)	0	8	3	5	5	N/A	13
3.1.3	# of e-Initiatives meeting their objectives (Cumulative)	0	16	6	9	12	N/A	27
3.1.4	# of e-Initiatives completed (Cumulative)	0	10	0	13	7	N/A	20
Mobile Money Component								
<i>IR/ER 1: Offer MM Salary payments to Civil servants at additional ministries</i>								
<i>Sub IR/ER 1.1: Evidence of progress with new MACs adopting MM and employees that have initiated a phased roll-out of a mobile money payment option for at least one work stream</i>								
1.1.1	Number of new MACs adopting Mobile Money	0	6	0	0	13	NA	13
1.1.2	Number of Mobile Money salary enrollments	0	300	0	0	1124	NA	112
1.1.3	Number of Mobile Money salary payments	0	300	0	0	520	NA	520
<i>Sub IR/ER 1.2: Development of communication plan for CSA and CAG/MFDP to communicate the benefits and modalities of MM to MAC leadership</i>								
1.2.1	Number of MFDP Mobile Money Staff trained on Mobile Money salary payment benefits and modalities.	0	60	0	0	65	NA	65
1.2.2	Number of MACs trained by CSA/MFDP Mobile Money unit	0	6	0	0	19	NA	19
1.2.3	Number of MACs supported by CSA/MFDP Mobile Money unit that have accepted Mobile Money Communication Plan	0	6	0	0	19	NA	19
<i>Sub IR/ER 1.3: Development of an institutional coordination mechanism established between CSA and additional MACs for enabling mobile money-based payment streams.</i>								
1.3.1	Number of coordination meetings with CSA and MFDP and additional MACs	0	10	0	0	23	NA	23
<i>IR/ER 2: Civil Service Agency technical assistance</i>								
<i>Sub IR/ER 2.1: Integration of Digital Pay slip to MM payments</i>								
2.1.1	Number of employees receiving digital pay slips	0	300	0	0	0	NA	0
<i>Sub IR/ER 2.2: The Help Desk function is scalable to meet the needs of increased demand for MM payments.</i>								
2.2.1	Number of MACs that the Help Desk supports	0	8	0	0	9	NA	9
<i>Sub IR/ER 2.3: The Help Desk is operating on a reliable digital platform that provides collection and recording, transmitting, reconciling and validating MM payroll data</i>								
2.3.1	Number of tickets logged (complaints received)	0	300	0	0	308	NA	308
2.3.2	Number of tickets resolved	0	300	0	0	292	NA	292
2.3.3	Average time (mm/hh) to respond to ticket	72	24	0	0	48	NA	48
<i>IR/ER 3: Ecosystem work to be coordinated at a central level</i>								

Performance Indicators (Indicator No. and Title)		FY 2017 Baseline	Life of Project Target	FY 2017 Achieved	FY 2018 Achieved	FY 2019 Achieved	FY 2020 Achieved	Life of Project Achieved
<i>Sub IR/ER 3.1: CBL Support to efficiently apply regulations for effective and efficient coordination of Government to People (G2P) mobile payment</i>								
3.1.1	Evidence that CBL is regulating Mobile Money payments/systems	<i>CBL not wishing to pursue this activity. USAID in agreement</i>						
<i>IR/ER 4: Integration of systems between MOH and CSA:</i>								
<i>Sub IR/ER 4.2: Roadmap for migration to improved integration of MOH and centralized systems created.</i>								
4.1.1	Evidence of an integrated system between MOH and CSA	<i>Agreed with USAID not to pursue</i>						
Objective 2: Support the Capacity Development of Government Internet Service Provisioning								
<i>ER 1: Government Internet Services Provisioning available to prioritized MACs and their individual facilities</i>								
2.2.0	Number of MACs with customer provided equipment installed (output)	0	51	N/A	N/A	41	5	46
<i>ER 2. MACs provisioned with improved connectivity</i>								
2.2.1	Number of MACs provisioned with improved connectivity (outcome)	0	49	4	44	84	8	92
<i>ER 3. Development of Concept of Operations (ConOps)</i>								
2.3.1	Concept of operations (ConOps) finalized (process; qualitative)	NO	YES	YES	N/A	N/A	N/A	YES
<i>ER 4. Standard Operating Procedures (SOPs), Tender Templates, Provisioning Guidelines, etc.</i>								
2.4.1	Number of tools (SOPs, templates, and/or guidelines) developed (output)	0	3	3	1	0	N/A	4
<i>ER 5. Broadband Communications & Value-Added Services (VAS) Procured</i>								
2.5.1	Number of GOL employees trained in internet procurement procedures (output)	0	196	0	96	97	NA	193
2.5.2	Number of broadband communications and Value-Added-Services (VAS) procurements supported (output)	0	10	0	0	161	NA	161
<i>ER 6. Shared Infrastructure & Application Services Improved</i>								
2.6.1	Design for shared infrastructure & application services developed (process; qualitative)	NO	YES	NO	YES	N/A	NA	YES
<i>ER 7. Improved Internet and Intranet connectivity at Prioritized University of Liberia Campuses</i>								
2.7.1	Campus connectivity roadmap developed (output)	0	YES	N/A	N/A	YES	NA	YES
2.7.2	Number of UL campuses with improved connectivity (output)	0	3	N/A	N/A	0	1	4
2.7.3	Number of tertiary education IT staff trained in network management (output)	0	10	N/A	N/A	24	NA	24
<i>ER 8. Improved Access to Education and Research Materials for Prioritized Tertiary Education Institutions in Liberia</i>								
2.8.1	LRREN governance structure formalized (process, qualitative)	NO	YES	N/A	N/A	YES	NA	YES
2.8.2	LRREN Roadmap developed (process, qualitative)	NO	YES	N/A	N/A	YES	NA	YES
2.8.3	Tele-education content library developed (process, qualitative)	NO	YES	NA	N/A	NO	YES	YES
<i>ER 9. Progress Made toward L-IXP Implementation</i>								

Performance Indicators (Indicator No. and Title)		FY 2017 Baseline	Life of Project Target	FY 2017 Achieved	FY 2018 Achieved	FY 2019 Achieved	FY 2020 Achieved	Life of Project Achieved
2.9.1	L-IXP implementation action plan developed (process, qualitative)	NO	YES	N/A	N/A	YES	NA	YES
2.9.2	L-IXP local pricing roll out plan developed (process, qualitative)	NO	YES	N/A	N/A	YES	NA	YES
<i>ER 10. Improved Internet Connectivity at Prioritized County Service Centers</i>								
2.10.1	CSC connectivity sustainability plan developed (process, qualitative)	NO	YES	NO	NO	YES	NA	YES